



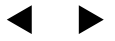
**Baker
McKenzie.**

**Global Sustainable
Buildings Guide 2024**

**TRANSACTIONAL
POWERHOUSE**
Real Estate

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Global Sustainable Buildings Guide



Foreword

Dear reader,

The built environment accounts for almost 40% of all global carbon emissions, of which around 11% come from embodied carbon. Real estate owners, occupiers, investors and developers have a crucial role to play in our global journey towards a more sustainable built environment. The challenge is real, and an increasing number of developers, investors and other real estate stakeholders are now taking steps to make sustainability a central force behind their business decisions.

We have revised this third edition of our Global Sustainable Buildings Guide to provide an updated overview of key topics that will be relevant to you on your journey to net-zero. We take a comparative look across 37 jurisdictions at issues such as: certification models that are recognized in different jurisdictions; energy performance standards; available government subsidies and national targets; and regulatory measures and risks. You are able to select jurisdictions and questions, and compare the answers for a global perspective across Asia Pacific, Europe, the Middle East and the Americas.

We thank all our colleagues across the globe for their contributions and expertise in compiling this guide, and we trust it proves a useful resource for you. For questions, assistance or advice, we invite you to contact any of the local authors referenced in the Guide.

Best regards,



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Global Sustainable Buildings Guide



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Asia Pacific



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Australia



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Australia, there are two main green rating tools with respect to commercial buildings: (i) Green Star and (ii) the National Australian Built Environment Rating System (NABERS).

Green Star is a voluntary system, managed by the Green Building Council of Australia, whose main rating tool evaluates the environmental/ecological design and construction of new buildings and refurbishments. To obtain a "green star rating," projects must meet the eligibility criteria, 10 minimum expectations, the Climate Positive Pathway (essential for five- and six-star ratings and optional for four-star ratings until 2026) and obtain credits in nine categories. These categories are as follows: (i) management; (ii) indoor environment quality; (iii) water; (iv) transport; (v) materials; (vi) land use and ecology; (vii) innovation; (viii) emission; and (ix) energy.

NABERS provides performance ratings for existing buildings against industry benchmarks for similar buildings over a 12-month period, providing quantifiable and comparable data across the market. Ratings are available for carbon neutrality (NABERS Carbon Neutral), energy consumption (NABERS Energy), air quality (NABERS Indoor Environment), on-site renewable energy generation and off-site renewable energy generation (NABERS Renewable Energy Indicator), waste generation, recycling, recovery and supply chain management (NABERS Waste), and water consumption and recycling (NABERS Waste). Ratings are available across various asset classes, including office buildings, office tenancy, hotels, shopping centers, data centers, hospitals, schools, warehouses and cold stores, and residential aged care and retirement living.

Under the NABERS Energy rating system, whole buildings, base buildings and tenancies can receive a "NABERS Star Rating" ranging from one ("making a start") to five ("market-leading"). It is compulsory to obtain a NABERS Energy rating when selling or leasing an office building larger than 1,000 square meters and new buildings over 1,000 square meters.



Australia



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The Building Energy Efficiency Disclosure Act 2010 (Cth), together with the Building Energy Efficiency Disclosure Regulation 2010 and a number of ministerial determinations, established the Commercial Building Energy Efficiency Disclosure Scheme, which began on 1 November 2010. The scheme is designed to enable potential purchasers or tenants of large commercial buildings to consider energy efficiency as part of their decision-making processes. The scheme requires owners and landlords of "Disclosure Affected Buildings" or "Disclosure Affected Areas" of buildings to do the following:

- Have a building energy efficiency certificate (BEEC) registered on the Building Energy Efficiency Register, which is maintained by the Australian government's Department of Climate Change, Energy, the Environment and Water, at the time that the building (or area) is offered for sale, lease or sublease
- Include an energy efficiency rating on any sale, lease or sublease advertisement

A "Disclosure Affected Area" or "Disclosure Affected Building" includes a building or an area of a building that is used or capable of being used as an office if (i) 75% of the space by net lettable area is used for "administrative, clerical, professional or similar information-based activities, including support facilities for those areas" and (ii) that net lettable area is equal to or more than 1,000 square meters. A BEEC is composed of (i) a NABERS Energy star rating for the office building and (ii) information about the energy efficiency of the office lighting (called a "CBD Tenancy Lighting Assessment"). The act establishes the Building Energy Efficiency Register, which is available for inspection online.

The Building Energy Efficiency Disclosure Amendment Act 2015 (Cth) commenced on 1 July 2015. This amending act introduced new exemptions and provided simpler certification processes under the Commercial Building Disclosure Program ("**CBD Program**"). These amendments aimed to reduce the administrative burden of complying with the CBD Program and provide greater flexibility for businesses maintaining their current BEECs.



Australia



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The national greenhouse gas and energy reporting scheme was first implemented in Australia in 2007 through the National Greenhouse and Energy Reporting Act 2007 (Cth). Mandatory annual reporting obligations have been imposed on certain corporations in control of facilities and/or corporate groups that emit greenhouse gases equal to or in excess of 50 kilotonnes of CO₂ equivalent, or produce or consume energy equal to or in excess of 200 terajoules.

The Building Code of Australia (BCA) is Australia's primary national building standard. The BCA was produced and is maintained by the Australian Building Codes Board on behalf of the Australian government and state and territory governments. The BCA is a uniform set of technical provisions for the design and construction of buildings throughout Australia, containing provisions on matters such as structure, fire resistance, energy efficiency, and certain aspects of health and amenities. The BCA is given legal effect by legislation in each state and territory. However, any provision of the BCA may be overridden by state and territory legislation. Through regulations or appendixes to the BCA, some states and territories have introduced additional energy efficiency requirements in relation to building new homes. This is in conjunction with the Nationwide House Energy Rating Scheme that commenced 1 October 2023, which sets minimum energy standards for new homes across Australia. This is one of the ways of meeting the energy efficiency requirements established under the National Construction Code.



Australia



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The application of federal, state and local council schemes that encourage new development or the redevelopment of buildings is ordinarily determined on a case-by-case basis. While there are schemes that may provide benefits in certain circumstances, this depends on the location of the building and the controls that apply to the site. This means that the eligibility of energy efficiency improvements to commercial buildings depends on a wide range of factors.



Australia



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Pursuant to its obligations under the 2015 Paris Agreement, Australia has enacted and is in the process of developing further legislation directed at limiting global warming to a total of 1.5 degrees Celsius above preindustrial levels. The Climate Change Act 2022 (Cth) became effective in September 2022. It mainly codifies Australia's greenhouse gas emissions reduction targets at 43% below 2005 levels by 2030 and at net zero by 2050. These legislated targets are consistent with Australia's new nationally determined contributions under the 2015 Paris Agreement and were made more ambitious than they were in 2022.

These targets are generally consistent with a separate legislative mechanism designed to put downward pressure on greenhouse gas emissions, which is known as the Safeguard Mechanism. However, there is currently no clear and codified target for the reduction of greenhouse gas emissions in connection with commercial buildings.



Australia



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Australia has a target of 82% renewable electricity by 2030. This is underpinned by a range of policy initiatives that are directed at facilitating investment in new renewable energy projects and filling reliability gaps as aging coal power stations are expected to exit the electricity market.



Australia



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Please see our response under the topic "Energy Performance Certificates and Minimum Energy Standards."



Australia



Financing

Are there any public or private “green” financing initiatives for sustainable real estate projects?

Several green financing initiatives are available for sustainable real estate projects in Australia. The Green Building Council of Australia, in collaboration with the Australian Sustainable Finance Institute, has released [a practical guide](#) on sustainable finance, which includes green bonds and green loans.



Australia



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In Australia, a state or local government can require that sustainability measures be put in place. In New South Wales (NSW), the Building Sustainability Index (BASIX) sets sustainability targets for water and energy, applicable to new or refurbished residential developments. BASIX imposed targets relating to the reduction in potable water consumption and greenhouse gas emissions, determined from the NSW average residential water, electricity and gas consumption data collected from energy utilities. While the BASIX requirements do not apply to nonresidential buildings, a state government could adopt these rules to apply to all buildings. Local councils also have the ability to require that proposed buildings comply with a number of green initiatives. They are constrained by the planning statutes in place as to what standards they can impose on developers. However, within their framework, they have broad discretion and can impose higher environmental standards to make buildings more sustainable.



Australia



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Australia, green lease provisions are not mandatory. The public sector is taking the lead by changing government behavior as owners and occupiers of commercial buildings, and the private sector complements this approach in accordance with its own ESG targets and aims.

Notwithstanding that there are no mandatory requirements to include green lease provisions, a substantial number of leases in the "A grade" market have green lease arrangements.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

* Full list of cited regulations at the end of this chapter.

Under China's national regime, there are four levels of certifications for green buildings (in ascending order of quality requirements): Basic Grade, 1-Star Grade, 2-Star Grade and 3-Star Grade.

The current green building certification regime in China is mainly based on the following regulation and evaluation standard:

- 2019 Green Building Evaluation Standard* (Note: The first version of this standard was issued in 2006; draft revisions to the current version are now under public consultation.)
- 2021 Green Building Label Management Measures*

These documents coexist and cross-interact with many other regulatory documents and technical standards governing construction planning, design, safety, conservation of energy and other resources, and measures to combat climate change and reach decarbonization. Some of the documents will be discussed below.

Over the years, many projects in China have also applied for other internationally recognized green building certifications, most notably, the Leadership in Energy and Environmental Design certification launched by the US Green Building Council.

As of the first half of 2022, more than 25,000 projects have been certified under the current green building regime.

Under China's current green building certification regime:

- The 3-Star Grade is to be granted by the national building authority, i.e., the Ministry of Housing and Urban-Rural Development (MOHURD).
- The other certification grades (Basic Grade, 1-Star Grade and 2-Star Grade) can be granted by the local building authorities. In addition, the local authorities may make certain adjustments to the evaluation standards applicable to the lower certification grades.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- While all types of buildings are now eligible to apply for a green building certificate and label, it is still not a nationwide mandatory requirement. Specifically:
 - Under the 2013 Green Building Work Plan*, only certain new government-invested buildings, affordable housing in certain cities and large-scale public buildings over 20,000 square meters must attain a green building certification.
 - Under the Urban and Rural Construction Area Carbon Peaking Implementation Plan* and the Building Energy Conservation and Green Building Development Plan during the 14th Five-Year Plan Period*, China targets that all new buildings in China shall attain at least the Basic Grade rating and at least 30% of them reaching at least 1-Star rating by 2025.
 - Local regulations may set higher requirements and mandate all new buildings to attain green building certification. For example, under the Shenzhen Green Building Regulation*, from 1 July 2022, all new buildings in Shenzhen must attain a 1-Star rating, and all new government-invested projects must attain no lower than 2-Star rating.
- A green building rating label is to be granted after construction is completed. (Note: A project owner can apply for a pre-assessment for a green building label during the construction design stage)

The current assessment criteria under the 2019 Green Building Evaluation Standard are grouped under the following building aspects:

- Safety and durability
- Health and comfort
- Occupancy convenience
- Conservation of resources
- Environmental habitability



China



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Overall, more consideration is now given to various green building aspects, such as the project's adaption to the climatic and physical environment and users' comfort and convenience.

Under the above-mentioned national regulations and certain local regulations, if buildings are mandated to obtain green building certification but fail to obtain the required certification, it could result in the relevant buildings not being allowed to be put into use and/or other regulatory sanctions.

Under the 2019 Green Building Evaluation Standard, the relevant energy conservation standards are still mainly expressed in terms of energy consumption intensity, but the standard requires that there be specific reporting on carbon emission intensity if the project intends to apply for green financing. In addition, if the project owners calculate the buildings' carbon emission intensity and adopt measures to lower the emission intensity, it will help the relevant buildings obtain a higher rating.

China has enacted the following technical standards for calculating and prescribing carbon emission intensity of buildings:

- 2019 Building Carbon Emissions Calculation Standard*
- 2021 General Rules for Building Energy Conservation and Use of Renewable Energy ("2021 General Rules")*

In February 2023, the MOHURD published draft revisions to the 2019 Green Building Evaluation Standard* for public comments. The draft revisions aim to align the 2019 Green Building Evaluation Standard with the 2021 General Rules and to include more specific provisions in relation to carbon emissions. For example, building owners must specify the buildings' carbon emission intensity and their proposed measures to reduce this carbon emission intensity to obtain a 1-Star rating or above.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

* Full list of cited regulations at the end of this chapter.

China's current national regime for prescribing minimum energy performance standards is principally based on the following regulation and standard:

- 2008 Civil Buildings Energy Conservation Regulation ("2008 Regulation")*
- 2021 General Rules*

In connection with the 2008 Regulation, China has enacted the 2008 Civil Building Energy Performance Labeling Interim Measures* to provide for a system of certification and labeling of energy performance. In practice, this labeling system was largely absorbed by the green building certification regime discussed under "Green certification" and was only used in certain provinces and cities. The 2021 General Rules apply to all new buildings, renovation and expansion work of existing buildings, and energy conservation renovation of existing buildings. Buildings must also comply with the specific mandatory requirements in other applicable standards. For details on how China implements its building energy performance and conservation requirements, please refer to our discussions in relation to the green building regime under "Green certification".

In April 2023, China issued the revised 2023 Fixed Assets Investment Energy Conservation Review Measures*. The measures set out which authorities are responsible for carrying out the energy conservation review. Furthermore, local authorities are specifically required to conduct random post-completion inspections to ensure that buildings comply with all mandatory energy conservation requirements.

According to the 2015 Interim Measures for the Administration of Energy Audit of Public Institutions* and certain local regulations, certain major public facilities and buildings of public bodies are required to undergo regular energy performance audits. Save for these specified types of buildings, there are currently no general statutory requirements for regular audits of buildings' energy performance.



China



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

* Full list of cited regulations at the end of this chapter.

Improving the energy efficiency of existing buildings is increasingly becoming a significant part of China's energy conservation, carbon peaking and carbon neutrality plan. China has established various financial support plans and subsidy funds for specific improvements, such as the following:

- In 2014, China consolidated several special funds and established the **Subsidy Fund for Affordable Housing Projects in Urban Areas**. Among other things, this subsidy fund supports energy conservation renovations of existing old residential buildings. Specifically, local authorities are required to improve the energy efficiency of existing buildings in the northern heating area. The northern heating area in China covers 15 municipalities and provinces in Northern China that need heating systems in winter.

In 2022, the central government allocated approximately CNY 30 billion to support renovations of old residential buildings, including improving their energy efficiency.

- In 2015, to promote energy conservation, reduce carbon emissions and enhance energy efficiency, China established the **Subsidy Fund for Energy Conservation and Carbon Emission Reduction**.
- In November 2023, the State Council issued the Carbon Peaking Pilot Scheme*. Under this scheme, 100 cities or areas will be selected to implement various measures to reach carbon peaking, with the initial phase covering 15 cities. Among other things, the major tasks for the pilot cities include improving energy conservation in new buildings, and promoting energy conservation renovation of existing buildings and green construction methods.
- Local authorities have also rolled out various financial incentives for improving the energy efficiency of existing buildings:
 - In January 2021, Shenzhen established the **Special Fund for Green Innovative Development in the Field of Engineering and Construction**. Among other things, the special fund supports green renovation and energy conservation renovation of existing buildings. In 2024, Shenzhen announced that it plans to allocate CNY 4.16 million for energy conservation renovation of existing buildings in the next two years.



China



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

- In June 2023, Beijing established the **Incentive Fund for Green Building Development**. The incentive fund provides financial incentives for energy conservation renovation of public and other existing buildings.

For public buildings, the energy conservation renovation must have a minimum energy conservation rate of 15% for ordinary public buildings and a minimum energy conservation rate of 20% for large-scale public buildings. The amount of the cash incentive is up to CNY 20 per square meter based on the approved building area and should not exceed 30% of the total renovation cost.

For energy conservation renovation of other existing buildings, it should attain at least a 2-Star rating under the Green Renovation of Existing Buildings Evaluation Standard* or the comparable local standard in Beijing. The amount of the cash incentive is up to CNY 60 per square meter based on the implemented construction area and should not exceed CNY 6 million.



China



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

* Full list of cited regulations at the end of this chapter.

At the 75th Session of the UN General Assembly in September 2020, President Xi Jinping of China announced that China will make efforts to peak its carbon emissions by 2030 and attain carbon neutrality by 2060. Since then, China has promulgated a number of policy documents to outline its national CO2 reduction target and action plan, including the following:

- 2021 14th Five-Year Plan and 2035 Plan*
- 2021 Opinions on Full Implementation of Decarbonization*
- 2021 Action Plan for Peaking Carbon Emissions before 2030*
- 2022 National Climate Change Adaptation Strategy for 2035*
- 2023 Guidelines for Establishing Carbon Peaking and Carbon Neutrality Standards*

Based on these macro policies and targets, China has further promulgated other national regulations to set out its CO2 reduction targets for the building sector, including the following:

- 2019 Near-Zero Energy Consumption Buildings Technical Standard*
- 2020 Green Building Promotion Action Plan*
- 2021 Opinions on Driving Green Developments in Urban and Rural Areas*
- 2021 General Rules*



China



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Under these documents, China has set the following national CO2 reduction targets for the building sector:

- The carbon intensity level of all new buildings, renovation and expansion of existing buildings, and energy retrofitting of existing buildings, must comply with the applicable standards. (Note: These standards do not apply to industrial buildings that do not have heating supply or air-conditioning equipment or temporary buildings with a use duration of less than two years.)
- By 2025, the energy conservation rate of new residential buildings in urban areas must be improved by 30%.
- By 2025, the energy conservation rate of new public buildings in urban areas must be improved by 20%.

Further, China is drafting the following documents to quicken its progress on the above CO2 and energy reduction targets for its building sector:

- Carbon-Neutral Buildings Technical Standard*
- Revisions to the Green Building Evaluation Standard*



China



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

* Full list of cited regulations at the end of this chapter.

Under the 2021 General Rules* and the 2021 Action Plan for Peaking Carbon Emissions before 2030*, China has set the following targets for the use of renewable energy in the building sector:

- All new buildings must have solar power systems.
- By 2025, renewable energy substitution rate of 8% must be achieved in urban buildings.
- By 2025, a rooftop photovoltaic coverage rate of 50% must be reached for all new public buildings and industrial buildings.



China



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In addition to the mandatory requirements and financial support under the various regulations outlined under "Energy performance certificates and minimum energy standards" and "Incentives for green retrofit", China also issued the 2022 Tax Reliefs Policy Guidelines Supporting Green Development*, which provides for income tax relief for qualifying building projects that use renewable energy or green lighting, or improve energy efficiency generally.

While the local authorities in China can grant various types of local regulatory support or financial incentives, they are not permitted to grant support in the form of tax support. For example, Beijing's Incentive Fund for Green Building Development provides cash grants for buildings with nearly zero energy consumption and new green buildings that attain a 3-Star rating and are used for more than one year. The cash grant amount is up to CNY 60 per square meter based on the implemented construction area for new green buildings and up to CNY 200 per square meter based on the implemented construction area for buildings with nearly zero energy consumption. For both types of buildings, the cash grant amount should not exceed CNY 6 million per building project.

Beside the cash grant, local authorities can also grant plot ratio incentives for new green buildings. For example, in December 2023, Guangzhou issued the Green Buildings and Buildings Energy Conservation Management Regulation*(taking effect on 1 March 2024). The regulation provides that some qualifying areas in new green buildings can be exempted from the calculation of the plot ratio, and, for certain types of buildings, the external wall areas up to 3% of the total building areas can be exempted from the calculation of the plot ratio.

Another example of how the local authorities provide indirect nontax support for energy efficiency is through the local carbon emission trading scheme (ETS). Since 2011, China has been testing a carbon ETS through establishing local carbon emission exchanges in Beijing, Tianjin, Shanghai, Chongqing, Guangdong, Hubei and Shenzhen. Under the local schemes in Beijing and Shanghai, designated major local buildings are required to participate in the carbon ETS. Participants will be granted carbon credits and can sell them in the local exchange for monetary income.



China



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In 2021, China established its National ETS Exchange in Shanghai, in addition to the preexisting local exchanges. At this stage, mainly the major electricity power generation companies are mandated to participate in trading the carbon emissions quotas at the National ETS Exchange. Other sectors with heavy carbon emissions (such as steel, cement and chemicals) will also be mandated to participate in the National ETS Exchange in the near future. National and local authorities are actively studying how the building sector can participate in both local and national ETS.

In January 2024, China also started to allow trading of voluntary carbon credits in the energy sector. It is reasonably hoped that, in the longer term, voluntary carbon credits arising from energy-saving measures can also be traded in the national exchanges and all the local exchanges to deliver further nontax incentives for the building sector in China.



China



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

* Full list of cited regulations at the end of this chapter.

China is the world's second-largest country in terms of the quantity of green bonds and green finance, with USD 155 billion issued in 2022 and USD 3.5 trillion outstanding as of the end of the first quarter of 2023.

China has built up its massive green financing market for building and other sectors through a regime comprised of the following major national regulations:

- 2016 Guiding Opinions on Creating the Green Finance Framework*
- 2021 Green Bond Support Catalog*
- 2022 IPSF Common Ground Taxonomy - Climate Change Mitigation*
- 2023 Green Industry Catalog*
- 2023 Notice on Accelerating the Coordinated Development of the Green Building Industry and Green Finance*

To obtain the lower-cost benefit of green financing, a building project must meet the green building requirements stipulated by the above regulations and the financing documents of the lenders concerned. Sustainable real estate/green building projects have always been one of the most active business sectors in receiving green financing support.



China



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

* Full list of cited regulations at the end of this chapter.

As noted in the preceding topics, China has enacted mandatory energy performance, environmental and other green standards for all types of buildings. These standards are cross-linked and cross-enforced with the national and local zoning and building construction regulations. Since noncompliance with these standards and regulations could result in the refusal of planning or construction permits, Chinese authorities have fully effective means to mandate their required green initiatives, such as installing solar panels in buildings and district heating or cooling systems in large developments.

Some local authorities have implemented their own green requirements in planning and zoning regimes for local buildings and projects through local regulations and standards. The requirements vary among localities. For instance, Beijing aims to construct super-low energy consumption buildings covering an area of 5 million square meters and apply heat-pump heating to additional areas of 45 million square meters by 2025. As for Shanghai, it aims to complete the energy conservation renovation of existing buildings covering an area of over 20 million square meters or more, construct super-low energy consumption buildings covering an area of 5 million square meters or more and apply at least one kind of renewable energy in all new buildings starting from 2022.

In addition to regulations, local authorities also use contract terms in land-grant contracts they sign with real estate developers as a tool to mandate the construction of buildings with a specific green building rating standard.

As for renewable energy, the Modern Energy System Plan during the 14th Five-Year Plan Period* outlines that China will develop major clean energy bases in Yunnan, Guizhou, Sichuan, Xizang and Qinghai, as well as promote the use of hydropower, wind power and solar power in these areas. In addition, China plans to, among other things, use geothermal energy in the Beijing-Tianjin-Hebei region, and nuclear and marine energy and wind power in the Yangtze Delta region and Pearl River Delta region. Local authorities are expected to also mandate these renewable energy initiatives through various planning policy tools.



China



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

While "green lease" provisions are not mandatory in China, in recent years, some landlords and tenants have started to adopt green leases. So far, the active participants in green leases in China are mainly the well-known international companies. The driving force is not only from the landlords' side; quite often, the tenant drives or demands the use of green leases. Generally speaking, green lease provisions are still mostly based on aspirational goals, with both sides committing to collaborating closely and making best efforts to achieve the green lease goals. It is still very rare that green lease provisions will contain stringent negative consequences or legal remedies for noncompliance. It is expected that green lease provisions will continue to become more prevalent as the building sector continues with its green development.

Full list of cited regulations:

- 2008 Civil Buildings Energy Conservation Regulation (民用建筑节能条例)
- 2008 Civil Building Energy Performance Labeling Interim Measures (民用建筑能效测评标识管理暂行办法)
- 2013 Green Building Work Plan (绿色建筑行动方案)
- 2015 Interim Measures for Public Institutions Energy Audit (公共机构能源审计管理暂行办法)
- 2016 Guiding Opinions on Creating the Green Finance Framework (关于构建绿色金融体系的指导意见)
- 2019 Green Building Evaluation Standard (《绿色建筑评价标准》(GB/T50378-2019))
- 2019 Near-Zero Energy Consumption Buildings Technical Standard (《近零能耗建筑技术标准》(GB/T51350-2019))
- 2020 Green Building Promotion Action Plan (绿色建筑创建行动方案)
- 2021 14th Five-Year Plan and 2035 Plan (中华人民共和国国民经济和社会发展第十四个五年规划和2035年远景目标纲要)
- 2021 Action Plan for Peaking Carbon Emissions before 2030 (2030年前碳达峰行动方案)



China



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

- 2021 General Rules for Building Energy Conservation and Use of Renewable Energy (《建筑节能与可再生能源利用通用规范》(GB 55015-2021))
- 2021 Green Bond Support Catalog (绿色债券支持项目目录)
- 2021 Green Building Label Management Measures (绿色建筑标识管理办法)
- 2021 Opinions on Driving Green Developments in Urban and Rural Areas (关于推动城乡建设绿色发展的意见)
- 2021 Opinions on Full Implementation of Decarbonization (关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见)
- 2022 IPSF Common Ground Taxonomy — Climate Change Mitigation (可持续金融共同分类目录报告—减缓气候变化)
- 2022 National Climate Change Adaptation Strategy for 2035 (国家适应气候变化战略2035)
- 2022 Tax Reliefs Policy Guidelines Supporting Green Development (支持绿色发展税费优惠政策指引)
- 2023 Green Industry Catalog (绿色产业指导目录)
- 2023 Guidelines for Establishing Carbon Peaking and Carbon Neutrality Standards (碳达峰碳中和标准体系建设指南)
- 2023 Notice on Accelerating the Coordinated Development of the Green Building Industry and Green Finance (关于加快推动绿色建筑产业与绿色金融协同发展的通知)
- Building Carbon Emissions Calculation Standard (建筑碳排放计算标准)
- Building Energy Conservation and Green Building Development Plan during the 14th Five-Year Plan Period ("十四五"建筑节能与绿色建筑发展规划)
- Carbon Peaking Pilot Scheme (国家碳达峰试点建设方案)



China



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

- Carbon-Neutral Buildings Technical Standard (零碳建筑技术标准)
- Energy Audit Measures for Public Institutions (公共机构能源审计管理暂行办法)
- Fixed Assets Investment Energy Conservation Review Measures (固定资产投资项目节能审查办法)
- Green Building Evaluation Standard (Draft for Comments) (绿色建筑评价标准 (局部修订征求意见稿))
- Green Renovation of Existing Buildings Evaluation Standard (GB/T51141) (《既有建筑绿色改造评价标准》(GB/T51141))
- Guangzhou Green Buildings and Buildings Energy Conservation Management Regulation (广州市绿色建筑和建筑节能管理规定)
- Modern Energy System Plan during the 14th Five-Year Plan Period ("十四五"现代能源体系规划)
- Shenzhen Green Building Regulation (深圳经济特区绿色建筑条例)
- Urban and Rural Construction Area Carbon Peaking Implementation Plan (城乡建设领域碳达峰实施方案)



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

BEAM Plus

Building Environmental Assessment Method (BEAM) Plus is the leading environmental assessment tool for buildings in Hong Kong. The local BEAM scheme was established in 1996 and was largely based on the UK's BREEAM. In November 2009, the scheme was revamped and renamed BEAM Plus.

BEAM Plus is a voluntary private sector initiative administered by the BEAM society and recognized by the Hong Kong Green Building Council (HKGBC), an industry-wide platform to drive the market transformation for sustainable buildings in Hong Kong. BEAM Plus has separate assessment tools for New Buildings (NB), Existing Buildings (EB), Interiors (BI), Neighborhood (ND), Data Centers (DC) and Existing Schools (ES). Generally, there are four ratings available for a project (i.e., Platinum, Gold, Silver or Bronze) after completing the assessment.

- **BEAM Plus NB:** BEAM Plus NB covers the demolition, planning, design, construction and commissioning of a new building of any type. It can also be applied to major renovations of existing buildings. Its predecessor, BEAM for NB, was first introduced in 2004. The latest version, BEAM Plus NB V2.0, was launched in 2019 and assesses a building's performance on the following seven aspects: (i) Integrated Design and Construction Management; (ii) Health and Wellbeing; (iii) Sustainable Sites; (iv) Materials and Waste; (v) Energy Use; (vi) Water Use; (vii) Innovations and Additions. NBs have to undergo a provisional assessment and a final assessment, with four ratings (i.e., Platinum, Gold, Silver or Bronze) available for each stage of assessment.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- **BEAM Plus EB:** BEAM Plus EB covers existing buildings of all types and all ages and may be applied at any time during a building's operational life. Its predecessor, BEAM for EB, was first introduced in 2004. The latest version, BEAM Plus EB V2.0, was launched in 2016 and assesses a building's overall environmental performance throughout its life cycle by considering the following seven aspects of sustainability: (i) Site Aspects; (ii) Management; (iii) Materials and Waste Aspects; (iv) Energy Use; (v) Water Use; (vi) Indoor Environmental Quality; and (vii) Innovations and Additions. BEAM Plus EB V2.0 allows applicants to apply for a Comprehensive Scheme or a Selective Scheme according to their needs, budget and technical capabilities. Under the Comprehensive Scheme, there will be a holistic review of the building, and four ratings (i.e., Platinum, Gold, Silver or Bronze) are available for a project after completing the assessment. Under the Selective Scheme, the applicant may apply for an individual assessment of each aspect, and four ratings (i.e., Excellent, Very Good, Good, Satisfactory) are available for an aspect after completing the assessment.
- **BEAM Plus BI:** In 2013, BEAM Plus BI was first introduced in response to strong marketplace demand for a localized benchmark for interior fit-out, renovation and refurbishment works. It was designed specifically for Hong Kong and is targeted at assessing the fit-out, renovation and refurbishment projects of nondomestic and occupied spaces, such as office and retail premises, hotel rooms and function rooms, restaurants, educational facilities, and institutional facilities. In 2023, the updated version, BEAM Plus BI V2.0 – Non-Residential, was launched, and the tool also expanded its assessment scope to include residential spaces with the launch of BEAM Plus BI V2.0 – Residential. Under BEAM Plus BI V2.0 – Non-Residential, four ratings (i.e., Platinum, Gold, Silver or Bronze) are available for a project after completing the assessment. Under BEAM Plus BI V2.0 – Residential, two ratings (i.e., Green or Green+) are available for a project after completing the assessment.
- **BEAM Plus ND:** BEAM Plus ND was launched in 2016 and focuses on the design of the space between buildings and the socioeconomic elements of a development. Assessment aspects of BEAM Plus ND consist of (i) Community Aspects, (ii) Outdoor Environmental Quality, (iii) Site Aspects, (iv) Materials and Waste Aspects, (v) Energy Aspects, (vi) Water Aspects, and (vii) Innovations and Additions. Four ratings (i.e., Platinum, Gold, Silver or Bronze) are available for a project after completing the assessment.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- **BEAM Plus DC:** With the sharp rise in demand for data centers in Hong Kong and the huge power consumption associated with it, BEAM Plus DC was launched in 2021. It assesses the design and construction of new data centers, as well as the operations and maintenance of existing data centers, with slight differences in the assessment aspects. Four ratings (i.e., Platinum, Gold, Silver or Bronze) are available for a project after completing the assessment.
- **BEAM Plus ES:** BEAM Plus ES was launched in 2022 to assess existing primary and secondary schools. The assessment framework of BEAM Plus ES comprises the following five categories: (i) Sustainable Leadership and Learning; (ii) Efficient Use of Resources; (iii) Sustainable Campus Environment; (iv) Health, Comfort and Happiness; and (v) Innovations and Additions. A school achieving an overall score of 50 will be awarded a rating of "Green" (while an "Unclassified" rating would be given to a school if its overall score does not reach 50). While certification is voluntary, the Hong Kong government has been leading by example. Since 2009, all new government buildings with a construction floor area of more than 10,000 square meters have been aiming to achieve at least a Gold rating under BEAM Plus. From October 2015, this target was further expanded to cover all new government buildings with a construction floor area of more than 5,000 square meters and with central air-conditioning. Additionally, new government buildings serving as landmarks will need to consider achieving a Platinum rating whenever possible. Green concepts have also been incorporated into public housing developments. From 2015-2016, all new public housing projects have aimed to attain the performance equivalent to BEAM Plus Gold or above.

As of March 2024, more than 2,500 projects have been registered or certified with BEAM Plus in Hong Kong.

LEED

In addition to BEAM Plus, the US Green Building Council's LEED is also used in Hong Kong as an alternative certification standard. Local developers are attracted by LEED's global popularity, as it appeals to multinational tenants seeking to occupy green buildings in Hong Kong.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Zero-Carbon-Ready Building Certification Scheme

In furtherance to the carbon emission reduction and energy use reduction targets set by "Hong Kong's Climate Action Plan 2050" released in 2021, the HKGBC launched the Zero-Carbon-Ready Building Certification Scheme in June 2023 to help the building sector to benchmark energy performance and set decarbonization targets.

The Zero-Carbon-Ready Building Certification Scheme has three categories of certification, namely the Energy Performance Certificate, Target Setting Certificate and Progress Certificate. The scheme aims to allow building owners to do the following:

- Benchmark and report the energy performance of their buildings
- Set their targets for carbon neutrality and tracking their progress
- Justify their improvement projects for green financing

Net-Zero Building Certification Scheme

Following the success of the Zero-Carbon-Ready Certification Scheme, in March 2024, the HKGBC introduced the Net-Zero Building Certification Scheme. By issuing a Net Zero Building Certificate, the scheme aims to recognize buildings whose renewable energy produced in-situ is not less than its energy consumption.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Mandatory certification under the Buildings Energy Efficiency Ordinance

The Buildings Energy Efficiency Ordinance (BEEO) was enacted in September 2012 and made it mandatory to comply with the building energy codes (BECs) in the manner set out below. The BECs are regularly updated and stipulate the minimum energy performance standards for the following four building services installations: (i) air-conditioning; (ii) lighting; (iii) lifts and escalators; and (iv) electrical installations. As of March 2024, the latest edition of the BEC is the 2021 edition.

- In respect of new buildings, developers or owners of one or more of 13 types of prescribed new buildings must ensure that their building's four key types of building services installations comply with the design standards of the BECs. Accordingly, the developers or owners must apply for a "Certificate of Compliance Registration" upon completion of the building. The certificate must be renewed every 10 years, which means that the building's compliance with the BECs must be recertified every 10 years. The Electrical and Mechanical Services Department (EMSD) keeps a register of buildings with this certificate, and the register is publicly available online.
- In respect of existing buildings, the responsible persons (i.e., owners, tenants or occupiers, etc.) must ensure that the building's services installations comply with the BECs when undertaking "major retrofitting works" (i.e., work involving an area over 500 square meters). As such, the owner, tenant or occupier must obtain a "Form of Compliance" after the completion of works.
- The owners of commercial buildings must also carry out an energy audit in respect of the four key types of building services installations in accordance with the Energy Audit Code every 10 years. The results of the audit must be displayed at the building for public inspection.

As of March 2024, the government is discussing the proposal to amend the BEEO, which amendment includes widening the scope of prescribed buildings, mandating disclosure of technical information in energy audit reports and shortening the interval of energy audits to five years with the target of commencing legislative work within 2024.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Voluntary certification under the Energy Efficiency Registration Scheme for Buildings

The Energy Efficiency Registration Scheme for Buildings (EERSB) was launched in 1998 to promote compliance with the first set of BECs published in 1998. With the implementation of the BEEO in 2012, which made compliance with BECs mandatory, buildings built in recent years have already fulfilled the minimum energy efficiency requirements under the BECs. To continue to encourage and promote the enhancement of energy efficiency of buildings in Hong Kong, the EERSB was reviewed in 2017 so that buildings/premises achieving a better energy performance beyond the statutory requirements could be recognized and commended by the scheme. With effect from 1 January 2018, all types of new and existing buildings/premises outperforming the minimum statutory requirements under the BEEO, evidenced by the BEAM Plus certification (or another internationally recognized assessment system certification), can apply to join the EERSB.

The EMSD maintains a publicly available list of buildings successfully certified under the scheme. If a building is registered, the scheme's "Energy Efficient Building" logo may be used on marketing documents to publicize its energy efficiency.

As of March 2024, there have been more than 4,000 registrations under the EERSB (including registrations prior to 2018).



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

"Green Welfare NGOs" scheme

In the 2021/22 budget, the government pledged to set aside HKD 150 million to conduct energy audits and install energy-saving appliances, free of charge, for NGOs financially supported by the Social Welfare Department. In collaboration with the Social Welfare Department, the Environment Bureau and the EMSD launched the "Green Welfare NGOs" scheme in November 2021, which will fully cover the energy-saving projects. The scheme will run five financial years from 2022/23 to 2026/27. As of March 2024, the latest round of applications closed on 31 March 2023, and application windows for further rounds are yet to be announced.

"Green Schools 2.0 – Energy Smart" scheme

The government also introduced a HKD 600 million "Green Schools 2.0 – Energy Smart" scheme, to be run for five financial years from 2020/22 to 2024/25. Under the scheme, primary and secondary schools (except government and profit-making schools) are to replace existing air conditioners with variable-speed air conditioners, convert existing fluorescent lighting/incandescent floodlights into LED lighting/LED floodlights, and install real-time energy monitoring systems at their premises, with all expenses in relation to the energy-saving projects covered by the government. As of March 2024, the latest round of applications closed on 30 June 2022, and application windows for further rounds are yet to be announced.



Hong Kong



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Following President Xi Jinping's announcement at the United Nations in 2020 that China would endeavor to achieve peak carbon emissions in 2030 and carbon neutrality before 2060, the Hong Kong government released "Hong Kong's Climate Action Plan 2050" in 2021, setting out the following targets for CO2 reduction and energy use reduction from buildings:

- To reduce Hong Kong's carbon emissions by 50% before 2035 as compared to the 2005 level and to achieve carbon neutrality before 2050
- To reduce commercial buildings' electricity consumption by 30% to 40% and that of residential buildings by 20% to 30% from the 2015 level by 2050, and to achieve half of the above targets by 2035



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There are no regulations requiring a certain percentage of energy consumption to come from renewable sources. However, to promote the use of renewable energy, in 2009, the Hong Kong government began to require (i) all new school and educational buildings without air-conditioning to aim to have at least 0.5% of their electrical consumption be provided by renewable energy and (ii) all other new government buildings to incorporate renewable energy technologies as far as reasonably practicable. This requirement is part of a target-based green performance framework for new and existing government buildings. With the issuance of a new circular for green government buildings on 1 April 2015 ("**2015 Circular**"), these targets have since been revised and expanded. Under this 2015 Circular are the following requirements:

- All new school and educational buildings, irrespective of whether air-conditioning is provided, should aim to have at least 1% of their electrical consumption be provided by renewable energy.
- All new open spaces and new public park projects should aim to have (i) at least 15% of their general public lighting be provided by renewable energy and (ii) at least 1% of their electrical consumption be provided by renewable energy.
- All new municipal buildings with a high demand for shower facilities (e.g., sports centers and swimming pool complexes) should have a solar hot water system to reduce energy consumption in water heating.
- All other new government buildings should incorporate renewable energy technologies as far as reasonably practicable.
- Renewable energy technologies should be incorporated in all capital works projects as far as reasonably practicable whenever the project satisfies certain criteria.

On 19 March 2014, the Hong Kong government issued a public consultation document titled "Future Fuel Mix for Electricity Generation." It foresees only a very limited role for renewable energy sources to meet Hong Kong's electricity demand in the future due to Hong Kong's limited prospects for developing wind or solar power generation.



Hong Kong



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In 2021, the government released "Hong Kong's Climate Action Plan 2050," with one of the strategies being "net-zero electricity generation." The strategy aims to stop using coal for daily electricity generation; increase the share of renewable energy in the fuel mix for electricity generation to 7.5% to 10% by 2035, and to 15% subsequently; and try out the use of new energy and strengthen cooperation with neighboring regions to achieve the long-term target of net-zero electricity generation before 2050.



Hong Kong



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In addition to the Building Energy Efficiency Ordinance, in July 1995, the Hong Kong government enacted the Building (Energy Efficiency) Regulation ("**Regulation**"). The Regulation imposes energy efficiency requirements and aims to reduce heat transfer through building envelopes (i.e., the buffer zone between the indoor area of a building and the outdoor environment), thus saving on electricity consumption for air-conditioning.

The Regulation requires external walls and roofs of commercial buildings (and hotels) to be designed and constructed to have a "suitable" Overall Thermal Transfer Value (OTTV). The suitable levels are specified in the Code of Practice for Overall Thermal Transfer Value in Buildings 1995 ("**OTTV Code**") published by the Buildings Department, which were tightened in 2000 and further again in 2011. In April 2015, the OTTV Code was extended to the residents' clubhouses in residential developments. Compliance with the OTTV Code is a prerequisite for gross floor area (GFA) concessions.

For residential buildings, in September 2014, the government promulgated a Guideline on Design and Construction Requirements for Energy Efficiency of Residential Buildings ("**Guideline**") along with a practice note (PNAP-APP156). Similar to the OTTV Code, the Guideline sets out the required level of Residential Thermal Transfer Value (RTTV). It also states that residential buildings should be subject to similar control as the OTTV of commercial buildings (and hotels) and sets out other requirements for Natural Ventilation for Thermal Comfort (NVTC) and glass curtain walls. PNAP-APP156 requires all new building plans or major revisions of building plans for development proposals involving residential buildings to comply with the Guideline as of 1 April 2015. Compliance with the Guideline is also a prerequisite for GFA concessions.

Starting from the 2018-19 financial year, the capital expenditure incurred in procuring energy-efficient building installations and renewable energy devices can be fully deducted in the first year of purchase instead of the previous time frame of five years. Energy-efficient building installations are required to be registered under the EERSB to be eligible for accelerated tax deduction — see details of the EERSB in "Energy Performance Certificates and Minimum Energy Standards."



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

According to the Exemption from Profits Tax (Feed-in Tariff (FiT) Scheme) Order and the Business Registration (Amendment) Regulation 2019, individuals installing renewal energy systems at their residential premises (not in the course of any other business) are exempted from reporting in the tax return the FiT payments received through participating in the FiT Scheme and the requirement of applying for business registration.

In addition, there are also the following nontax incentives to encourage more efficient use of electricity in buildings and use of renewal energy:

CLP Holdings Limited (CLP)

- Energy Audit Service: CLP provides a free energy audit service to its business customers to identify energy management opportunities.
- Energy Saving Loan Scheme: CLP offers interest-free loans to its business customers to help them implement energy management opportunities identified from their energy audits.
- Electrical Equipment Upgrade Scheme: CLP provides subsidies to its business customers to install or upgrade energy-efficient lighting or air-conditioning.
- CLP Eco Building Fund: The CLP Eco Building Fund provides subsidies for energy-saving improvement works in communal areas of residential, commercial and industrial buildings.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

HK Electric

- Smart Power Energy Audit: HK Electric provides a free energy audit service to help its nonresidential customers identify energy-saving potential for improving energy efficiency at their business premises.
- Smart Power Building Fund: The Smart Power Building Fund sponsored by HK Electric subsidizes building owners (except buildings directly owned and operated by the government (housing estates of the Hong Kong Housing Authority and Hong Kong Housing Society are eligible)) in carrying out retrofitting, retro-commissioning or building-based smart technologies projects to enhance the energy efficiency of communal building services installations (e.g., lighting, air-conditioning, lift, escalator, electrical installation, etc.).
- Smart Power Loan Fund: Under the Smart Power Loan Fund, collaborating banks will provide loans for the implementation of energy efficiency enhancement projects, while HK Electric will subsidize the respective loan interests.
- Energy-Efficient Equipment Subsidy: The Energy-Efficient Equipment Subsidy subsidizes 50% of nonresidential customers' costs to retrofit energy-efficient equipment for enhancing energy efficiency, subject to certain caps.

Government

- Green Tech Fund (GTF): The GTF was established in 2020 to provide better and more focused funding support to R&D projects, which can help Hong Kong decarbonize and enhance environmental protection. A total of HKD 400 million has been allocated to the GTF. There are certain themes that will be prioritized when allocating funding, and "energy saving and green buildings" is one of them. Public research institutes, designated R&D centers and local companies are eligible to apply for funding of up to HKD 30 million per project.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

- "Solar Harvest" scheme: The government introduced the "Solar Harvest" scheme in 2019 to subsidize schools (except government and profit-making schools) and welfare NGOs financially supported by the Social Welfare Department in installing small-scale solar energy generation systems at their premises. These schools and welfare NGOs can then join the FiT Scheme operated by the two local power companies (whereby they can sell the renewable energy generated by solar panels to the power companies at a rate higher than the normal tariff rate). The government will fully cover all the expenses in relation to the solar energy generation installation and FiT application (including capital costs of the solar energy generation systems, installation costs, costs of professional services, etc.). The scheme will run for five financial years from 2019/20 to 2023/24. As of March 2024, the scheme has already closed for applications.
- Facilitation Measures on the Installation of Solar Photovoltaic Systems in Open Car Parks by the Private Sector: In 2022, the Environment Bureau and the Development Bureau introduced a set of measures to facilitate the installation of solar photovoltaic systems in open car parks by the private sector. Upon meeting the specified requirements and obtaining the Environment Bureau's policy support, the private sector may install solar photovoltaic systems (including the supporting structure(s)) not exceeding three meters in height in car parking spaces of larger-scale open car parks located on the ground or on the main roof of nondomestic premises. The Buildings Department will grant a 100% GFA concession to car parking spaces (excluding driveways) that are covered by these solar photovoltaic systems. It will accept the mean height of the roof over the highest usable floor space of the existing building for the purposes of calculating building height restrictions in determining the approved site coverage and the plot ratio of the building.
- EV-Charging at Home Subsidy Scheme: The government rolled out a HKD 3.5 billion "EV-Charging at Home Subsidy Scheme" in 2020 to subsidize the installation of infrastructure that enables EV charging in car parks of existing private residential buildings, and hence further help EV owners to install EV chargers in the car parks of their residences according to their own needs in the future simply and easily. As of March 2024, the funding had reached the HKD 3.5 billion funding ceiling, and the applications closed on 31 December 2023.



Hong Kong



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The Hong Kong government has been very proactive in establishing Hong Kong as the green financing center in the Greater China area and Asia generally. To this end, it has adopted many policy measures, for example, the following:

- Establishment of the Green and Sustainable Finance Cross-Agency Steering Group and a Green and Sustainable Finance Center under it in 2020
- Establishment of the Green and Sustainable Finance Grant Scheme in 2021 to provide subsidies for the transactional costs associated with various types of green financing

So far, the Hong Kong real estate sector has been one of the sectors that has received the biggest amount of green financing in Hong Kong.

On the private side, a number of major commercial banks have rolled out green mortgage programs, which provide better-priced mortgage financing for purchasing residential properties that have received a BEAM Plus NB or EB Gold or Platinum rating.



Hong Kong



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Technically, yes. For example, an applicant requesting permission to develop on land designated as a "Comprehensive Development Area" must prepare a master layout plan for the Town Planning Board's approval. The Town Planning Board may issue planning briefs to set out broad planning parameters and development requirements to facilitate the preparation of the master layout plan. The planning brief can mandate green initiatives (such as achieving a certain grade of green building certification for new buildings).

That said, promotion of green initiatives is more effectively carried out via the GFA concessions introduced by the Hong Kong government in April 2011 for green features of real estate projects. Concessions are made available so that certain green features, such as balconies and communal podium gardens, can be disregarded when calculating whether a building's permitted GFA has been used up. Certification by BEAM Plus is a prerequisite of taking advantage of a GFA concession for green features. The Buildings Department announced through the revised Practice Note "PNAP APP-151" that, starting from 30 June 2024, building projects will generally need to obtain a BEAM Plus Gold rating or above to be eligible for GFA concessions for green and amenity features. The concessions have an overall cap of 10% of the GFA. Certain features, such as communal sky gardens, are not subject to this overall cap.



Hong Kong



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases and green lease provisions are neither mandatory nor commonly used in Hong Kong. However, we are seeing continued efforts from various players in promoting green lease/green lease provisions. For example, the HKGBC has launched a few green tenancy tools, and some large landlords and international tenants require certain environmental protection obligations (generally quite light at the moment) in their leases. In general, we have been seeing more take-up of green lease provisions in the market in recent years and expect the trend to continue or even accelerate in the future.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There is a nationally adopted and recognized certification process called the Comprehensive Assessment System for Built Environment Efficiency (CASBEE). It is not mandatory for all buildings, but some local governments require a CASBEE certification or report for the construction of new buildings.

CASBEE

The CASBEE was developed in 2001 by a research committee comprised of representatives from academia, industry, and national and local governments. The committee established the Japan Sustainable Building Consortium (JSBC) with the support of the Ministry of Land, Infrastructure, Transport and Tourism. The JSBC is responsible for around 90% of green building certification in Japan.

The CASBEE assesses four aspects of buildings: (i) energy efficiency, (ii) resource efficiency, (iii) outdoor environment, and (iv) indoor and the environment. It also calculates the Built Environment Efficiency (BEE) of the assessed buildings.

CASBEE is characterized by its link to government initiatives. The Ministry of Land, Infrastructure, Transport and Tourism has adopted CASBEE as a selection item in its evaluation guidelines and certification criteria for projects such as the Leading Project for Sustainable Buildings. In addition, local governments have developed their own version of CASBEE by adding their own requirements based on CASBEE.

In many cases, developers seek certification to obtain preferential treatment such as development subsidies and enhanced limits on floor-area ratios that may be made available for buildings that are constructed using CASBEE criteria.

Other certification systems in Japan include the Building-Housing Energy-Efficiency Labeling System (BELS), the Zero Energy Building (ZEB), the Net Zero Energy House (ZEH) and the Development Bank of Japan (DBJ) Green Building certification.



Japan



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Obligation to report

Some local governments, such as Osaka and Yokohama City, require a notification based on CASBEE before commencing the construction of buildings over a certain size.

Generally, in most cases, notification is required at least 21 days prior to the start of construction of buildings with a total floor area of 2,000 square meters or more.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The Act on the Rational Use of Energy, enacted in 2015, establishes the obligation to conform to certain standards for non-residential buildings with a gross floor area of over 300 square meters, the obligation to notify for residential buildings, and the obligation to explain for buildings under 300 square meters. In addition:

- For buildings subject to the obligation to conform, the owner is required to obtain an energy efficiency and conservation conformity assessment by the competent administrative agency or energy efficiency and conservation assessment agency when applying for the required building permit (Article 10).
- If notification is required, the owner must notify the competent administrative agency of the energy conservation plan at least 21 days prior to the start of construction (Article 19).
- If an explanation is required, the architect must explain to the owner whether the building complies with the energy conservation standards and what measures will be taken if it does not (Article 27).

The amended Act on the Rational Use of Energy will come into effect in July 2025. After enactment, all buildings will, in principle, be required to comply with certain specific standards. In particular:

- Buildings that do not comply with the applicable standard will be subject to a correction order, and failure to comply with such an order may result in a fine of up to JPY 3 million (Article 73 of the amended Act on the Rational Use of Energy).
- Different standards and obligations are established for different types of buildings, such as single-family dwellings, large-scale non-residential buildings, and buildings with special structures and equipment.



Japan



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Earthquake Resistance and Environmental Real Estate Formation Promotion Project is an example of a government-funded scheme aimed at improving the energy efficiency of existing buildings.

Under this program, the government supports financing for the renovation of existing buildings if the renovation is expected to (i) reduce the building's overall energy consumption by 15% or more, or (ii) bring the building up to the A-rank standard of CASBEE.

The Ministry of the Environment also offers a number of subsidy programs for energy conservation retrofits, including support for renovation projects to reduce carbon dioxide emissions, support for renewable energy such as the development of small-scale hydroelectric power generation at water supply and sewage facilities and investment in low-carbon investment promotion projects.

These programs provide support according to the use and scale of the building.

For example, the "Energy Conservation Promotion Project for Existing Buildings" supports the renovation of existing office buildings by private companies.

Eligible projects are those that reduce the energy consumption of the entire building by 20% or more compared to the level before the renovation.

If these conditions are met, one-third of the renovation costs will be supported up to a maximum of JPY 50 million.



Japan



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The only national target in Japan in relation to CO2 reduction was adopted on 22 October 2021, when Japan's Cabinet approved the "Plan for [Global Warming Countermeasures](#)". There are currently no specific targets decided solely in relation to CO2 reduction and/or energy-use reduction from buildings.

This plan is the first revision in five years of the plan adopted in 2016. In April 2021, Japan announced its goal to reduce greenhouse gas emissions by 46% in FY2030 compared to FY13.

The new plan is designed to achieve the above goal, calling for the expansion of renewable energy, the expansion of mandatory compliance with energy conservation standards for homes and buildings, and the creation of decarbonized major regions.



Japan



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Although there are no regulations in Japan mandating the percentage of renewable energy in energy consumption, several Japanese prefectures and local governments have made the installation of renewable energy mandatory for buildings that meet certain conditions.

For example, the Tokyo Metropolitan Government passed an ordinance in December 2022 making the installation of solar panels mandatory for new residential buildings with a roof area of 20 square meters or more, and a total floor area of less than 2,000 square meters. The ordinance is due to take effect in April 2025.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Local governments in Japan provide financial support and tax incentives for CASBEE certification.

In addition, the National Tax Agency has established a special tax-credit system for specified home improvements. Under this system, when an individual undertakes general heat insulation repair work, ("**General Energy-Saving Repair Work**") on a residential house owned by the individual, the individual will be eligible for a grant of a tax credit if the house becomes energy efficient as a result of the General Energy-Saving Repair Work. In addition, the National Tax Agency also established a tax-credit system that provides for a special tax credit for specified residential renovations under certain conditions when an individual has made general heat-insulation modifications to their residential house, and the house is used for their own residential purpose between 1 April 2014 and 31 December 2023.

In the Tax Reform Bill of 2024, a decision was made to extend this system until the end of 2025.

In addition, the Low Carbon Building Certification System provides tax and financing incentives for buildings that have been certified as low-carbon buildings.

Furthermore, the Tokyo Metropolitan Government is granting corporate enterprise tax exemptions to corporations that have installed energy-saving and renewable energy facilities. To be eligible for this program, corporations must: (1) have a capital of JPY 100 million or less; and (2) file a specific report (e.g., a global warming action report) with the Bureau of Environment. If a company that meets these requirements installs energy-saving equipment designated by the Tokyo Metropolitan Government, one-half of the installation cost will be exempted from corporate enterprise tax for that year. This program is applicable to each fiscal year ending on or before 30 March 2026.



Japan



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The "Earthquake Resistance and Environmental Real Estate Formation Promotion Project," the "Special Tax Credit for Specified Residential Repairs," and the "Low Carbon Building Certification Program" are all examples of public "green" financing initiatives.

In addition, the Ministry of Land, Infrastructure, Transport and Tourism; the Ministry of Agriculture, Forestry and Fisheries; and the Ministry of the Environment have a number of other programs to support "green infrastructure," which utilizes the functions of the natural environment for infrastructure development.

As of April 2024, there are no private "green" financing initiatives for sustainable real estate projects.



Japan



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In Japan, there is no system to mandate such initiatives via the planning/zoning regime. However, an initiative called "positive zoning" was adopted under the revised Global Warming Countermeasures Act of 2021.

Under this initiative, the government can designate areas suitable for the installation of solar panels, etc., and encourage investment in solar energy.

In addition, Article 5 of the Green Purchasing Act provides that "business proprietors and citizens shall endeavor to select eco-friendly goods as much as possible when purchasing or borrowing goods, or receiving the provision of services." It also provides that businesses and citizens have a general obligation to make an effort to do so. The Act mainly focuses on government agencies and instrumentalities, stipulating the authorities' obligation to establish basic policies on the purchase of environmental goods, etc.



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases and green lease provisions are optional in Japan. Such leases are not currently common in Japan, but they are increasing in number and are more widely seen in main cities such as Tokyo and Osaka.

The following is a summary of typical green lease provisions:

- Confirmation of collaboration on environmental considerations

First, as a prerequisite for a green lease, the contracting parties might consider a provision to the effect that they will work together on environmental considerations regarding the property subject to the contract. Although such provision may not provide for specific measures, it has the effect of confirming that the contracting parties are willing or are committed towards collaborating to enter into a green lease.

- Setting targets such as reduction of energy consumption

In addition to confirming cooperation, setting specific targets can have the effect of making the lease more effective from a "green" perspective. Not only is it possible to set targets at the time of contracting, but it is also possible to set them after the contract has been signed. Specific target items could include, for example: (1) consumption of electricity, gas and other energy sources; (2) greenhouse gas emissions; (3) water consumption; and (4) waste generation, treatment and recycling status.

- Sharing energy consumption data and other information

A green lease may also include provisions for sharing energy consumption and other data in order to set targets and measure the effects during the term of the lease. The extent to which detailed data is shared may vary depending on the individual lease agreement, but one method is to start with a simple scope and then broaden the scope of shared items through discussion.



Malaysia



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Malaysia, there is no nationally adopted or recognized form of green certification for buildings. There is no mandatory requirement for new buildings and refurbished buildings to obtain green certification.

Generally, building owners may voluntarily apply for green rating or certification, and are free to elect such certifications by the industry associations. The two most common green-rating systems adopted in Malaysia are: (i) Green Building Index (GBI), operated jointly by the Malaysian Institute of Architects (Pertubuhan Arkitek Malaysia) and the Association of Consulting Engineers Malaysia; and (ii) Green Real Estate (GreenRE), which is established by Malaysia's Real Estate and Housing Developers Association.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There is no mandatory form of energy performance certification in Malaysia.

However, there are certain energy efficiency requirements that apply to the construction of buildings in Malaysia. For example, Uniform Building By-Laws 1984 (UBBL), the subsidiary legislation made under the Street, Drainage and Building Act 1974, imposes the requirement for new or renovated non-residential buildings with air-conditioned space exceeding 4,000 square meters to comply with the requirements to meet the required overall thermal transfer value and roof transfer thermal value and provide an Energy Management System. UBBL also imposes a maximum thermal transmittance value in relation to the roofs of all buildings (residential and non-residential).

However, not all states in Malaysia adopt the UBBL. Some states have their own Uniform Building By-Laws, which may entail different energy efficiency requirements.

Energy Efficiency and Conservation Bill 2023 (EECA)

The Government of Malaysia is looking to enact a new legislation to regulate the efficient consumption of energy and conservation of energy, to improve and increase energy efficiency and avoid waste of energy. The legislation is currently in the form of a bill known as the Energy Efficiency and Conservation Bill 2023, under consideration in the upper house of Malaysian parliament (House of Senates) before it receives Royal Assent and is gazetted as law. Once the said new legislation is enacted as law, it will impose, among others, the following key duties on certain target groups:

- Any energy consumer who consumes more than the prescribed threshold of 21,600 gigajoules annually is required to implement an energy management system and conduct periodical energy audits
- Office buildings exceeding 8,000 square meters must apply and display the energy intensity label, and ensure that the energy intensity performance of the building complies with the prescribed energy efficiency rating
- Any energy-using product as specified in the guidelines must adhere to energy performance standards to obtain the energy efficiency certificates and labels



Malaysia



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Government of Malaysia has launched the National Energy Transition Roadmap (NETR), a comprehensive strategic plan that aims to steer the energy systems away from conventional, fossil-fuel-based sources and towards cleaner, more sustainable alternatives, which include the following:

- Establishing a mandatory national standard that outlines retrofit for existing buildings to meet a minimum building energy intensity level
- Establishing a public energy service companies platform to coordinate public building retrofits with private energy service companies
- Launching a major energy efficiency retrofit initiative amongst government buildings



Malaysia



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Malaysia does not have national targets for CO2 reduction specifically applicable to building emissions.

That said, the Government of Malaysia has launched the National Low Carbon Cities Master Plan (NLCCM), which sets out key drivers for low-carbon development, including establishing absolute carbon reduction targets for targeted cities (2021 - 2050) and embedding low-carbon elements in urban planning and development.

On 19 September 2022, the Government of Malaysia launched the National Energy Policy 2022-2040 (NEP) that set out the roadmap for Malaysia to achieve the aspiration targets by the year 2040, improve its socioeconomic position and be in line with its other policies to achieve net-zero greenhouse gas emissions by 2050. As part of the NEP, the Malaysian government developed the Low Carbon Aspiration 2040 initiative, which aims to produce a low-carbon economy with a particular focus on the following:

Targets	2018	2040
1. Increase in urban public transport modal share	20%	50%
2. Increase in electric vehicle (EV) penetration	<1%	38%
3. Alternative lower carbon fuels in heavy transport	B5 blend	B30 blend
4. Usage of LNG as alternative fuel in marine transport	0%	25%
5. Increase in percentage of industrial and commercial energy efficiency savings	<1%	11%
6. Increase in percentage of residential energy efficiency savings	<1%	10%
7. Increase in total installed capacity of renewable energy (RE)	7,597MW	18,431MW
8. Reduction of coal in installed capacity	31.4%	18.6%
9. Increase in percentage of RE in total primary energy supply	7.2%	17%



Malaysia



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There are currently no regulations in Malaysia requiring a percentage of energy consumption to come from renewable sources.

Under the Malaysia Renewable Energy Roadmap (MyRER), the Government of Malaysia aims to achieve a 31% renewable energy share in the national capacity mix by 2025, 40% by 2035, and to attain decarbonization of the electricity sector by 2035. The MyRER strategic framework comprises the following technology-specific pillars:

1. Solar pillar
2. Bioenergy pillar
3. Hydro pillar
4. New solutions and resources pillar, including geothermal, wind and energy storage technologies

The above would consider the outcome of MyRER's assessment on available renewable energy resources, existing institutional and regulatory frameworks, industry practices and technology adoption, as well as projected future social and economic development. Key actions are planned to realize respective milestone targets, which include, among others, the net energy metering scheme.



Malaysia



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Currently, Malaysia does not have any carbon tax, but the government has expressed the intention to implement carbon tax in the future.

Currently, the Government of Malaysia has implemented the Green Technology Tax Incentive, which includes incentives for companies seeking to acquire qualifying green technology assets listed under the MyHIJAU Directory or those undertaking qualifying green technology projects for their business or own consumption. These companies may apply to the Green Investment Tax Allowance (GITA). The Green Income Tax Exemption (GITE) is available for qualifying green technology service provider companies listed under the MyHIJAU Directory.

The GITA will allow eligible companies to be entitled to 100% qualifying capital expenditure (QCE) incurred on green projects for a period of three years from the date of the first QCE incurred for implementing green technology projects, including, among others, the following:

1. Renewable energy
2. Energy efficiency
3. Green building

Based on the recent budget for 2024 announced by the Government of Malaysia (Budget 2024), the incentive period for GITA is from 1 January 2024 to 31 December 2026.

Under Budget 2024, companies engaged in solar leasing are eligible for income tax exemption of 70% of statutory income. GITE applications for solar leasing incentives have been extended to 31 December 2026.



Malaysia



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Through the Green Technology Financing Scheme 4.0 (GTFS), the Government of Malaysia has made available a financing facility of up to MYR 1 billion for the period until 31 December 2025 for businesses adopting green technology in the construction, management, maintenance and demolition of buildings. Housing developers and low-carbon mobility infrastructure are eligible to obtain a maximum financing of MYR 100 million and MYR 50 million respectively under the GTFS 4.0.

The Central Bank of Malaysia (Bank Negara Malaysia) further established the Low Carbon Transition Facility (LCTF) of up to MYR 10,000,000 per small and medium-sized enterprise (SME) to support SMEs in adopting sustainable and low-carbon practices, including improving energy efficiency, increasing the use of sustainable material for production and obtaining sustainability certification. The LCTF became available for application on 3 February 2022 until the MYR 2,000,000,000 allocation is fully utilized.

Green financing has become increasingly popular to be adopted by the private sectors in Malaysia. Financial institutions are increasingly offering green financing facilities to businesses. An example would be RHB Bank's Sustainable Financing Program, which aims to provide MYR 1 billion in green financing by 2025 to SMEs and retail customers, to promote, among others, the adoption of renewable energy and green buildings. United Overseas Bank (Malaysia) Bhd has also approved MYR 6 billion in sustainable finance, as part of its Sustainable Finance Framework to support green building developers and owners to develop green real estate, and its Smart City Sustainable Financing Framework, aimed at supporting companies that contribute towards the creation of sustainable and smart cities.



Malaysia



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In granting any planning permission, local authorities may impose certain terms and conditions that the construction of the buildings must comply with. These terms and conditions may make reference to the energy efficiency requirements under the UBBL (as discussed in the section on "Energy Performance Certificates and Minimum Energy Standards" above). It is incumbent upon the architect and engineer to ensure that these conditions are complied with before a Certificate of Completion and Compliance (CCC) is issued for the building.

In 2023, Federal Department of Town and Country Planning (PLANMalaysia) issued the Planning Guidelines on Low Carbon and Climate Change Resilient Cities (Guidelines), in line with the NLCCM 2021 in supporting the government's commitment to achieve net-zero greenhouse gas emissions by 2050. The Guidelines should be read in conjunction with the law and regulations, and the implementation of these planning guidelines needs to be coordinated with the development plan that is currently in effect in the respective area under the purview of each local authority.

The Guidelines suggest, among others, the following proposed management and implementation mechanisms, to enhance the planning of low-carbon urban development in Malaysia:

1. Suggested improvements to the preparation of local plans and sector content (scope of low-carbon and climate-change-resilient cities), including the following, among others:
 - (a) Mobilization and preparation of a draft local plan should consider the needs of low-carbon and climate-change-resilient elements
 - (b) Preparation of greenhouse gas inventory
 - (c) Consideration of suggestions from low-carbon expert consultants
2. Proposal for the establishment of a special unit related to low carbon and climate change within local authorities



Malaysia



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases or green lease provisions are optional in Malaysia. The landlords may opt to adopt/implement green leases as part of their environmental, social and governance (ESG) agenda. For instance, Sunway REIT created the Green Lease Partnership Programme with the goal of achieving 100% tenant involvement by 2030. Setia City Mall also introduced green leases to its tenants as part of its green initiatives.

Based on a survey conducted by JLL in 2022, up to 42% of occupiers and large developers have signed leases incorporating green clauses across Asia Pacific.



Philippines



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

We confirm that there are nationally adopted and recognized certifications for buildings. However, these certifications are not mandatory, i.e., they are not required under Philippine law.

BERDE Program

The Building for Ecologically Responsive Design Excellence (BERDE) Program is a program established by the Philippine Green Building Council^[1] (PHILGBC) as the Philippines' own national **voluntary** green building rating system to facilitate green building projects in the country.

The BERDE Green Building Rating System, developed by PHILGBC, is used to measure, verify and monitor the environmental performance of buildings that go beyond existing mandatory regulations and standards. BERDE considers energy efficiency in all aspects, including air, water and waste in buildings to create a healthy environment for users and improve the quality of life.

The BERDE Certification is the formal assessment, rating and certification process for projects of the BERDE Program. A building can be deemed BERDE-certified whether it is a new construction or a fit-out project, undergoing renovations, or an existing project only improving its operations.

BERDE Certification is **not** mandatory. However, at the national level, it is recognized as the National Voluntary Green Building Rating System by the Philippine government. Certain government agencies, such as the Department of Energy (DOE), have used BERDE as a guide in developing policies and programs for green building and sustainability for the building sector. At the local level, several local government units have incorporated BERDE as part of their policy to ensure the environmental performance of projects within their respective jurisdictions.

^[1] PHILGBC is a national non-stock, non-profit organisation that promotes the sharing of knowledge on green building practices to the industry to ensure a sustainable environment.



Philippines



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

GREEN Program

The Geared for Resiliency and Energy Efficiency for the Environment (GREEN) Program is a collection of documents and tools that can aid designers in developing and achieving green building goals. It was developed by the Philippine Green Building Initiative, Inc. (PGBI).^[2]

The GREEN certification process begins with goal setting, and involves design development, project completion, evaluation, and culminates in the issuance of the GREEN certification. The GREEN green building rating system provides a code-based, environment-responsive set of criteria to evaluate buildings that are newly constructed or undergoing major renovations.

Similar to the BERDE Program, the GREEN Program is purely voluntary.

EDGE Zero Carbon certification

The Excellence in Design for Greater Efficiencies (EDGE) provides a free software, a green building standard, and an international green building certification system. It was developed by the International Finance Corporation (IFC).^[3]

Under the EDGE Zero Carbon certification, projects may be certified as carbon neutral, where there should be a minimum of 20% savings in water and embodied energy, 40% energy savings on-site, and 100% energy savings through renewables or carbon offset.

The EDGE Zero Carbon certification covers buildings for education, homes, hospitality, hospitals, light industries, offices, retail, and warehouses. As a qualification, the building must have been in operation for at least one year at 75% of normal occupancy. Its energy use information must be entered into the EDGE Carbon Calculator provided in the EDGE Application.

^[2] The PGBI is a non-profit, voluntary group of professional associations involved with the built-environment, which shares a common concern on the impacts of global warming and climate change.

^[3] The International Finance Corporation is an international financial institution that offers investment, advisory and asset-management services to encourage private-sector development in less developed countries.



Philippines



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Once a building is awarded an EDGE Zero Carbon certificate, the certificate will indicate the year of award and its expiration date and would need to be recertified (by way of submitting annual records) to maintain its EDGE Zero Carbon status.

The EDGE Zero Carbon certification may be applied for voluntarily.

LEED certification

Another green certification used for buildings is Leadership in Energy and Environmental Design (LEED). It is a green building rating system developed by the US Green Building Council^[4] and is globally recognized. LEED certification provides a framework for healthy, highly efficient and cost-saving green buildings, which offer environmental, social and governance benefits. LEED can be used for all building types and all building phases, such as new construction, interior fit outs, operations and maintenance, and core and shell. The rating system varies per building phase.

To achieve LEED certification, a project earns points by complying with the prerequisites and credits that address carbon, energy, water, waste, transportation, materials, health and indoor environmental quality. The project then undergoes a verification and review process by the Green Business Certification Inc. (GBCI) and the accumulated points correspond to a certain level of LEED certification.

The LEED certification is not mandatory but has been recognized by the Philippine Economic Zone Authority (PEZA)^[5] as part of the criteria for the Green, Healthy, Smart, and Sustainable Ecozone Award in 2020.

^[4] The US Green Building Council membership-based non-profit organization that promotes sustainability in building design, construction and operation.

^[5] The PEZA is a government agency tasked with promoting investments, generating exports and creating employment by granting incentives and assistance to investors in PEZA Economic Zone.



Philippines



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

No, there is no mandatory form of energy performance certification.

However, there are voluntary forms of energy performance certifications available in the Philippines. The Advancing Net Zero Philippines (ANZ/PH) Program, which was established by the PHILGBC, serves as a benchmark for certifying the energy performance of projects. The ANZ/PH Program provides a user guide that supports the implementation of the ANZ/PH to transform the design, construction and operation of projects toward the net zero goal.

The ANZ/PH Certification serves as the formal assessment, rating and certification process for projects under the ANZ/PH Program. It certifies that the project demonstrates a holistic approach to energy performance, through energy efficiency and conservation, and its use of renewable energy.

To be certified under the ANZ/PH Program, the project would need to comply with the following basic minimum system requirements:

- Regulatory compliance — the project must comply with all applicable building and environmental laws, regulations and mandatory standards.
- Distinct and clear boundaries — the project must establish its scope, defining its physical boundaries and the locations of shared building systems and utilities.
- Disclosure of resource performance data — the project owner must disclose its energy performance data and ensure consistency in the submission of the performance data for the assessment of the project.
- Construction activity pollution prevention and control — the project team must conduct a site assessment and establish and implement a proper waste and pollution prevention, and control plan.

The rating of the project will be based on how it is advancing towards "net zero" through conserving energy, optimizing energy use and using renewable energy.



Philippines



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The energy performance of the project is measured based on the percentage of operational energy reduction from conservation and optimization strategies compared to the project's base case, and percentage of the energy supply from on-site and off-site renewable energy compared to the project's operational energy demand.

The project may be awarded with the following:	If the project's energy performance is the following:	
1 star	40% to less than 52%	Good practice
2 stars	52% to less than 64%	Ideal practice
3 stars	64% to less than 76%	Exemplary performance
4 stars	76% to less than 88%	Country leader
5 stars	88% to 100%	World class



Philippines



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Yes.

Energy Efficiency Excellence Awards

Republic Act No. 11285, otherwise known as the "Energy Efficiency and Conservation Act" (EECA), provides for non-fiscal incentives to establishments that will implement energy efficiency projects. In line with this, the DOE issued Department Order No. DO2021-09-0014, entitled the "Guidelines on Energy Efficiency Excellence (EEE) Awards."

To participate in the EEE Award for Industries and Buildings, the designated establishment must have an annual energy consumption of more than 100,000 kilowatt-hours, and must have been operational for three years.

Prior to the actual assessment, an applicant should conduct an appraisal based on their current systems using the prescribed "Assessment Tool," and the assessment must be submitted together with the required "Entry Form." The Selection Committee will issue an advisory on the commencement of the EEE award and all applicants would need to register online using the link provided in the advisory for the Call for Entries.

The following are the awards to be given for industries and buildings:

Category	Definition	Number of awards
Energy Management for Small and Medium Buildings	Buildings with an annual energy consumption of at least 100,000 kilowatt-hours to 4 million kilowatt-hours, or gross floor area (GFA) from 3,000 to 5,000 square meters	3
Energy Management for Large Buildings	Buildings with an annual energy consumption of more than 4 million kilowatt-hours or GFA above 5,000 square meters	3



Philippines



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Category	Definition	Number of awards
Energy Management for Small and Medium Industry	Industry with a total energy consumption for ≤ 30 million megajoules per year or ≤ 8.3 million kilowatt-hours per year	3
Energy Management for Large Industry	Industry with total energy consumption for > 30 million megajoules per year or > 8.3 million kilowatt-hours per year	3
Green Building (Small and Medium)	GFA of 3,000 to 5,000 square meters, excluding the car park area	3
Green Building (Large)	GFA of more than 5,000 square meters	3
New and Existing Building	Open to buildings with an energy consumption of more than 100,000 kilowatt-hours per year, and the building must not be more than 5 years old	3
Tropical Building	Open to buildings with an energy consumption of more than 100,000 kilowatt-hours per year, air-conditioning of less than 50% of the total GFA, with a high emphasis on the effective use of passive design and not less than a GFA of 500 square meters, excluding the car park area	3
Retrofitted Building	Open to buildings with an energy consumption of more than 100,000 kilowatt-hours per year, buildings where major changes and improvements have already been introduced to improve energy efficiency, and the age of the building must be at least five years old	3

Awardees will be entitled to receive non-fiscal incentives under the EECA.



Philippines



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Green, Healthy, Smart, and Sustainable Ecozone Award

The PEZA introduced the Green, Healthy, Smart, and Sustainable Ecozone Award in 2020, under PEZA Memorandum Circular No. 2020-052. The award is given to ecozone developers that are committed to the following initiatives: the promotion of healthy industrialization through designing ecozones and townships that are geared towards sustainability and a decarbonized future; adoption of technologies and methodologies that make ecozone operations more efficient; and fostering partnerships between the government and the industry to make ecozones more attractive to global leaders in the manufacturing and IT sector.

To be eligible for the award, the participant must be registered with the PEZA in an ecozone. Further, the participant should comply with the requirements under the following laws, rules, regulations, and certifications:

- Renewable Energy (RE) Act of 2008 (Republic Act No 9513)
- The Clean Air Act (Republic Act No 8749)
- The Philippine Green Building Code
- EECA
- LEED/BERDE Certification
- Solid and Liquid Waste Disposal and Recycling System
- Energy Management System and RE Development
- Water Use and Re-Use System
- Other projects designed to minimize the impact of climate change
- Proposed projects to integrate ecozone into smart townships



Philippines



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Yes.

CO2 reduction

From an economy-wide perspective, the Philippines communicated its Nationally Determined Contribution (NDC) on 21 April 2021 in accordance with Decision 1/CP.21 of the Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC).

Based on the NDC, in terms of greenhouse gas (GHG)^[6] emissions, the Philippines emitted an average of 1.98 metric tons of carbon dioxide equivalent per capita in 2020. The Philippines noted that this figure is significantly lower than the global average of four (4) metric tons per capita.

Through its NDC, the Philippines committed to a projected GHG emissions reduction and avoidance of 75%, of which 2.71% is unconditional^[7] and 72.29% is conditional,^[8] representing the country's ambition for GHG mitigation for the period 2020 to 2030 for the sectors of agriculture, waste, industry, transport and energy.

^[6] Greenhouse gases covered are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs).

^[7] "Unconditional" refers to policies and measures that can be undertaken using nationally mobilized resources.

^[8] "Conditional" refers to policies and measures that require support or the means of implementation under the Paris Agreement.



Philippines



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

On the other hand, based on the National Energy Efficiency and Conservation Plan and Roadmap 2023-2050 issued by the DOE, the following are the sectoral targets for emissions savings:

Table 1: Sectoral targets per Program over the short-, medium-, and long-term

Sector	Programs	Short-Term Emission Savings (2023-2024)	Medium-Term Emissions Savings (2025-2028)	Long-Term Emissions Savings (2029-2050)
Government	Government Energy Management Programs (GEMP)	1.87 Mt CO2e 16.15%	3.31 Mt CO2e 15.81%	25.06 Mt CO2e 14.48%
Commercial	Philippine Energy Labeling Programs (PELP) / Minimum Energy Performance for Products (MEPP)	7.51 Mt CO2e 16.15%	13.28 Mt CO2e 15.81%	100.50 Mt CO2e 14.48%
Residential	PELP/MEPPs	18.56 Mt CO2e 34.65%	32.79 Mt CO2e 31.66%	248.21 Mt CO2e 23.17%
Industrial	PELP/MEPPs	17.43 Mt CO2e 19.38%	30.81 Mt CO2e 19.17%	233.18 Mt CO2e 18.35%



Philippines



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Sector	Programs	Short-Term Emission Savings (2023-2024)	Medium-Term Emissions Savings (2025-2028)	Long-Term Emissions Savings (2029-2050)
Transport	Fuel Efficiency Standards (under PELP)	Pending data	Pending data	Pending data
	Electric Vehicle and Charging Stations (EVCS)	Pending data	Pending data	Pending data
	10% EV penetration by 2040	N/A	N/A	116.54 Mt CO2e 8.22%
Utilities & End use	Power Sector Efficiency	4.34 Mt CO2e 27.95%	7.53 Mt CO2e 27.95%	54.03 Mt CO2e 27.95%



Philippines



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Energy Use Reduction for Buildings

The DOE provided the following table of energy savings for 2024, in the Energy Efficiency and Conservation Roadmap for 2017 – 2040 that was published in 2017:

Sector	Annual energy saved	Implied annual % of savings (total savings by 2040)	
Transport	4,500	1.9%	(25%)
Industry	3,000	1.3%	(15%)
Residential	1,000	1.2%	(20%)
Commercial	1,200	1.9%	(25%)
Agriculture	300	0.9%	(10%)
Total	10,000	1.6%	(24%)



Philippines



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Yes.

The EECA provides that new building construction and the retrofit of buildings should comply with the minimum requirements specified in DOE Department Circular No. 2020-12-0026, entitled the "Guidelines on Energy Conserving Design on Buildings" ("**Guidelines**").

The Guidelines pertain to the energy-conserving design of buildings to provide energy efficiency guidance in the design and construction of buildings in the Philippines, and to ensure the use of energy-efficient systems in the building sector. It applies to the design of the following:

- New buildings and their systems, with at least 112.5 kilo-volt-amperes of total connected electrical loads or with at least 10,000 square meters (m²) total gross floor area (TGFA)
- Any expansion and/or modification of existing buildings or systems designed with total connected electrical loads of at least 112.5 kilo-volt-amperes, or with at least 10,000 m² TGFA.

It does **not** apply to areas with industrial/manufacturing processes.

Under the Guidelines, covered buildings shall source, initially, a minimum of 1% of their projected annual energy requirements to reduce demand for commercial power through the installation of any or a combination or all of the following:

- Renewable energy power supply systems
- Solar water heaters
- Solar cooling systems
- Solar-powered lighting systems
- Any other similar system or equipment



Philippines



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Compliance with the Green Energy Option Plan^[9] by any building would satisfy the above-mentioned requirement.

These requirements may be increased by the DOE from time to time in accordance with its mandate.

^[9] The Green Energy Option Program (GEOP) empowers eligible end-users to choose renewable sources of energy. The GEOP was established under Republic Act No. 9513, otherwise known as the "Renewable Energy Act of 2008." It allows eligible end users the option to choose renewable energy resources as their source of energy, as opposed to captive customers who must stay with their respective Distribution Utility for their electricity requirements.



Philippines



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The primary regulatory measure aimed toward energy-saving measures in buildings is the EECA and its related regulations. The aim of the EECA is to establish a framework for introducing and institutionalizing fundamental policies on energy efficiency and conservation, including the promotion of efficient and judicious utilization of energy, increase in the utilization of energy efficiency and renewable energy technologies, and the delineation of responsibilities among various government agencies and private entities.

Under Section 25 of the EECA, energy efficiency projects,^[10] upon certification by the DOE, shall be included in the annual investment priorities plan of the Board of Investments (BOI) and shall be entitled to the incentives provided under Executive Order No. 226, otherwise known as the "Omnibus Investments Code of 1987," as amended, and any other applicable laws for 10 years from the effectivity of the EECA. After the above-mentioned period, the inclusion of energy efficiency projects in the annual investment priorities plan shall be reviewed and may be extended by the BOI.

In this regard, energy efficiency and conservation projects are among the activities classified as Tier II priority projects under the 2022 Strategic Investment Priority Plan (SIPP). Incentives granted under the SIPP include Income Tax Holidays (ITH), enhanced deductions (ED) and a preferential special corporate income tax rate of 5% (SCIT). Incentives under the SIPP typically begin as ITHs of four to seven years, followed by five to 10 years of either SCIT or ED. The period of the incentive is determined by several factors, including the tier assigned to the activity, whether the activity is for export or for the domestic market, and whether the investment is made in the location of the investment involved.

^[10] "Energy efficiency projects" refer to projects designed to reduce energy consumption and costs by any improvement, repair, alteration or betterment of any building or facility, or any equipment, fixture or furnishing to be added to or used in any building, facility or vehicle, including the manufacturing and provision of services related thereto. This is provided that such projects shall be cost-effective and shall lead to lower energy or utility costs during operation and maintenance.



Philippines



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are several public and private "green" financing activities for sustainable real estate projects in the Philippines. Reports in recent years indicate that the Philippines is increasingly becoming a market leader in green financing activities in Southeast Asia.^[11]

The country's Bureau of Treasury (BoTR), Securities and Exchange Commission (SEC), and the Bangko Sentral ng Pilipinas (BSP), the Philippines' central bank, are among the Philippine government agencies that have national initiatives of their own in the area of green financing.

In 2021, the BoTR issued the national Sustainable Finance Framework, which set out the Philippines' policy in utilizing and raising green, social or sustainability bonds, loans, and other debt instruments to finance "Eligible Social Expenditures." Eligible Social Expenditures include and especially highlight projects that contribute to affordable basic infrastructure and housing.

On the other hand, the SEC issued the Guidelines on the Issuance of Green Bonds Under the ASEAN Green Bonds Standards (SEC Memorandum Circular No. 12, s. 2018), the Guidelines on the Issuance of Social Bonds Under the ASEAN Social Bonds Standards in the Philippines (SEC Memorandum Circular No. 9, s. 2019) and the Guidelines on the Issuance of Sustainability Bonds Under the ASEAN Sustainability Bonds Standards in the Philippines (SEC Memorandum Circular. No. 9, s. 2019). These circulars spearheaded the issuance of green bonds by the private sector, as they set the standards for green bonds that may be availed of by the general public.

The BSP, on the other hand, apart from having a USD 550 million green bond portfolio of its own, has been implementing projects to encourage green financing among public and private banks, and financial institutions under its supervision. These initiatives include offering an additional 15% single borrower limit on loans, credit accommodation, guarantees to finance sustainable projects and a 0% requirement rate for sustainable bonds.

^[11]ADB Southeast Asia Development Solutions, "The Philippines Grows Its Green Finance Market," 12 January 2021, accessible through [<https://seads.adb.org/solutions/philippines-grows-its-green-finance-market>]



Philippines



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Among private entities, banks and real estate companies have taken the lead on green financing through issuing green bonds for real estate and infrastructure projects. For instance, a leading real estate developer with a residential and commercial portfolio, certified as "sustainable" by global organizations, recently offered a USD 61.8 million green bond to finance buildings and real estate projects in the Philippines. Similarly, two market leaders of the banking industry in the Philippines have issued green bonds in the amounts of USD 150 million and USD 408.6 million, respectively, to finance buildings and infrastructure projects in the country.



Philippines



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes.

National and local governments in the Philippines mandate green initiatives and enforce "green" or environmental regulations in the planning and zoning regimes.

On a national scale, the Environment, Land Use, and Urban Planning and Development Bureau, which is an attached agency of the Department of Human Settlements and Urban Development, was established to implement environmental laws in planning and zoning systems. It primarily performs policy development, undertakes regulatory roles, and creates national urban development policies and programs.

Specialized agencies such as the PEZA, which is one of the investment promotion agencies of the Philippine government, serves as the administrator for "green" zones. Green zones are industrial zones that are reserved to attract specialized investments and concentrate them in environmentally sustainable locations and areas.

On a local level, local government units (e.g., governments of provinces, cities and municipalities) are responsible for ensuring that all developments within their respective jurisdictions comply with the municipal or local environment codes. For instance, local zoning ordinances generally state that new developments are required to comply with the Revised Forestry Code, Water Code, Environment and Natural Resources guidelines, and provisions in local zoning ordinances. Projects in environmentally-critical areas are also required to obtain Environmental Impact Assessments before obtaining necessary business permits and licenses.



Philippines



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases are commonly understood to refer to lease contracts that include provisions on environmental sustainability to ensure that the use of a building or an establishment has the least impact on the environment. We are not aware of any Philippine law or regulation that mandates green leases.

There is also no publicly available information on the extent of the take-up of green leases in the Philippines. However, based on market reports generated by leading property consulting firms in the Philippines, green leases appear to be an emerging trend in property rentals, as more and more landlords include green lease provisions in lease contracts.

Notwithstanding the above, it is worth noting that there are voluntary mechanisms by which green leases are promoted in the Philippines.

LEED certifications are gaining traction in the Philippine real estate industry, albeit also being an optional certification. As mentioned in the "Green certification" section, a LEED certification is issued to buildings to determine compliance with standards set by the GBCI. In particular, these standards track a building's compliance with standards on sustainability, water efficiency, indoor environmental quality, innovation, materials and resources used, location and transportation, regional priority, integrative process, and innovation.

As of 2023, a total of 23 projects have been issued with LEED certifications in the Philippines.

In relation to green leases, it appears that green lease provisions are required before a landlord can obtain a LEED certification for a building. Under Version 4 of the LEED guidelines, owners of new constructions are required to declare that they are vying for LEED certifications and recommend best practices for a tenant to comply with LEED standards before signing any lease contract. Thus, if a building in the Philippines intends to obtain a LEED certification, green lease provisions appear to be required in its lease provisions.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Introduction and background to Singapore's Green Mark certification

The Building and Construction Authority (BCA) is the government agency overseeing safety, quality, inclusiveness, sustainability and productivity of the built environment sector in Singapore. Tasked by the government to champion the green building environment,^[1] the BCA introduced the Green Mark certification scheme in 2005. This rating system promotes the adoption of green building designs and technologies that improve energy efficiency and reduce buildings' impact on the environment.^[2]

Collaborating with the building industry and other relevant stakeholders, the BCA launched the first Green Building Masterplan in 2006 to increase industry efforts in environmental sustainability, with the focus on "greening" new buildings.^[3]

In 2009, the BCA launched the [second Green Building Masterplan](#), emphasizing the greening of existing buildings for which a major energy-use change has been proposed or that have undergone a major energy-use change. For the purposes of the Building Control Act 1989 and the [Building Control \(Environmental Sustainability Measures for Existing Buildings\) Regulations 2013](#) ("**2013 Regulations**"), a "major energy-use change"^[4] in relation to an existing building means either of the following:

- The installation, substantial alteration or replacement of a prescribed cooling system (water-cooled chiller or air-cooled chiller^[5]) of the building
- Any other change to the energy requirements of the building that may be prescribed

^[1] See [About the BCA](#).

^[2] See [About the BCA Green Mark Scheme](#).

^[3] See [Green Building Masterplans](#).

^[4] Section 22FA of the Building Control Act 1989.

^[5] Regulation 4 of the 2013 Regulations.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The latest Green Mark: 2021 certification,^[6] and the [Code on Periodic Energy Audit of Building Cooling System](#) also apply to existing buildings undergoing "major retrofitting works" involving the provision, extension or substantial alteration of the building envelope^[7] and building services in or in connection with an existing building^[8]:

- Addition or replacement of chiller(s)
- Addition or replacement of 50% or more of all air-conditioning condenser units or, if adding or replacing air-conditioning condenser units, 50% or more of the currently installed capacity
- Additional gross floor area (GFA) of 5,000 square meters (m²) or more
- Projects subject to environmental sustainability regulations^[9]

Developers and owners of new and existing buildings, districts, parks, infrastructure, and building interiors are assessed on the following five key criteria:^[10]

- Energy efficiency
- Water efficiency
- Environmental protection
- Indoor environmental quality
- Other green and innovative features that contribute to better building performance

^[6] The BCA [Green Mark: 2021 Certification Standard \(Second Edition\)](#).

^[7] "building envelope" is defined under the [Building Control Regulations 2003](#) to mean the elements of a building which enclose air-conditioned spaces through which thermal energy may be transferred from the exterior.

^[8] See [Annex B: Factsheet on Mandatory Energy Improvement \(MEI\) Regime](#).

^[9] Including the environmental sustainability measures for existing buildings set out in Part 3B of the Building Control Act 1989 and Building Control (Environmental Sustainability) Regulations 2008 for new buildings where applicable

^[10] See [About the BCA Green Mark Scheme](#).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The process for applying for Green Mark certification involves several stages and an on-site inspection.

- At application: When paying a fee, applicants must provide detailed information on the design and construction of the project, including engineering calculations and material/equipment specifications.
- For verification: Applicants must supply other information, such as purchase/delivery orders.
- At assessment: The BCA assessors will visit the site for a detailed assessment.^[11]

When first introduced, the Green Mark assessment — based on scoring, performance levels and evidence collection — determined the Green Mark rating series:

Green Mark rating	Score
Certified	From 50 to 70
Gold	From 70 to 80
Gold ^{PLUS}	From 80 to 90
Platinum	90 and above

^[11] See FIDIC [Rating & Certification Tool: BCA Green Mark](#).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

All new builds and existing buildings with major retrofitting are now assessed under the refreshed standards and technical guides of the Green Mark: 2021 second edition. The BCA describes this latest certification framework^[12] as follows:

- Simple: Many prerequisites of the first edition standards and technical guides have been removed, and the criteria have been restructured into two broad categories:
 - Energy efficiency (the only prerequisite)
 - Sustainability sections covering intelligence, health and well-being, whole-life carbon, maintainability and resilience
- Sustainable:
 - Criteria are mapped to the [United Nations Sustainable Development Goals](#) and contextualized for implementation within the built environment in Singapore and the urban tropics to push the energy efficiency envelope so as to mainstream Super Low Energy (SLE) buildings.
 - This recognizes future requirements from various sustainable finance taxonomies.
- Smart: This recognizes digitalization efforts to facilitate easy, seamless, and secure certification processes.
- Owner-friendly: This recognizes building developers' and owners' needs for sustainable operations and environmental, social and governance reporting and demonstrating their leadership.
- Cost-effective: This increases sustainability with a value-driven approach, including environmental value, social value and economic value based on a life-cycle cost approach.
- User-friendly: This is a robust yet flexible framework that brings all buildings into the same ecosystem of Green Mark: 2021.

^[12]The BCA [Green Mark: 2021 Certification Standard \(Second Edition\)](#).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Green Mark: 2021 aims to raise standards in energy performance and place greater emphasis on other sustainability outcomes:

- Designing for maintainability
- Reducing embodied carbon across a building's life cycle
- Using smart technologies
- Enhancing a building's resilience to climate change
- Creating healthier environments for building users^[13]

For previously Green Mark certified buildings not undergoing a retrofit, building owners can apply for a [streamlined certification process](#) "Green Mark: 2021 In Operation" to maintain the previous Green Mark rating or upgrade the rating based on the energy efficiency performance.

Under the Green Mark: 2021 assessment, which introduces a new Green Mark rating series, project teams have the option to pursue either or both of the following series:

- Green Mark Gold^{PLUS} or Platinum certification, which are comprehensive certifications that cover various aspects of sustainability
- Green Mark SLE certification, which is focused solely on energy efficiency

^[13]The BCA [Green Mark: 2021 Certification Standard \(Second Edition\)](#).



Singapore



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Green Mark series	Energy efficiency savings	Overall requirements
SLE	Up to 60%	Top-tier energy efficiency built on a high environmental performance foundation
Gold ^{PLUS} /Platinum	From 50% to 60%	Addressing climate change with a best-in-class holistic environmental performance Includes various aspects of sustainability
Gold ^{PLUS} /Platinum + SLE	60% and over	The peak green building performance Includes various aspects of sustainability

Each subsequent iteration of the Green Building Masterplan (the latest edition summarized below) increases and progresses certification standards. Compliance with the Green Mark: 2021 certification is voluntary. It recognizes performance that is above mandatory, regulated standards, and includes robust levels of energy efficiency, indoor air quality, greenery provision, active mobility considerations, materials and waste management, and water efficiency.

However, developers and owners of prescribed new buildings or existing buildings undertaking major energy use change or undergoing major retrofitting works that meet the building size requirements (or are projects on government land sale (GLS) sites) currently must comply with the minimum standards set out in the codes for new and existing buildings with a major energy use change or under retrofit, including achieving the minimum Green Mark score^[14], that are mandated by statute and regulations, as summarized below.

^[14]Section 22FA of the amended Building Control Act 1989: when the amendments come into force in 2025, the definition of “environmental sustainability score” or “ES score” replaces the definition of “Green Mark score” as the numerical score to assess the environmental sustainability of buildings. The definition of “major energy-use change” will be amended to “major energy use change” because the latter term is more commonly used in the built environment sector (even though there is no change in the meaning).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Owners of existing buildings which will be classified as "energy-intensive" under recent amendments to the Building Control Act 1989 should also be aware of the forthcoming statutory requirements and the Mandatory Energy Improvement (MEI) regime.

New buildings

For developers of new buildings, the [Building Control \(Environmental Sustainability\) Regulations in 2008](#) ("**2008 Regulations**") require new builds of all building types^[15] with a GFA of 5,000 m² or more^[16] to achieve a minimum Green Mark certification.^[17] The 2008 Regulations require these new builds^[18] to achieve a minimum score of points as set out in the [Code for Environmental Sustainability of Buildings](#), which establishes environmentally friendly practices in planning, design and construction to mitigate the environmental impact of such structures. All new buildings must be 50% more energy efficient than the 2005 baseline.

^[15]All building types include industrial, institutional and commercial buildings (office, hotel, retail and mixed development), stations, port facilities, residential and residential landed buildings, and simple structures such as farms and bridges; see [FAQ on Building Control \(Environmental Sustainability\) Regulations 2008](#).

^[16]Regulation 3(1). Exempting projects involving a GFA of less than 5,000 m² from the need to comply with the 2008 Regulations is based on the BCA's assessment of standards stipulated by the Energy Conservation Act 2012, which addresses inefficient building systems at the source and supply end, particularly for smaller projects; see BCA Circular: [Amendments to The Building Control \(Environmental Sustainability\) Regulations 2008 and adoption of the Code For Environmental Sustainability of Buildings \(edition 4.0\) and Code on Environmental Sustainability Measures for Existing Buildings \(edition 3.0\)](#); 1 September 2021.

^[17]Regulation 6(1)(b).

^[18]Projects with a planning permission submission date on or after 1 December 2021 must adopt the fourth edition of the Code for Environmental Sustainability of Buildings.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Existing buildings undertaking major energy use change or undergoing major retrofitting works

The types of buildings initially subject to achieving a minimum Green Mark certification were large hotels, retail buildings, and office buildings with a minimum GFA of 15,000 m².^[19] The 2013 Regulations were amended in 2017^[20] with the latest prescribed buildings^[21] extended to include all single-use and mixed-use buildings with a GFA of 5,000 m²^[22] that install or replace their building cooling system.

Part 3B of the Building Control Act 1989 on environmental sustainability measures for existing buildings requires owners of existing buildings (except for types A and B) to do the following:

- Comply with the minimum Green Mark environmental sustainability standard
- Submit periodic energy efficiency audits of the building's cooling systems
- Submit information in respect of energy consumption and other related information as required by the Commissioner of Building Control (CBC)

^[19] [Regulation 3\(1\), superseded.](#)

^[20] [Building Control \(Environmental Sustainability Measures for Existing Buildings\) \(Amendment\) Regulations 2016.](#)

^[21] Section 22FA of the amended Building Control Act 1989: when the amendments come into force in 2025, the definition of “prescribed building” will be replaced with definitions of “Type 1 building” and “Type 2 building” to allow the Minister to prescribe different types of buildings for the existing regime and the new Mandatory Energy Improvement regime.

^[22] Regulation 3(1) of the 2013 Regulations.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The buildings exempt from the requirements of Part 3B of the Building Control Act 1989 are classified as either of the following:

- Type A buildings used as the following:
 - Data center^[23]
 - Religious building
 - Residential building (other than serviced apartments)
 - Utility building
- Type B buildings used as follows:
 - As an industrial building, an industrial retail building, a light industrial building or a special industrial building^[24]
 - As railway premises

^[23]Data centers must nonetheless comply with SS 564-1:2020 Sustainable data centres - Part 1: Energy and environmental management systems and SS 564-2:2020 Sustainable data centres - Part 2: Guidance for energy and environmental management systems, developed and updated by the Infocomm Media Development Authority (IMDA) from time to time to reduce data centers' energy consumption and operating costs and enhance their competitiveness. The 2013 revisions are modeled after the ISO 50001 standard on energy management and specifically tailored to meet the needs of data centers in Singapore; see [IMDA: Green Data Centre Standard](#).

^[24]See the NEA: [Industrial Sector Mandatory Energy Management Practices for Existing Industrial Facilities](#) and note that, from 22 April 2013, a corporation:

- Has operational control over a business activity that has attained the energy use threshold of 54 terajoules of energy used per calendar year in at least two out of the three preceding calendar years
- Carries out the business activity at a single site and is attributable to one of the following sectors:
 - Manufacturing and manufacturing-related services
 - Supply of electricity, gas, steam, compressed air and chilled water for air-conditioning
 - Water supply and sewage and waste management
- Will be a registrable corporation under the [Energy Conservation Act 2012](#) and subject to the stipulated energy management practices under the [Energy Conservation Act 2012](#) and the [Energy Conservation \(Energy Management Practices\) Regulations 2013](#).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- To provide airport services and facilities^[25]
- To provide port services and facilities^[26]

The 2013 Regulations also require all prescribed buildings to achieve a minimum score of points set out in the [Code on Environmental Sustainability Measures for Existing Buildings](#), which establishes environmentally friendly practices in the operation and retrofitting of existing buildings. The building energy performance must be optimized to meet the minimum energy improvements of 40% over the 2005 baseline when retrofitted.

Existing buildings classified as "energy-intensive"

As of 2024, only existing buildings undertaking major energy use change or undergoing major retrofitting works are required to meet minimum energy performance requirements and meet prevailing sustainability standards after such upgrades.

Noting that, if such works are not carried out, there is no requirement for building owners to improve their building's energy performance, the BCA has proposed amendments^[27] to the Building Control Act 1989, to introduce the new MEI regime.^[28]

The BCA recognizes the need to accelerate energy efficiency improvements in existing buildings, which account for over 20% of Singapore's carbon emissions, in order for Singapore to shift towards a low-carbon built environment and to achieve net-zero emissions by 2050.

^[25] Changi Airport Group (Singapore) Pte Ltd, whose assets and operations under CAG's business control include four passenger terminal buildings, Changi Airfreight Complex and the aircraft operating areas of Changi Airport, maintains ISO 14001:2015 certification for Energy and Emissions Management; see [Changi Airport Group Forging A Sustainable Changi Sustainability Report 2021 – 2022](#).

^[26] The [Maritime Singapore Green Initiative](#), introduced by the Maritime and Port Authority of Singapore in 2019 and extended to 31 December 2024, comprises four voluntary programs for ships, ports and green energy to promote decarbonization of shipping.

^[27] The [Building Control \(Amendment\) Bill](#), first introduced in Parliament on 6 August 2024, passed on 10 September 2024

^[28] See the BCA media release: [Changes to the Building Control Act to enhance Energy Efficiency measures in Existing Buildings for a Sustainable Future](#)¹⁰ September 2024



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

This new MEI regime, expected to be implemented in the third quarter of 2025^[29], will require owners of energy-intensive buildings to appoint a qualified professional mechanical engineer or energy auditor registered with the BCA to carry out an energy audit and develop an Energy Efficiency Improvement Plan (EEIP) to reduce the building's energy use intensity^[30] (EUI) by at least 10% from pre-audit levels.

The BCA uses EUI as the benchmarking metric to measure building energy efficiency. EUI is calculated by dividing a building's total annual electricity consumption (in kWh) by its GFA (in m²) and allows for the comparison of a building's energy performance against similar building types^[31].

When implemented, the amended Building Control Act 1989 will expand the regime in Part 3B relating to environmental sustainability measures for existing buildings^[32]. in each of the building typology or sub-typology used as follows:

- Retail
- Hotel
- Office
- Hospital
- Polyclinic/Private Clinic
- Nursing Home

^[29] See the BCA media release: [Changes to the Building Control Act to enhance Energy Efficiency measures in Existing Buildings for a Sustainable Future](#) 10 September 2024

^[30] EUI refers to the annual energy consumption of a building per unit of GFA (expressed in kilowatt hour per square metre per year)

^[31] See BCA: [Building Energy Benchmarking](#)

^[32] Explanatory statement to the [Building Control \(Amendment\) Bill](#)



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- Education
- Civic, Community and Cultural
- Sports and Recreation centers

The CBC will apply the MEI regime to energy-intensive buildings with GFA of 5,000 m². The EUI thresholds will be set out in subsidiary legislation for each building sub-typology, in recognition of the fact that different sub-typologies will have different energy use profiles.

A building will be considered energy-intensive if it exceeds a predetermined EUI threshold over a period of three years. For a start, the predetermined EUI threshold will be pegged at the 75th percentile of the EUI range. The buildings subject to the MEI regime are those that are consistently in the top 25% of their building sub-typology in terms of energy consumption over three years. The EUI threshold will remain fixed for a period of five years before the next review.^[33]

The MEI regime will be outcome-based and neither the amended Building Control Act 1989 nor the CBC will stipulate the types of improvement measures that building owners need to undertake. Building owners have the autonomy to decide the measures to implement that are most appropriate for their buildings, as long as the required reduction is achieved. Depending on the building's existing condition and energy performance, these measures can range from simple and low-cost such as the replacement of faulty parts and sensors, or the insulation of hot water systems, to more extensive retrofitting works such as the replacement of the building's chiller systems or other behavioral changes such as increasing by the building's air conditioning temperature 1 degree Celsius.

^[33] [Opening Speech by Senior Minister of State Sim Ann on the second Reading of Building Control \(Amendment\) Bill](#); 10 September 2024



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Green Building Masterplans

The BCA has continuously updated its Green Building Masterplan since its inception in 2006, and the latest [Singapore Green Building Masterplan 2021 \(updated in July 2022\)](#) sets out the built environment sustainability standards to achieve the BCA's [low-carbon target of 80-80-80 in 2030](#). These are also adopted in the Green Mark: 2021 scoring.

1. Accelerating the greening of 80% of buildings by 2030, which includes the following steps:
 - Annually publishing energy performance data in the Building Energy Benchmarking Report,^[34] which does the following:
 - Informs building owners and facilities managers on how well their buildings have performed
 - Spurs them to initiate and implement improvements in building energy efficiency^[35]
 - Shapes the market through information transparency of buildings' energy performance
 - Raising the mandatory environmental sustainability standards (including raising the minimum energy performance requirements for new buildings and existing buildings that undergo a major retrofit, and introducing mandatory sustainable construction practices to lower the carbon footprint of our buildings)
 - Updating the Green Mark: 2021 scheme, aligned with the United Nations' Sustainability Development Goals, to raise energy performance standards and place greater emphasis on other important sustainability outcomes such as designing for maintainability, reducing embodied carbon across a building's life cycle, and creating healthier environments for building users

^[34] See the BCA [Building Energy Benchmarking Report \(Statistics and Figures\) 2021](#).

^[35] From 2023, the BCA will also provide individual energy performance data for healthcare facilities, sports and recreation centers, and institutional buildings, and identify them by name. Buildings will be ranked by energy performance among other buildings of similar typology. The next edition of the report will be published on the BCA's website; see Budget 2023: [speech by the senior minister of state for national development and communications & information](#); 2 March 2023.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

2. Requiring 80% of new developments by GFA to be SLE^[36] buildings from 2030 by mandating the following:
 - New public sector buildings attain Green Mark certification, including Green Mark Platinum for new buildings with an air-conditioned area exceeding 5,000 m²
 - Green Mark Platinum SLE standards or equivalent for all new and existing buildings (upon a major retrofit)
 - Enhanced sustainability standards to further drive energy efficiency and carbon reduction for projects developed on land sold under the GLS from June 2022
3. Increasing energy efficiency for best-in-class green buildings to an 80% improvement by 2030 by codeveloping alternative cooling technologies, data-driven smart building solutions and next-generation building ventilation with building owners and developers and through industry partnerships

^[36] See the BCA's [Super Low Energy program](#).



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Introduction

The building sector, which is responsible for more than one-third of Singapore's total electricity consumption, is included in the government's commitment to reducing its emissions intensity by 36% from 2005 levels by 2030.

The BCA is driving the energy efficiency of buildings, working closely with industry and stakeholders, in accordance with its [SLE Buildings Technology Roadmap](#), which the BCA introduced in 2018.^[37] The SLE Buildings Technology Roadmap reviewed existing technology roadmaps developed in 2014 and set normalized energy efficiency index targets to achieve improvements in the energy efficiency index by 40% (moderate adoption) to 60% (aggressive adoption) in over 2,013 best-in-class buildings (Green Mark Platinum as a proxy) by 2030.

The BCA has progressively raised buildings' energy performance through regulation, incentives and building R&D. This has resulted in the current best-in-class buildings using at least 50% less energy compared to 2005 levels and the building stock's energy use intensity improving by 9% overall since 2008.^[38]

The BCA's stated aspiration is to achieve Positive Energy, Zero Energy and SLE buildings that are 60%-80% more energy efficient than 2005 levels.

^[37] See the BCA media release: [BCA Drives The Next Generation Of Green Buildings– The Super Low Energy Buildings](#).

^[38] See the BCA: [Super Low Energy Building Technology Roadmap](#).



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Energy Performance Certificates and Minimum Energy Standards

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Categories of SLE building	SLE building's energy savings and energy sources
Positive Energy	<ul style="list-style-type: none"> 115% of all energy consumption, including plug load, supplied from on-site renewable energy sources
Zero Energy	<ul style="list-style-type: none"> All energy consumption, including plug load, supplied from on-site and off-site renewable energy sources On-site renewable source to be first maximized before exploring off-site renewable sources Renewable energy certificates must comply with SS 673: 2021 Code of Practice for Renewable Energy Certificates:^[39] <ul style="list-style-type: none"> Renewable energy generated within Singapore Minimum of three years with commitment to recertification
SLE	<ul style="list-style-type: none"> Best-in-class Green Mark building achieving at least 60% energy savings above 2005 building codes, which is being used as the anchor reference for Green Mark energy savings

^[39] See the Singapore Standards Council media release: [New Singapore Standard launch to support management and use of Renewable Energy Certificates](#)



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Green Mark: 2021 energy efficiency certification

- The second edition of the [Green Mark: 2021 certification standard](#) came into effect on 1 June 2024 (superseding the first edition which was applied from 1 November 2021 to 31 December 2023)^[40]
- The Green Mark: 2021 assessment framework comprises the following:

Assessment framework	Application
Green Mark: 2021	<p>Recognizes performance that is above mandatory, regulated standards, which includes robust levels of energy efficiency and applies to both of the following:</p> <ul style="list-style-type: none">■ Developments at the design and completion (as built) stage■ Existing buildings that are either:<ul style="list-style-type: none">■ Undergoing retrofitting (including a major change to the cooling system or major energy-use change as defined under Part IIIB of the Building Control Act 1989 and the 2013 Regulations)■ In operation but with no previous Green Mark certification

^[40] See the BCA [Green Mark 2021](#)



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Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Assessment framework	Application
Green Mark: 2021 In Operation	<ul style="list-style-type: none"> ■ Simplified version of Green Mark: 2021 for projects that have previously been assessed and fully certified under Green Mark that have demonstrated their holistic environmental performance ■ Tracks the key performance indicators (KPIs) based on actual operational data to ensure that the building is performing to the same Green Mark: 2021 standard ■ Applies to the following: <ul style="list-style-type: none"> ■ Existing buildings in operation that have previously held Green Mark certification, and with no major energy use change ■ Projects seeking Green Mark recertification

- Most of the building types are eligible for assessment, including office towers, retail buildings and hotels. However, Green Mark: 2021 does not apply to office interiors, retail interiors or other interior fit-out projects.
- Building projects must meet either the 2008 Regulations or the 2013 Regulations before Green Mark certification is conferred. The 2008 Regulations were amended in 2022 to adopt the Green Mark certification of Green Mark Platinum SLE as the minimum requirement.^[41]

^[41] Regulation 4(1)(f) in relation to building on land sold on or after 30 June 2022 under the GLS.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- The following projects are required to adopt one of three energy efficiency (operational carbon) pathways leading to greater energy efficiency, with each pathway describing the requirements to achieve an energy efficiency of 50%, 55% and 60% (SLE standard) to demonstrate their energy efficiency levels:
 - New nonresidential development
 - New residential development
 - Existing nonresidential development
- Green Mark: 2021 adopts the World Green Building Council's term of "operational carbon," which describes the amount of carbon emissions associated with energy used to operate the building or in the operation of infrastructure.
- The energy efficiency (operational carbon) pathways are as follows:
 - Aligned to real project performance with validated data with flexibility for projects to demonstrate their performance
 - Outcome-based with full recognition of passive design strategies and renewable energy systems' contribution to energy savings
 - Supportive of innovation, encouraging the use of new technologies, approaches and solutions to energy performance



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Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Pathway	Metric
Pathway 1 — energy use intensity (EUI)	<p>EUI measures the total annual energy consumption of a building over the GFA (in kilowatt-hour/m²/year), based on the following:</p> <ul style="list-style-type: none">■ Energy modeling (design)■ Energy calculation and measured data (retrofit)■ Measurement — in operation
Pathway 2 — fixed metrics	<p>A prescriptive pathway where projects must demonstrate high levels of performance in each of the key building energy systems.</p> <ul style="list-style-type: none">■ Key performance metrics (ingredients) that make an energy-efficient project — all aspects must be met individually.■ Any shortfall in performance can be made up with the use of on-site renewables, subject to the building typology multiplication factor.
Pathway 3 — energy savings	<p>Energy savings demonstrated by energy modeling in accordance with the Green Mark: 2021 Energy Modelling Guideline, which measures energy savings by comparing the annual energy consumption of the proposed model (designed building) against the reference model (baseline building)</p>



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Singapore Green Building Council (SGBC) certification schemes

- The SGBC is a nonprofit organization, launched in 2009 as a private-public sector partnership with the key role of advocating green building design, practices and technologies and driving environmental sustainability in the building and construction industry.^[42] In March 2015, the SGBC introduced the following schemes:
 - The [Singapore Green Building Product](#) (SGBP) certification scheme
 - Recognized by the BCA's Green Mark, SGBP-certified products accrue points that count toward a project's Green Mark rating
 - Complies with many of the requirements in ISO 14024 environmental labels and declarations and Type I environmental labeling, and is accepted by regional green building rating tools such as the following:
 - GreenRE, a rating tool set up by the Real Estate and Housing Developers' Association of Malaysia
 - LOTUS, the Vietnam Green Building Council's rating tool
 - The [Singapore Green Building Services](#) (SGBS) certification
 - This is a platform to recognize and profile professional services firms that deliver best-in-class green buildings aligned with the latest industry benchmarks and best practices.
 - SGBS-certified firms are recognized under the Green Mark certification scheme.

^[42] See [About the SGBC](#).



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Energy modeling

- The BCA considers^[43] energy modeling an integrated approach that does the following:
 - Provides a good gauge of the building's energy consumption
 - Identifies energy efficiency opportunities
 - Indicates how a building is going to operate
- To attain higher-tier Green Mark certifications (i.e., Gold^{PLUS} or Platinum), the BCA requires demonstratable energy savings through energy modeling. As part of their application and assessment process for Gold^{PLUS} or Platinum Green Mark certification, developers and building owners must measure the building's energy performance by comparing the annual power consumption of the proposed model (designed building) against the reference model^[44] (baseline building). The reference model complies with the 2008 Regulations or the 2013 Regulations and the Singapore standards on energy efficiency, lighting and ventilation, which include the following:
 - [SS530:2014+A1:2018 — Code of Practice for energy efficiency standard for building services and equipment](#). This code, first issued in 2006, was revised in 2014 and amended in 2018. This code does the following:
 - Raises the energy efficiency requirements in accordance with international standards for air-conditioning equipment, water heaters, electric motors and lighting power density
 - Adopts new methods to determine efficiency for water chilling packages and lighting power density
 - Includes new efficiency standards for buildings with high-capacity service water-heating, systems, distribution transformers, and lifts and escalators

^[43] See the BCA: [Green Mark Certification Scheme: Energy Modelling and Green Mark: 2021 Energy Modelling Guideline](#).

^[44] See the [Framework for Energy Modeling for Green Mark Incentive Scheme \(GMIS\)](#).



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- [SS CP13:1999 — Code of Practice for mechanical ventilation and air conditioning in buildings \(Incorporating Amendment No. 1, February 2000 and Erratum No. 1, June 2001\)](#), which establishes a broad standard for engineers, architects, contractors, and owners to comply with in matters relating to mechanical ventilation and air-conditioning
- [SS CP 38:1999 — Code of Practice for artificial lighting of buildings](#), which recommends a range of illuminance levels for various types of buildings and recommended design illuminances, and establishes the criteria for the design, installation, and maintenance of artificial lighting in buildings so as to provide sufficient lighting for indoor activities, thus enhancing visual comfort
- [Code on Envelope Thermal Performance for Buildings](#) to assist architects and professional engineers to comply with the envelope thermal performance standards prescribed in the building regulations:
- The proposed model must perform better than the reference model in total annual savings in energy consumption through the following:
 - Better building design
 - Higher improved equipment efficiency
 - Lower thermal transmittance of building envelope
- Simulation results from the proposed model must show at least the following:
 - 25% savings in annual energy consumption compared to the reference model for Green Mark Gold^{PLUS}
 - 30% energy savings for Green Mark Platinum



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Mandatory submission of periodic energy audits of cooling systems

- The system performance of any building cooling system, including the energy-efficient ones, is expected to deteriorate over time if not properly operated and maintained. As such, the BCA requires a periodic energy audit^[45] by a registered energy auditor^[46] to ensure that the building cooling system continues to operate as efficiently as per its initial design throughout its life cycle and comply with the minimum standards stipulated in the [Code on Periodic Energy Audit of Building Cooling System](#) ("**Energy Audit Code**").
- Based on such building information and energy consumption data, the BCA establishes the national building energy benchmarks, with EUI as the benchmarking metric used to measure building energy efficiency. These building energy benchmarks are published by the BCA annually^[47] to monitor Singapore's building energy performance.

^[45] Currently, section 22FF of the Building Control Act 1989 allows the CBC to serve a notice to owners of new buildings or buildings undergoing a major energy-use change to submit building energy consumption data for a periodic audit of the building cooling system's energy efficiency, and Regulation 9 of the 2013 Regulations requires the energy audit to be conducted in accordance with the Energy Audit Code. Once the amendments to the Building Control Act 1989 come into effect, the new section 22FF will make such submission mandatory for all owners of prescribed buildings.

^[46] Regulation 10 of the 2013 Regulations.

^[47] See for example the BCA: [Building Energy Benchmarking Report \(Statistics and Figures\) 2023](#). This report is updated annually to reflect newly added buildings and major renovations.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- The following buildings will have to carry out the energy audit:^[48]
 - Existing buildings that have undergone the installation, substantial alteration or replacement of a building's/development's water-cooled/air-cooled chiller(s) (major energy-use change) unless excepted^[49]
 - Existing buildings undergoing major retrofitting works
 - Existing buildings under the MEI regime that are classified as energy-intensive
 - New buildings that have applied for planning permission on or after 1 December 2010
- Building owners must ensure that the building cooling system's level of operating system efficiency meets the minimum system efficiencies stipulated in the Green Mark certification standard referred to in the 2008 Regulations and the 2013 Regulations and in the Energy Audit Code, which does the following:
 - Sets out the energy efficiency standard applicable to a cooling system of the building
 - Stipulates the manner that an energy audit is to be carried out in determining the building cooling system's level of energy performance during operation
 - Spells out the required qualification and experience for an energy auditor's registration or renewal of registration

^[48] See [FAQ on Environmental Sustainability Requirements](#).

^[49] Regulation 3 of the 2013 Regulations exempts the application to Type A use of the building ((a) as a data center; (b) as a religious building; (c) as a residential building (other than serviced apartments); or (d) as a utility building) and Type B use of the building ((a) as an industrial building, an industrial retail building, a light industrial building or a special industrial building; (b) as railway premises; (c) to provide airport services and facilities; or (d) to provide port services and facilities).



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- The CBC, appointed under the Building Control Act 1989, will issue notices requiring periodic audit of energy efficiency to building owners and allow a reasonable timeframe for them to complete the energy audit.
 - Existing buildings: The CBC may serve the first notice no less than 36 months from the date of the notice of approval of the as-built score.
 - New buildings: The CBC may serve the first notice at any time after the temporary occupation permit or certificate of statutory completion is issued.
 - For subsequent energy audit submissions, the CBC may serve each subsequent notice no less than 36 months after the date that the last notice was served.^[50]
- For owners of prescribed existing buildings classified as energy-intensive and subject to the MEI regime, the CBC will issue an MEI audit notice^[51] and such building owners will be required to:
 - Appoint a qualified person (a Professional Mechanical Engineer or energy auditor registered with BCA) within 90 days from the issuance of the MEI audit notice to:
 - Conduct an energy audit of the building which will involve a review of the major energy-consuming systems in a building to identify possible measures to optimize energy use
 - Develop an Energy Efficiency Improvement Plan (EEIP) which reduces the building's EUI by at least 10% from pre-audit levels. The measures in the EEIP can range from simple, low-cost measures (e.g. simple maintenance works like replacing faulty parts / sensors, insulating hot water systems, installing monitoring instruments) to more extensive retrofitting works.

^[50] See the [BCA Circular to Building Owners And Professional Institutes/Associations 9 December 2013](#) and the Energy Audit Code, para. 5.1.1.

^[51] New section 22FJ of the Building Control Act 1989.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- Submit the audit report of the energy audit carried out and an EEIP
- Implement EEIP measures within three years from the submission of the audit report
- Maintain the 10% reduction in EUI for a period of one year after implementation of the EEIP measures^[52]
- The CBC may choose not to issue an MEI audit notice on any prescribed ground, or if there are good reasons to withhold or cancel the MEI audit notice, for example if a building is:
 - scheduled for redevelopment in the near future
 - currently undergoing major retrofitting works or energy use change^[53]
- Failure to comply with requirements under the MEI regime will attract fines ranging from SGD 10,000 to SGD 150,000, depending on the severity of the offence and may also be compounded in the case of a continuing offence. Building owners will be penalized for the following breaches in respect of:
 - submission of EEIP^[54]
 - duty to carry out EEIP^[55]

^[52] new sections 22FB, 22FC, 22FD, 22FE and 22FL and new Division 2 of the Building Control Act 1989.

^[53] new sections 22FJ and 22FK of the Building Control Act 1989.

^[54] new section 22FO(6) of the Building Control Act 1989

^[55] new section 22FQ(4) of the Building Control Act 1989



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- submission of maintenance report^[56].
- non-compliance with the Commissioner of Building Control's written direction issued to the building owner for the purpose of ensuring that the specified reduction or approved reduction in energy use intensity is achieved and maintained^[57].
- Building owners who depart or deviate from EEIP^[58] will also be penalized.

Minimum Energy Performance Requirements and the MEI regime

The following minimum energy performance standards currently apply to new and existing buildings undertaking major energy use change or undergoing major retrofitting works, with the MEI regime applying to existing buildings classified as "energy-intensive" from the third quarter of 2025:

Building type	Percentage minimum energy performance requirements	Effective date of latest requirements
New buildings	50% (energy efficiency improvement over 2005 levels)	December 2021
Existing buildings undergoing major retrofitting works	40% (energy efficiency improvement over 2005 levels)	December 2021
Existing buildings undergoing major energy use change	40% (energy efficiency improvement over 2005 levels)	June 2022
Existing buildings under the MEI regime that are classified as energy-intensive	10% reduction in the building's EUI from pre-audit levels	(expected implementation date in the third quarter of 2025)

^[56] new section 22FT(4) of the Building Control Act 1989

^[57] new section 22FU(4) of the Building Control Act 1989

^[58] new section 22FS(2) of the Building Control Act 1989



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Green Mark Incentive Schemes (GMIS) were introduced to accelerate the adoption of environmentally friendly building technologies and building design practices through cash or GFA incentives.

Built Environment Transformation Gross Floor Area Incentive Scheme ("BE Transformation GFA Scheme")^[59]

- Under the BE Transformation GFA Scheme, valid for five years from 24 November 2021 to 23 November 2026, unless otherwise extended, the BCA and the Urban Redevelopment Authority (URA), Singapore's land use planning and conservation authority, allow additional GFA in excess of the master plan gross plot ratio (GPR) as an incentive for developers and building owners. In satisfying the [Construction Industry Transformation Map](#) outcome requirements in digitalization, productivity and sustainability in the development and redevelopment of private sites or GLS sites launched on and prior to 31 March 2022, of at least 5,000 m² GFA, developers/building owners enjoy either of the following:
 - Up to 3% additional GFA
 - Up to 2% bonus GFA above the master GPR if the superstructural works have not commenced for building developments on sites launched under the GLS program on or prior to 31 March 2022
- The types of eligible developments are as follows:
 - Residential non-landed and other developments (approved on a case-by-case basis)
 - Nonresidential commercial, industrial and institutional developments, such as office, retail, business park, community building, hotel, hospital or white-site developments
 - Any combination of the above

^[59] See the BCA [Factsheet on Built Environment Transformation Gross Floor Area \(GFA\) Incentive Scheme](#).



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

- Where development proposals fall within areas with specific planning considerations (e.g., story height controls) or are unable to fully accommodate the additional intensity due to on-site conditions (e.g., areas with traffic concerns), a lower quantum of additional GFA may be granted and/or the bonus GFA may be limited to a particular use or uses.

SGD 63 million Green Mark Incentive Scheme for Existing Buildings 2.0 (GMIS-EB 2.0)^[60]

- The Ministry for National Development (MND), the key government ministry responsible for national land use and development planning,^[61] recognizes the cost challenges to green an existing building. The MND estimated that basic retrofitting, which involves upgrading the building's existing building cooling system, typically takes three to seven years to pay off via savings in the form of lower energy bills and operating costs. Thus, in addition to mandatory legislation, the BCA also offers incentives to encourage these building owners to achieve higher energy efficiency.^[62]
- The GMIS-EB 2.0 was launched on 30 June 2022 and is available from 30 June 2022 till the funds have been fully committed or 31 March 2027 (whichever is earlier). The objective of the GMIS-EBP 2.0 is to raise the energy performance of existing buildings and step up the pace to green 80% of our buildings by 2030, in line with the Green Building Masterplan's environmental sustainability ambitions and the target to accelerate the transition to a low-carbon built environment.

^[60] See the BCA [Green Mark Incentive Schemes: Green Mark Incentive Scheme for Existing Buildings 2.0 \(GMIS-EB 2.0\)](#) and [Green Mark Incentive Scheme for Existing Buildings 2.0 \(GMIS-EB 2.0\) Factsheet](#).

^[61] See the MND [Introduction](#).

^[62] See the [Second Reading of the Building Control \(Amendment\) Bill](#) by the senior minister of state for national development, 10 September 2012.



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Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Qualifying certification	Funding factor (per ton of carbon dioxide equivalent (tCO ₂ e))	Cap
Green Mark Platinum	SGD 25	SGD 600,000 or up to 50% of the qualifying cost, whichever is lower
Green Mark SLE	SGD 35	SGD 900,000 or up to 50% of the qualifying cost, whichever is lower
Green Mark Zero Energy	SGD 45	SGD 1.2 million or up to 50% of the qualifying cost, whichever is lower

- The grants will lower the upfront capital costs for energy efficiency retrofits, allowing building owners to attain higher energy performance and improve the returns on investment, particularly for buildings meeting SLE or Zero Energy standards.
- GMIS-EB 2.0 applies to the following privately owned existing buildings with a GFA of at least 5,000 m²:
 - Commercial and institutional developments (e.g., hotels, offices, retail buildings, healthcare facilities, community institutions)
 - Light industrial buildings under specified Singapore Standard Industrial Classification codes (Energy savings from manufacturing, industrial and commercial processes must be excluded from the energy savings calculation.)
 - Residential buildings, only including energy savings from common areas/services



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

- Once the BCA issues a letter of acceptance (LOA) to the building owner indicating the maximum grant and the owner concludes a valid and binding agreement between the owner and the BCA incorporating the required [terms and conditions](#), the BCA will disburse the grant in two tranches:
 - Owners may submit the first tranche application upon receiving the LOA from the BCA and after the commencement of the EIWs: The quantum of the first tranche shall be determined based on the costs incurred by the owner for actual qualifying costs, being costs incurred for the following:
 - Purchasing and installing the EIWs
 - Carrying out building works to convert air-conditioned spaces to naturally ventilated or mixed-mode ventilation spaces
 - Procuring professional services for the project as of the date of the first tranche application
 - Owners may submit the second tranche application, with supporting documents, after the completion of the EIWs and no later than 36 months from the date of the LOA. The owner must ensure that its development has achieved the Green Mark certification and completed the Green Mark verification. The second tranche quantum will be based on whichever is lowest of the following calculations (and will not exceed an amount equal to the maximum grant amount less the quantum of the first tranche):
 - The actual carbon abated
 - 50% of the actual qualifying costs incurred by the owner for the project
 - The applicable funding cap



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

JTC's solar deployment scheme^[63]

- JTC Corporation (JTC), the government agency in charge of planning and developing industrial infrastructure,^[64] plans to deploy solar photovoltaic (PV) panels at all feasible JTC buildings, vacant industrial land and at sea by 2030, with JTC aiming to persuade more privately leased industrial properties to do the same. As of May 2023, privately leased industrial properties make up 72% of the total potential solar capacity from industrial estates.
- The aim is to have all these solar panels — including those deployed at sea — achieve a solar capacity of 1,250 megawatt-peak (MWp), or contributing to 60% of Singapore's total solar deployment target of at least 2 gigawatt-peak (GWp), by 2030. This target, enough to power about 350,000 households here for a year, is expected to make up 3% of Singapore's total electricity demand in 2030.
- Mandatory solar deployment:^[65] Solar deployment is mandatory for the following JTC leases:
 - New and renewed land and land-based facilities
 - (With effect from 1 April 2022) on the assignment/transfer or redevelopment of the land and land-based facility
 - If the site has at least the following:
 - 800 m² of available contiguous rooftop area
 - Fifteen years of remaining lease term or more

^[63] See JTC [Managing tenancy or lease: Solar deployment](#).

^[64] See JTC: [Who We Are](#).

^[65] See JTC [Managing tenancy or lease: Solar deployment](#).



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

- Voluntary solar deployment: Where the land or land-based facility does not meet the above conditions, a JTC lessee may still choose to install solar panels voluntarily.
 - From 1 December 2022, JTC lessees are not required to apply for consent for their voluntary solar deployment that only comprises the installation of solar PV panels and supporting equipment that do not do the following:
 - Result in changes in the authorized use, GFA, use quantum as specified by the URA and plot ratio
 - Affect the structural integrity of an existing building
 - Nonetheless, the JTC lessee is still required to obtain JTC's consent for any additions and alterations to the JTC land and land-based facilities and may also be required to obtain approval from other authorities such as the URA and the Singapore Civil Defence Force.
- Under the terms of the JTC solar deployment,^[66] solar panels are installed for free (i.e., no capital cost through the Solar Roof programme with JTC's appointed vendor, currently being Sembcorp Solar) and JTC lessees can enjoy discounted rates for power generated from solar panels on their roofs. Alternatively, they can earn revenue by leasing their roof space for solar panels to be installed. The three models of deployment are:
 - Rooftop licensing (no capital cost): JTC's appointed vendor installs PV panels on the premises and pays rental to the JTC lessee. The solar-generated energy is then exported to the national grid by the solar vendor.
 - Solar leasing (no capital cost): JTC's appointed vendor installs PV panels on the premises. The solar-generated energy is then sold to the JTC lessee at a discounted rate to offset its building power consumption.

^[66] See the JTC [Environmental Sustainability: Solar Deployment Toolkit](#).



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

- Direct ownership: The JTC lessee purchases PV panels from its own solar vendor and arranges for installation. The solar energy generated is for the JTC lessee's own consumption on the premises, and the JTC lessee may sell excess energy to the grid.
- Since July 2022, the minimum contract period for solar deployment has been reduced from 15 years to eight years, allowing companies with shorter lease periods to also benefit.^[67]

Green Buildings Innovation Cluster (GBIC) programme^[68]

- The GBIC programme, established in 2014, supports the development and demonstration of innovative energy-efficient technologies and solutions with high potential to be widely adopted.
- To push the boundaries of energy efficiency in buildings, the BCA provides enhanced funding of SGD 45 million^[69] for the GBIC programme. The enhanced programme, GBIC 2.0, available for applications by industry and research communities from 2022, targets key demand drivers, such as building owners and developers, and their value chains to cocreate and accelerate solutions and commercialization through industry partnerships. Research areas under GBIC 2.0 include developing alternative cooling technologies, data-driven smart building solutions and next-generation building ventilation.

^[67] See JTC's press release: [JTC leads solar deployment across Singapore's industrial estates towards achieving potential solar capacity of 1,250 MWp](#).

^[68] See the BCA [Green Buildings Innovation Cluster \(GBIC\) program](#).

^[69] See the MND: [Speech by MOS Faishal at the Singapore Green Building Council Gala Dinner](#); 15 September 2023.



Singapore



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Introduction

Singapore submitted its enhanced Nationally Determined Contribution (NDC) and its Long-Term Low-Emissions Development Strategy (LEDS) to the United Nations Framework Convention on Climate Change in 2022, revising^[70] its commitment to reducing emissions to around 60 million tonnes of carbon dioxide equivalent (MtCO₂e) in 2030 after peaking emissions earlier.^[71]

Based on earlier projections, this is consistent with Singapore's existing 2030 NDC, which states that Singapore aims to achieve a 36% reduction in emissions intensity (EI) from 2005 levels by 2030. Singapore also aims to halve emissions from its peak to 33 MtCO₂e by 2050, with a view to achieving net-zero emissions as soon as viable in the second half of the century.

Singapore's low-carbon transition will involve concrete actions across all sectors, building on its long-standing emphasis on sustainable development and will have three thrusts.

- Transformations in industry, economy and society, e.g., more renewable energy, greater energy efficiency, reduced energy consumption
- Adoption of advanced low-carbon technologies, e.g., carbon capture, utilization and storage (CCUS), and use of low-carbon hydrogen
- Effective international collaboration, e.g., international climate action, regional power grids, market-based mechanisms

^[70] See Strategy Group, Prime Minister's Office: [Singapore's Enhanced Nationally Determined Contribution and Long-Term Low-Emissions Development Strategy](#), 28 February 2020.

^[71] See Strategy Group, Prime Minister's Office: [Singapore Commits to Achieve Net Zero Emissions by 2050 and to a Revised 2030 Nationally Determined Contribution; Public Sector and Jurong Lake District to Lead The Way with Net Zero Targets](#); 25 October 2022.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

According to the MND,^[72] buildings accounted for about 11 MtCO₂e of carbon emissions in 2018, the most recent year for which verified data is available, with a projected increase in emissions arising from the recovery in the construction of new buildings following the pandemic.

To reduce embodied carbon in buildings, the BCA requires building projects to adopt a minimum number of sustainable construction practices under the following codes:^[73]

- [Code for Environmental Sustainability of Buildings \(Edition 4.0\)](#) under the 2008 Regulations, which requires the following:
 - For new residential buildings: a selection of four carbon reduction measures in total as listed in Table 4.2(a), including a minimum of two measures from Section 2: Sustainable Construction
 - For new nonresidential buildings: a selection of four carbon reduction measures in total as listed in Table 4.2(b), including a minimum of two measures from Section 2: Sustainable Construction
- [Code on Environmental Sustainability Measures for Existing Buildings \(Edition 3.0\)](#) under the 2013 Regulations, which requires, for existing nonresidential buildings, all base requirements listed in Table 4.1, where relevant, and a selection of three carbon reduction measures from Table 4.2, with at least one measure from Sustainable Operation and Management.

^[72] [Written answer by MND on current and projected levels of carbon emission by the built environment sector and plans to enhance green financing for construction companies](#); 2 November 2021.

^[73] See the BCA circular: [Amendments to The Building Control \(Environmental Sustainability\) Regulations 2008 and adoption of the Code For Environmental Sustainability of Buildings \(edition 4.0\) and Code on Environmental Sustainability Measures for Existing Buildings \(edition 3.0\)](#); 1 September 2021.



Singapore



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The following building works and types of use are exempted from the above codes:

- Building works involving a GFA of less than 5,000 m²
- Type A buildings used as the following:
 - Data center
 - Religious building
 - Residential building (other than serviced apartments)
 - Utility building
- Type B buildings used as follows:
 - As an industrial building, an industrial retail building, a light industrial building or a special industrial building
 - As railway premises
 - To provide airport services and facilities
 - To provide port services and facilities

However, note that, under the [Carbon Pricing Act 2018](#), the following business facilities emitting a total amount of reckonable greenhouse gas (GHG) equal to or above 2,000 tCO₂e annually directly into the atmosphere must register^[74] with the National Environment Agency (NEA):

^[74] Section 7 of the Carbon Pricing Act 2018.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

- Manufacturing and manufacturing related services
- Supply of electricity, gas, steam, compressed air and chilled water for air-conditioning
- Water supply and sewage and waste management

and carrying out any business activity at a single site, including a series of activities carried out at more than one parcel of land that:

- Are contiguous, adjacent or adjoining
- Are separated by any road, pathway, drain or waterway
- Have a dependency between the activities carried out on the parcels of land

All registered business facilities must submit an emissions report annually^[75] to the NEA on emissions in respect of the business.

Registered business facilities emitting at least annual direct GHG emissions of 25,000 tCO₂e are subject^[76] to a carbon tax. The carbon tax rate will increase to SGD 25 per tonne in 2024, and to SGD 45 per tonne in 2026, with a view to reaching SGD 50 to SGD 80 per tonne by 2030.^[77] From 2019 to 2023, Singapore's carbon tax rate is set at SGD 5 per tonne of GHG emissions.

Starting from 2024, in lieu of paying the carbon tax, businesses will be able to use high-quality international carbon credits to offset up to 5% of their taxable emissions. There will also be a transition framework that may provide allowances for existing companies for a share of their emissions, though details have yet to be announced.^[78]

^[75] Section 12 of the Carbon Pricing Act 2018.

^[76] Section 16 of the Carbon Pricing Act 2018.

^[77] See the NEA: [Climate Change: Carbon Tax](#).

^[78] BMWL client alert: [Singapore Budget 2022: Key tax updates](#), March 2022.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Introduction

While there are no regulations stipulating use of renewable energy as yet, Singapore is committed to achieving net-zero emissions by 2050.^[79] Despite being an alternative energy disadvantaged island city-state, Singapore is adopting^[80] the following strategies to increase domestic supply of low-carbon energy:

- Maximizing solar deployment toward the target of at least two GWp of installed solar capacity by 2030
- Importing up to four gigawatts (GW) of low-carbon electricity by 2035, which is around 30% of Singapore's projected electricity demand (Presently, the Singapore government has awarded conditional approvals for up to three GW of low-carbon electricity to be imported from Cambodia and Indonesia.)
- Accelerating the exploration of low carbon alternatives:
 - Plans under the [National Hydrogen Strategy 2022](#) for hydrogen to complement and diversify Singapore's power mix alongside solar, imported electricity and other potential low-carbon energy sources (Depending on technological developments and the development of other energy sources, hydrogen could supply up to half of Singapore's power needs by 2050.)
 - Assessing the submissions from our expression of interest for low-carbon ammonia power generation and bunkering
 - Undertaking a nationwide study to assess Singapore's potential for deep geothermal and carbon sequestration

^[79] See Strategy Group, Prime Minister's Office: [Singapore Commits to Achieve Net Zero Emissions by 2050 and to a Revised 2030 Nationally Determined Contribution: Public Sector and Jurong Lake District to Lead The Way with Net Zero Targets](#); 25 October 2022.

^[80] Written answers by the minister for trade and industry of Singapore to question: [Growing Renewable Energy Adoption To Meet Net-Zero Carbon Emissions Pledge](#); 19 September 2023.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

The BCA has also conducted research on the target of greening 80% of the building stock by 2030. The [Super Low Energy Building Technology Roadmap](#) identified potential solutions from enhanced existing technologies and emerging research, development and demonstration (RD&D) initiatives and concluded the following:

- Achieving SLE with 60% energy efficiency improvement (from 2005 levels) is technically feasible with best-in-class technologies today.
- Further technological advancements and RD&D will be needed to reach 80% energy efficiency improvement, to make SLE both technically feasible and economically viable for mainstream adoption by 2030.

For JTC estates, buildings and vacant land, solar deployment is mandatory for the following:

- New and renewed land/land-based facilities
- Assignment/transfer or redevelopment of the land/land-based facilities
- Sites with at least 800 m² of available contiguous rooftop area and 15 years of remaining lease term or more

Where the above conditions are not met, the JTC lessee can adopt solar deployment voluntarily. JTC's consent is required for any addition and alteration works to the land/land-based facilities.^[81]

^[81] See JTC: [Managing tenancy or lease: Solar deployment](#).



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax relief on energy-saving measures, that can encourage more efficient use of energy in buildings?

Introduction

On or before 31 March 2021, the Investment Allowance (Energy Efficiency) (IA-EE) scheme provided investment allowance for those energy efficiency improvement projects approved by the Economic Development Board (EDB), the government agency under the Ministry of Trade and Industry responsible for enhancing Singapore's position as a global center for business, innovation and talent. Data centers were subject to additional qualifying conditions.

The IA-EE scheme has been renamed the Investment Allowance for Emissions Reduction scheme,^[82] with the following revisions:

- Expanded scope of qualifying projects to include projects involving a reduction of GHG emissions
- Streamlined and updated eligibility conditions that apply to all projects approved by the EDB from 1 April 2021 to 31 December 2026 (both dates inclusive), there being no distinction between data centers and non-data centers

Qualifying research and development (R&D) activities may benefit from the R&D tax measures, which are targeted at encouraging businesses to build up R&D capabilities in Singapore. To qualify, the R&D activity must fall within the definition of R&D under Section 2 of the [Income Tax Act 1947](#) and meet all three requirements. The Inland Revenue Authority of Singapore, the government agency in charge of administration of taxes and enterprise disbursements, has provided guidance^[83] on which energy-saving R&D activities meet the requirements (e.g., meeting the novelty or technical risk objective or comprising a systematic, investigative and experimental study in a field of science or technology).

^[82] See the Ministry of Finance: [Budget 2021 Annex F-1: Tax Changes](#).

^[83] [IRAS e-Tax Guide Research and Development Tax Measures \(Seventh Edition\)](#).



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Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax relief on energy-saving measures, that can encourage more efficient use of energy in buildings?

In addition to the Building Control Act 1989, the 2008 Regulations and the 2013 Regulations, which primarily target office, hotel and retail buildings, the [Energy Conservation Act 2012](#) regulates large energy users in the transport and industry sectors that consume more than 15 gigawatt-hours each year. Summarized below is a comparison^[84] between energy efficiency measures under the Building Control Act 1989 and the Energy Conservation Act 2012:

Energy efficiency measures	Building Control Act 1989	Energy Conservation Act 2012
Minimum standards	Under the initial phase, office, hotel, and retail buildings with a GFA of more than 15,000 m2 are required to meet the minimum standards, triggered by installing/replacing cooling systems.	No minimum standards, but prescribed users must submit energy efficiency improvement plans.
Reporting energy use	Utilities and building owners are required to submit energy consumption and building-related information.	Companies are required to appoint energy managers to submit energy efficiency plans.
Monitoring energy use	A periodic energy audit of the following is required: <ul style="list-style-type: none"> ■ Any new building (for which an application for planning permission was submitted on or after 1 December 2010) ■ Any existing building that is having its air-cooled or water-cooled chiller installed or replaced and that is subject to the minimum standard under the 2013 Regulations 	No mandatory energy audits, but energy efficiency plans submitted by energy managers must also include energy efficiency improvement plans.

^[84] See the BCA: [FAQS Periodic Energy Audit](#).



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Private "green" financing initiatives

The Monetary Authority of Singapore (MAS), Singapore's central bank and integrated financial regulator, leads the Project NovA! Development consortium,^[85] which has launched a minimum viable product (MVP) to assist banks to tap into artificial intelligence (AI) when issuing sustainability-linked loans (SLLs) in the real estate sector. The NovA! MVP, which concluded the first phase of its work on 14 November 2023, addresses the following challenges faced by banks in extending SLLs:

- Inaccurate settings for sustainability performance targets (SPTs) due to data scarcity and inconsistency
- Greenwashing concerns, which the MAS estimates affect about 50% of SLLs
- Inefficient processes leading to manual errors in reading and interpreting disclosures from lenders

The AI-powered MVP developed in phase one of Project NovA! offers three core features^[86] to address the above challenges:

- Facilitate setting performance targets for SLLs in the real estate sector through peer and industry benchmarking: By harnessing data from government sources and conducting property-specific peer and industry comparisons, AI technology can be used to help banks set KPIs judiciously and establish practical SPTs to enable a more accurate sustainability assessment.
- Monitor against selected KPIs/SPTs to curb greenwashing: By using buildings' energy consumption data continuously at source, NovA! enables banks to compare borrowers' current sustainability performance with the agreed SPTs in a timely manner. Risk assessment teams from banks can swiftly identify discrepancies, ensure SLLs maintain their intended impact, and curb greenwashing.

^[85] See the MAS media release: [MAS-Led Consortium Develops AI-Powered System to Support Sustainable Finance in Real Estate Sector](#); 14 November 2023..

^[86] [NovA! A whitepaper on accelerating sustainability with AI November 2023](#).



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Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

- Enhance processing sustainable finance transactions through the Autonomous Documentation Insights Engine. This feature uses natural language processing to enable banks' relationship managers, know your client (KYC) teams and sustainable finance units to extract sustainability insights, such as a company's total GHG emissions, swiftly and accurately from diverse sources. This is a shift away from manual processing of disclosure documents, allowing for more informed decision-making based on comprehensive data extracted from borrower disclosures.

Green Finance Industry Taskforce

The MAS leads the finance industry Green Finance Industry Taskforce, which issued the finalized [Singapore Asia Taxonomy](#) ("**Taxonomy**") in 2023. To promote green financing, funding and investment in Singapore and within the Association of Southeast Asian Nations, and to avoid unintended greenwashing, the Taxonomy uses science and technical screening to classify economic activities and projects as one of the following:

- Green (environmentally sustainable)
- Amber (transition, with the sunset date of 2030)
- Ineligible

They are classified based on their contribution to at least one of the Taxonomy's five environmental objectives, while at the same time not causing any significant harm to the other four:

- Climate change mitigation
- Climate change adaptation
- Protect healthy ecosystems and biodiversity
- Promote resource resilience and circular economy
- Pollution prevention and control



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Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The MAS intends for market participants, such as asset owners, investment managers, financial institutions, issuers, policymakers, regulators and other stakeholders, to use the Taxonomy to identify and allocate capital to green and transition activities and projects.

The Taxonomy's standardized green eligibility criteria for Singapore-based real estate and construction activities uses the Green Mark: 2021 certification to evaluate a building's environmental impact and performance:

Activities	Activity classification	Main technical screening criteria
Construction of new buildings	Green	Prevailing Green Mark: 2021 certification, or office buildings (or portfolio) in Singapore meeting Climate Bonds Initiative (CBI) certification criteria Eligible international certifications (e.g., Australia: Green Star Homes; China: Evaluation Standard for Green Building; India: India Green Building Council (IGBC) Green Homes; international: Leadership in Energy and Environmental Design (LEED) (Gold or Platinum), Excellence in Design for Greater Efficiencies (EDGE) or International Living Building Challenge Certified) Certificate validity: five-year maximum limit if the certification does not impose a limit or has one that is longer than five years
	Amber	No amber category for new buildings
	Ineligible	Buildings are dedicated to extraction, storage, manufacturing and transport of fossil fuels but do not include buildings providing office space to fossil fuel companies for administrative or trading activities.



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Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Activities	Activity classification	Main technical screening criteria
Installation, maintenance, repair of equipment	Green	Complies with one of the following criteria: <ul style="list-style-type: none"> ■ Installation of renewable energy equipment, renewable energy charging stations and regulation devices ■ Installation of equipment within the two highest energy efficiency classes for equipment, as determined by the relevant international labeling scheme or Singapore regulation
	Amber	No amber category: Technology is sufficiently developed to meet green criteria
	Ineligible	Buildings are dedicated to extraction, storage, manufacturing and transport of fossil fuels but do not include buildings providing office space to fossil fuel companies for administrative or trading activities.
Renovation of existing buildings	Green	Complies with one of the following criteria: <ul style="list-style-type: none"> ■ The renovations enable to reach the prevailing Green Mark: 2021 certification ■ The renovations align with relevant CBI buildings criteria
	Amber	Minimum 30% reduction in emissions or energy consumption if not meeting the certification standard above (based on energy usage, primary energy demand (PED) or GHG emissions) up to the 2030 sunset date



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Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Activities	Activity classification	Main technical screening criteria
	Ineligible	Buildings are dedicated to extraction, storage, manufacturing and transport of fossil fuels but do not include buildings providing office space to fossil fuel companies for administrative or trading activities.
Acquisition or ownership of buildings	Green	Complies with one of the following criteria: <ul style="list-style-type: none"> ■ Prevailing Green Mark: 2021 certification ■ The building is within the top 15% of the national (using the Annual Building Energy Benchmarking Report (BEBR)) or regional building stock expressed as operational PED or GHG emissions or energy consumption and demonstrated by evidence that at least compares the performance of the relevant asset to the performance of the national or regional stock and at least distinguishes between residential and nonresidential buildings.
	Amber	The building is within the top 25% of the national BEBR or regional building stock expressed as operational PED or GHG emissions or energy consumption and demonstrated by evidence. The sunset date for this activity is 2030.
	Ineligible	Buildings are dedicated to extraction, storage, manufacturing and transport of fossil fuels but do not include buildings providing office space to fossil fuel companies for administrative or trading activities.

Public "green" financing initiatives

[Please refer to BE Transformation GFA Scheme and GMIS-EB 2.0 above.]



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

The MND, together with the URA, is responsible for identifying infrastructure for upgrading and optimizing land use, but may also appoint a district-wide master developer to oversee the development of areas such as related industry clusters and new growth areas. In addition to imposing planning controls on individual land parcels, the master developer is given the discretion to develop the district based on land use and GPR guidelines at the overall district level to achieve: One of these master developers is JTC.

- Optimized land use across the entire development
- Integration of different users' needs
- Planned district-wide systems such as district cooling to reduce energy usage and enhance the sustainability and attractiveness of the environment^[87]

For land sold after 30 June 2022 under the GLS and Industrial Land Sales programmes for private development, the [Building Control \(Buildability and Productivity\) Regulations 2011](#) and the 2008 Regulations were amended in 2022 to impose several new requirements, including the requirement to attain the higher Green Mark certification rating of Platinum SLE to ensure the minimum energy efficiency improvement of 60% over the 2005 baseline. Previously, the 2008 Regulations stipulated the Gold^{Plus} or Platinum rating. Additionally, the environmental performance of buildings developed on GLS sites will be assessed on the Green Mark: 2021 certification standard and will be required to attain the maintainability badge to meet the Platinum SLE rating.^[88]

The [District Cooling Act 2001](#) allows minister for trade and industry to declare,^[89] by notification in the Government Gazette, an area to be a service area where district cooling systems (DCS) are to be provided and consumers have to subscribe to the service.

^[87] Budget 2017; [speech by MND](#); 7 March 2017.

^[88] See the BCA circular: [Enhanced Minimum Requirements for Building Works Relating to any Building on Land Sold on or after 30 June 2022 under the Government Land Sales Programme](#); 30 June 2022.

^[89] Section 7(1) of the District Cooling Act 2001.



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Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Unlike the in-house air-conditioning system in each individual building, which is maintained and operated, in part or fully, by a third party, the DCS supplies chilled water from a central source to multiple buildings through a network of pipes for cooling purposes. Individual users purchase chilled water from the DCS operator and do not need to install their own chiller plant other than an air distribution system.^[90]

Drawing from the successful implementation in Yokohama and Osaka, Japan, which found that a DCS should serve a total GFA of about 1.25 million m² for optimal efficiency,^[91] the URA has parceled out a section of the New Downtown at Marina South for a pilot DCS^[92] (expanded in 2023 with satellite plants^[93]) and another in the upcoming Tengah development.^[94] The District Cooling Act 2001 and provision of DCS is administered by the Energy Market Authority of Singapore. SP Group, Singapore's national grid operator, which owns and operates electricity and gas transmission and distribution businesses including DCS, has also built and operated an industrial DCS at AMK Industrial Park.^[95]

^[90] See the BCA [Green Mark: 2021 EE Technical Guide](#).

^[91] [Second reading of the District Cooling Bill](#); 16 March 2001.

^[92] [District Cooling \(Declaration of Service Area\) Notification](#).

^[93] SP Group news release: [SP Group Expands Marina Bay District Cooling Network With More Developments And New Satellite Plants](#); 26 May 2023.

^[94] Minister for trade and industry: [Second of the Energy \(Resilience Measures and Miscellaneous Amendments\) Bill](#); 2 November 2021.

^[95] See SP Group: [STMicroelectronics AMK Industrial Park, Singapore](#).



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

The BCA has created a Green Lease toolkit,^[96] the second version updated and aligned with Green Mark: 2021, with a single schedule of Green Clauses (Green Schedule) applicable for all nonresidential building typologies to help landlords and tenants to work together to improve their environmental performance over the life of the building that they manage or occupy. The Green Schedule provides a list of standard clauses that contain specific provisions for sustainable design and management as well as health and well-being.

Although adoption of Green Clauses is optional, a 2022 survey across Asia Pacific^[97] noted that up to 42% of occupiers and large developers have signed leases incorporating certain Green Clauses. The Green Schedule should be read in conjunction with the relevant BCA Green Mark criteria. Where the building features a Green Lease for its tenant-occupants that meets the BCA's prescriptions for Green Leases under the scheme, Green Mark points will be awarded accordingly; for example, where Green Lease implementation for tenants to ensure the targeted energy saving is achieved or to control lighting power density for tenanted areas.^[98] The base building itself must first achieve the following:

- A Green Mark Gold^{PLUS} or Platinum rating
- The Public Utilities Board's Water Efficient Building (Basic) Certification^[99]

^[96] See the BCA: [Green Lease Toolkit: Green Schedule; part of Green Mark: 2021](#).

^[97] JLL [Green Leases: Setting the Tone for Responsible Leases](#); 30 September 2022.

^[98] [BCA Awards 2020: Green Mark Award](#).

^[99] See the BCA: [Green Lease Toolkit: Green Schedule; part of Green Mark: 2021](#).



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Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

The Green Mark: 2021 score sheets also provide a maximum of available points under the whole life carbon section for fit-outs:

CN3.1: Green Lease	Available points for the following: <ul style="list-style-type: none"> ■ New nonresidential building ■ Existing nonresidential building
A comprehensive Green Lease (or equivalent) to be incorporated into the tenancy agreement, which establishes agreed levels of environmental performance between the landlord and tenant for the following: <ul style="list-style-type: none"> (a) More than or equal to 50% of the net lettable area (b) More than or equal to 70% of the net lettable area (c) Every tenant 	One point for (a) Two points for (b) Three points for (c)

Building owners^[100] in a Green Lease partnership programme with their commercial tenants may also apply for the Green Mark Pearl rating,^[101] which recognizes building owners/landlords and tenants/occupants working to achieve greater environmental sustainability for the same building.

^[100] City Developments Limited: [Manufactured Capital: Green Leases](#).

^[101] The BCA [Green Mark Pearl Award](#).



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Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

The BCA describes this environmentally friendly leasing arrangement or "Green Lease" as an agreement between landlord and tenant that sets out environmental objectives on how the building is to be improved, managed and/or occupied in a sustainable manner. Any cost savings in energy and water can be shared among parties and provide a better indoor environment.

The Green Lease acknowledges that there are areas of cooperation between building owners and tenants (and any relevant service providers and contractors) and addressing traditional structural barriers to implementation, such as split incentives and interests between building owners and tenants, ensures that the parties with influence over key aspects of environmental performance obtain some benefit from implementing the improvements. For example, installing energy-efficient lighting that generates less heat has the following benefits:

- The landlord benefits from reduced overall air-conditioning energy consumption.
- The tenant benefits from the reduced energy bill for lighting usage.

The Green Lease improves transparency and accountability through providing an agreement between both landlord and tenant ensuring that the parties identify and address problems promptly and efficiently together.

The Green Schedule provides a list of standard clauses that contain specific provisions for sustainable design and management as well as health and well-being. This includes monitoring and improving energy efficiency, water efficiency, sustainable material, waste management, indoor environmental quality, and comfort and well-being of the users and occupants. Through a target/outcome-based approach, the Green Schedule applies to building landlords and tenants. These standard provisions are fully editable to suit an individual building typology's or individual tenant's context.



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

This schedule can form part of a memorandum of understanding, or part of the tenancy agreement between the building landlord and individual tenants, to ensure that the tenant's actions and operations do not negatively affect the overall building's sustainability performance and aspirations. The building landlords should put in place mechanisms/processes for the management, validation and remedial actions/penalties for noncompliance, laid out in a transparent manner and agreed by the tenant. A building management committee comprising representatives of the landlord and tenant(s) must be formed (and should meet at least twice annually) and will be responsible for developing and implementing the environmental objectives under the Green Lease, and monitoring the building's performance and reporting periodically on the outcomes.

Drafting considerations for a Green Lease

When preparing a Green Lease, building owners should consider which categories of provisions in the Green Schedule should be made mandatory and which may be designated as best practices to be performed by the tenants on a best-endeavors basis.

Building owners should also take into account the length of tenancy before specifying certain obligations as mandatory, the noncompliance of which will constitute a breach of lease. While short-term tenants may be deterred by the additional costs in mandating compliance with sustainability obligations, these terms may instead be drafted guidelines or non-binding undertakings and be made more palatable by the provision of incentives for compliance.

Information sharing and submission/disclosure

To support the Green Schedule obligations to meet annual targets for carbon emissions, energy, water and waste reduction and to demonstrate these with tangible results, building owners require tenants to share information on energy and water use and the quantum of waste and emissions generated.

Green Lease provisions should cover the scope of data to collect, the frequency of submission and the installation of meters to track this information.



Singapore



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Where the building owner is required to submit data for a certification assessment or to report on and disclose energy use and emissions, the building owner should provide for tenant consent to avoid issues of confidentiality, and clearly state the extent of information required, the purpose for sharing the information and the third parties the information will be disclosed to.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Taiwan's green building certification was developed based on the country's subtropical climate with high temperatures and humidity. This certification aims to sufficiently meet the need for ecology, energy saving, waste reduction and health, abbreviated as "EEWH," from which the certification system was named. The EEWH green building certification system was established in September 1999, making it the second certification system in the world, right after Leadership in Energy and Environmental Design (LEED) in the US.

The green building certification consists of the following two parts:

- The "Green Building Label" for completed buildings (including new and refurbished ones)
- The "Green Building Candidate Certificate" for building projects according to their planning and design documentation

The candidate certificate is aimed at providing an opportunity to see in advance the possible inadequacies in the design so that high-cost improvements after completion may be effectively avoided.

The minimum requirement for the green building certification is to pass four indicators, which include two prerequisites (i.e., daily energy conservation and water conservation) and two more optional indicators from among the other seven. In an average life span of 40 years, a green building is estimated to do the following:

- Save 20% in electricity and 30% in water
- Reduce resource consumption
- Provide a better living environment with health and amenity

The label is valid for three years and renewable. As of January 2024, a total of 12,585 buildings or projects had already been certified as green buildings or candidates for green buildings.



Taiwan



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The original system comprised seven evaluation indicators, which are as follows:

- Greenery (vegetation planting)
- Water infiltration and retention
- Daily energy conservation
- Water conservation
- CO2 emission reduction
- Construction waste reduction
- Sewage and waste disposal facility improvement

In 2003, two additional indicators — biodiversity and indoor environment quality — were introduced in the system.

Category	Contents	
	Indicator	Evaluation items
Ecology	1. Biodiversity	Ecological network, biological habitat, plant diversity, soil ecosystem
	2. Greenery	CO2 absorption (kg-CO2/(m2.40yr))
	3. Water content of the site	Water infiltration and retention, storm water runoff management



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Category	Contents	
	Indicator	Evaluation items
Energy saving	4. Daily energy conservation (prerequisite)	Building envelope design ENVLOAD (20% higher than building regulation) and other techniques (including the HVAC system, lighting, management system)
Waste reduction	5. CO2 emission reduction	CO2 emission of building materials (kg-CO2/m2)
	6. Construction waste reduction	Waste of soil, construction, destruction, utilization of recycled materials
Health	7. Indoor environment	Acoustics, illumination and ventilation, interior finishing building materials
	8. Water conservation (prerequisite)	Water usage (L/person), hygienic instrument with water saving, grey water reuse
	9. Sewage and waste disposal facility improvement	Sewer plumbing, sanitary conditions for garbage gathering, compost



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In addition to the indicators, a scoring and rating system defining five classes of green building design was launched in 2007. These classes are as follows:

- Qualified (30% of the accepted cases)
- Bronze (30%)
- Silver (20%)
- Gold (15%)
- Diamond (top 5%)

Meanwhile, for the green building materials recognized in the "Design Technical Regulations for Green Building Materials," a Green Building Material Label conferred by the Ministry of the Interior and a Green Mark verified by the Environmental Protection Agency as environmentally preferable products will be granted. Examples of environmentally preferable products are recycled plastics and rubbers, heat insulation materials for buildings, water-based paints, recyclable bricks, and recycled building materials.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The energy performance certification for buildings in Taiwan is a part of the EEWH evaluation system, as mentioned under "Green certification." The indicators include requirements and recommendations for energy performance improvements to be implemented whenever a building is constructed.

At the beginning, the EEWH certification, as a voluntary mechanism, resulted in relatively limited applications for green building certification. To enhance its overall effectiveness, the Executive Yuan, the administrative department of the Taiwan government, ratified the "Green Building Promotion Program" in 2001. This initiated a mandatory EEWH evaluation for all the new publicly owned buildings with a price of more than TWD 50 million (approximately USD 1,587,300). This includes schools, theaters, gyms, transportation stations, markets, department stores, museums, libraries, medical facilities and government offices, among others.

The relevant requirements, including those for energy performance, will be included first in the tender documents and then evaluated at the completion, and sometimes also during the construction work. The contractor's obtaining of the completion certificate will be conditional on its fulfilment of the goals. Through the public sector's initiative of employing green building practices, the green building industry and its market were gradually formed.

To promote green buildings in the private sector, the Construction and Planning Agency of the Ministry of Interiors (CPAMI) under the Executive Yuan was tasked with institutionalizing and establishing relevant regulations. The CPAMI devised the "Green Building Basic Chapter" in the Building Technical Regulation, a general guideline for construction works. The chapter includes vegetation and planting, water infiltration and retention, energy saving, rainwater and grey water reuse, as well as green building materials. Nevertheless, it remains voluntary in the private sector, and green buildings are mostly seen only in large factories or leading buildings, such as Taipei 101, previously the highest building in the world from 2004 to 2010.

The use of green materials, however, is widely accepted and implemented in the field of interior and outdoor decoration. Pursuant to the Rules of Construction Technology, it is mandatory to use at least 45% green materials in each interior decoration work, and at least 10% in the case of outdoor decoration work, in both the public and private sectors.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Meanwhile, the Architecture and Building Research Institute of the Ministry of the Interior assembled all the relevant regulations and practices, and made the Green Building Evaluation Manuals as minimum requirements and recommendations for the five main types of green buildings or communities, which are as follows:

- EEWH-BC: Basic version
- EEWH-RS: Residential buildings
- EEWH-GF: Factory
- EEWH-RN: Renovated buildings
- EEWH-EC: Eco-community

Different types of green buildings focus on their respective purposes and may not only apply the indicators developed in the EEWH system. For example, EEWH-GF also involves the energy-saving requirements for facilities and commitments from factory managements, while EEWH-RN emphasizes indicators of carbon reduction and evaluation of energy costs. For EEWH-EC, the evaluation is more on the integration design and community establishment rather than a single building.

Except for construction work, a landlord may request that a tenant in a green lease agreement implement energy-saving materials, facilities or appliances for interior decorations with green building material labels, green marks, and water-saving or power-saving labels, which were respectively granted to the green products by the construction, environmental or energy authorities.



Taiwan



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Except for the mandatory EEWL evaluation for public buildings, which has been in effect since 2001, the Taiwan government expanded the existing "Green Building Promotion Program" with a budget of TWD 3,236 million (approximately USD 102.7 million) to promote green building and relevant labelling systems from 2010 to 2015. In 2008, the government also launched the "Promotion Program for Ecological City," with a budget of TWD 2 billion (approximately USD 63.5 million) to be invested in the green urban plan.

Under the massive multidepartment programs mentioned above and the mandatory EEWL evaluation in the public sector, the government also provides subsidies to certain types of buildings in the private sector to perform renovations in accordance with the EEWL evaluation. These types of buildings include private schools, social welfare facilities, and residential buildings with a building management committee. A maximum of 45% of the renovation cost for green materials/products or a cap of TWD 3 million (approximately USD 952,000) will be granted subject to the specific application.

The government also provides special accreditations to "green factories" and "green convenience stores" as a voluntary mechanism in the private sector. The accreditation for "green factories" mainly focuses on factories in the digital or manufacturing industries, while the accreditation for "green convenience stores" particularly considers the high density of convenience stores in Taiwan.



Taiwan



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

In April 2010, the Ministry of Economic Affairs (MOEA) launched the "National Plan for Energy Saving and Carbon Reduction," which provided for the following collective goals for CO2 and energy reduction:

- Goals for energy saving: to raise energy efficiency by 2% per year from 2008 to 2015 so that, in 2015, the energy density will have been reduced by 20% compared to 2005 levels, and then 50% by 2025, subject to the technology development
- Goals for carbon reduction: to reduce CO2 emissions to 2005 levels by 2020, and to 2000 levels by 2025

Although there are national targets for CO2 and energy reduction on a national scale, there is no specific goal or quantified target set up for buildings. Every year, the MOEA circulates a "National White Paper for Energy Policy" as a comprehensive summary of the relevant plans, including green buildings.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In the "National Plan for Energy Saving and Carbon Reduction" mentioned under "CO₂ and energy targets," the goal for energy consumption from "low-carbon sources" is to increase the percentage from 40% to 55% in 2025.

Further In March 2022, the Taiwan government published "Taiwan's Pathway to Net-Zero Emissions in 2050," which provides the action pathway to achieve the policy goal of 2050 net-zero emissions. It is based on the four major transition strategies, "energy transition," "industrial transition," "lifestyle transition" and "social transition," as well as the two governance foundations of "technology R&D" and "climate legislation," and is supplemented by "12 key strategies." It aims to develop action plans for key areas of expected growth with regard to energy, industrial and life transition to implement net-zero transition goals. The policy goals are ambitious, including the following:

- By 2050, 100% of new buildings and more than 85% of existing buildings will be nearly zero-carbon buildings.
- By 2050, 60%-70% of total power generation should come from renewable energy.

The main investments, including industrial developments, are focused on wind and solar power generation facilities. The plan is to encourage commercial sectors to set up offshore wind turbines with a capacity of 3,000 megawatts before 2030, so that the sum capacity will reach 4,200 megawatts together with the onshore generators. As of the end of 2023, wind turbines with a total capacity of around 2,250 megawatts had been installed. As for solar energy, the plan is mainly to promote solar panels on the roofs of private buildings and factories so that solar energy may reach 20,000 megawatts in 2025. By the end of 2023, it had reached an installed capacity of around 12,220 megawatts.

Aside from wind and solar energy, other goals for renewable sources include hydroelectric power generation of 2,200 megawatts with a capacity of 3,350 megawatts, biomass power generation of 950 megawatts, and geothermal power generation of 200 megawatts in 2030.

Although there are national targets for renewable sources, there is no specific goal or quantified target set up for buildings.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Except for the mandatory EEWB evaluation for public buildings, which has been in effect since 2001, and the subsidies for renovating private buildings (see paragraphs above), the main incentive for green buildings is provided in the form of the "construction capacity reward" by the local construction authority when issuing the construction permit. Subject to the outcome of the EEWB evaluation, any ranking beyond silver will grant the construction company extra floor space of no more than 10% of the total floor area for further development.

However, debates have been raised regarding the capacity reward as an incentive plan. This is because to develop more floor area implies more input of construction works and materials, which, in turn, may become more unfriendly to the environment and thus would defeat the purpose of having more energy saved from the green building.

As regards the other incentives, such as tax and/or tax reliefs, the energy authority is consulting with the Ministry of Finance, the competent authority of tax and financial institutions, regarding the possibility of energy tax, which will also integrate the existing fuel tax for cars and motorcycles. The researchers also suggest reducing the yearly house tax as an incentive for renovations made in accordance with green building regulations. These discussions are still ongoing, and there are already some implementations:

- Taichung City agreed to a deduction of 5% Building House for certified green buildings.
- Part of the R&D costs that private companies spend on carbon reduction technology or related facilities may be used for deduction of the business income tax under certain criteria.
- Deductions of custom taxes may be applicable for the construction or operation of renewable energy-related facilities that were not supplied in Taiwan.
- The excise tax of certain renewable energy-related facilities may be exempted.



Taiwan



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Except for subsidies for private building renovation and the initial investment in renewable energy facilities, no financing initiative has been made yet for green buildings or sustainable projects.

Nonetheless, from a government policy or corporate social responsibility perspective, it is possible that financing institutions may agree with incentives or special conditions, such as a longer payback period for a developer with higher bargaining power in a massive real estate project with public attention. Nevertheless, we do not see this becoming a trend in the market.



Taiwan



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

As mentioned under "Incentives for green retrofit," the Taiwan government has been running the "Green Building Promotion Program" since 2001, and further expanded its budget scale from 2010 to 2015, while the "Promotion Program for Ecological City" was launched from 2008 to 2011. The national programs required local authorities to amend regulations in relation to the green building evaluation, the capacity reward incentive and the relevant urban development plans to ensure that sustainability is a material consideration in assessing applications for the development of land.

Considering the frequent natural disasters happening in the region, such as earthquakes and typhoons, certain architects in Taiwan have developed extensive experience in biological engineering methods and green community renovation in large projects of interim or renovation housing, either in Taiwan, China or Japan. The project may be assigned or subsidized by the local government or private sector organizations, such as the Red Cross.



Taiwan



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases are not commonly used in Taiwan, and the relevant provisions have not yet been implemented in the sample agreement. However, we have seen some representative cases for buildings, like Taipei 101, which obtained the LEED Platinum certification in July 2011. Since then, Taipei 101 has modified the lease agreement and tenant manual to comply with the green building requirements. In November 2011, KPMG Taiwan first entered into this agreement with Taipei 101. Among the provisions included in the agreement were the selection of green materials for interior decoration, recycle and waste disposal policies, and water and energy reduction.



Thailand



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

With the world shifting toward sustainability, developers and building owners in Thailand have placed importance on the concept of green buildings and have increasingly adopted green building standards, resulting in many internationally renowned certifications becoming more common in Thailand. For example, the Leadership in Energy and Environmental Design, WELL, and Deutsche Gesellschaft für Nachhaltiges Bauen certification marks can be seen in commercial buildings, residential buildings, and government buildings. While these standards are not mandatory and are adopted voluntarily, every sector recognizes these certifications and is eager to get certified.

Thai's Rating of Energy and Environmental Sustainability

Since 2012, Thailand has had its own green building certification called Thai's Rating of Energy and Environmental Sustainability (TREES). This standard was developed by the Thai Green Building Institute (TGBI), an entity established by two professional associations of Thailand: the Engineering Institute of Thailand under Royal Patronage and the Association of Siamese Architects under Royal Patronage. The TGBI aims for TREES to be the standard that is most suitable for Thailand by designing the certification assessment based on Thai context. For example, while the standards developed based on other countries' contexts may only allow for a few parking spaces, TREES allows for more spaces as the majority of people in Thailand rely on private cars as their main mode of transportation since public transportation is not yet fully developed here.

The TREES standard

The TREES standard may be granted to two types of buildings: (i) TREES-NC/CS (new construction and major renovation/core and shell building), and (ii) TREES-EB (existing building: operation and maintenance).



Thailand



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

To achieve TREES certification, a project will have to meet all the prerequisites first, and then the TGBI will award points by considering the factors below. The prerequisites are subfactors of some of the following factors:

- Building management
- Site and landscape
- Water conservation
- Energy and atmosphere
- Materials and resources
- Indoor environmental quality
- Environmental protection
- Green innovation

The points that a project earns correspond to the level of TREES certification it will get. These levels are Certified, Silver, Gold, and Platinum.



Thailand



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Currently, Thailand has no mandatory form of energy performance certification. However, Thailand has a ministerial regulation regarding the energy-saving standard and determination of the buildings that must comply with the standard, B.E. 2563 (2020), issued under the Energy Conservation Act, B.E. 2535 (1992). It requires certain types of large-scale buildings to comply with the energy-saving standard.

Ministerial regulation regarding the energy-saving standard and determination of the buildings that must comply with the standard, B.E. 2563 (2020)

The ministerial regulation requires that the construction of certain buildings with a total area of 2,000 square meters or more, and the modification of those buildings that results in a renovated area of 2,000 square meters or more, be done in accordance with the energy-saving standard set out in the regulation. The regulation covers the following buildings:

- Theaters under the building control laws
- Hotels under the hotel laws
- Entertainment places under entertainment place laws
- Medical facilities under medical facility laws
- Educational establishments under national education laws
- Offices
- Malls or department stores
- Condominiums under condominium laws
- Assembly buildings



Thailand



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The energy-saving standard for buildings set out in the ministerial regulation concerns the facade system, lighting control system, air-conditioning system, and water heater system.



Thailand



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Currently, there are no government-funded or sponsored schemes for improving the energy efficiency of existing buildings in Thailand. However, more private sector entities are encouraging the government to do so. Considering that this idea aligns with the nation's target of reaching carbon neutrality in 2050 and net zero in 2065, it is certain that there will be initiatives regarding this in the near future.



Thailand



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Thailand has no national targets for carbon reduction from buildings specifically. However, from a policy perspective, the government emphasizes the importance of carbon reduction in every sector, including real estate, as part of its attempt to address climate change.



Thailand



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Currently, there are no regulations requiring consumption of renewable sources in Thailand.



Thailand



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The current Bangkok town planning regulation sets restrictions on the floor area ratio (FAR) for different zones. For example, the commercial center zone has a 10:1 FAR. However, the law allows buildings with a green standard certification to have 5% to 20% more FAR depending on the certification level the buildings get. This encourages real estate developers to adopt the green building standard so that they can use the land more.



Thailand



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Green finance has recently been introduced in Thailand. More and more stakeholders have started looking into it with no doubt that it will play a significant role in the future as part of the nation's sustainability efforts.

From the financial market side, the Bank of Thailand regards green finance as a key tool for addressing environmental problems and promotes it as part of sustainable finance. Some commercial banks have launched green finance products in the market — for example, green bonds for afforestation projects, green finance for renewable energy projects and other environmental projects, and lower interest rates for home loans if solar panels are installed.

From the capital market side, the Stock Exchange of Thailand (SET) encouraged all players to adopt green finance. Listed companies are required to disclose their ESG practices in Form 56-1 (One Report), and investors can access information about green investments through the SET's website. In addition, the SET also provides services and information to support listed companies in achieving their sustainable goals.



Thailand



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, it is legally possible for the regulator to mandate green initiatives through planning or zoning regimes. However, from a policy perspective, it is unlikely to do so as the Thai town planning law is intended to focus on land utilization, construction, and development. If there were to be any green initiatives, it is more likely that they will be mandated through a new set of regulations.



Thailand



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Thailand, green leases are adopted voluntarily. There are no specific legal requirements or government policies for green leases or green lease provisions. It is a relatively new concept for the Thai market, but the public has become more aware of this concept over the past few years. The first green lease in Bangkok was signed in October 2023 for the lease of One Bangkok, a mixed-use project developed by Frasers Property Limited.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In 2010, Vietnam Green Building Council (VGBC) introduced LOTUS (Leadership in Energy and Environmental Design – Local Operation Unit), the first green building rating system that considered Vietnam's building regulations, climate conditions and construction practices. The latest version is LOTUS for New Construction V3 (LOTUS NC V3), released in April 2019.

LOTUS is the only certification program that fully complies with Vietnamese building codes, while accepting international standards and best practices in its criteria-setting work. The goal is to establish baselines and benchmarks compatible with advanced systems such as Leadership in Energy and Environmental Design (LEED) and Green Mark.

LOTUS pays attention to projects that use nature-based solutions or green solutions to address the health needs of users, LOTUS standards believe that project ownership using scaled investment, good planning, community-oriented design, and development of many green areas are important, compatible with other technical aspects.

However, LOTUS has not been legislated. Vietnam laws on construction do not regulate, but encourage the construction, development, evaluation and certification of energy-efficient buildings, resource saving buildings, and green buildings. Government's Decree 15/2021/ND-CP, elaborating on certain regulations on the management of construction projects, defines "Green Building" as:

...a building that, in its design, construction or operation, meets the energy- and resource-efficient criteria and standards; ensures amenities and quality of life inside the building and protects environment outside the building.

Although there are no legal regulations or preferential policies, over the past 10 years, there have been nearly 150 projects evaluated and certified Green Buildings by LEED (USA), Green Mark (Singapore), LOTUS (VGBC) and Edge (IFC). These are projects with domestic and foreign capital, with the investor's awareness of the benefits they bring throughout the project's operation. Practice in Vietnam shows that the construction cost for green buildings may increase by about 1%-3%, and the benefits would last throughout the life of the project.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Prime Minister Decision 04/2017/QĐ-TTg effective as of 25 April 2017 provides the list of equipment and appliances to which the mandatory energy labeling and minimum energy efficiency standards should have been applied since 1 January 2020.

The following are the equipment and appliances to which the mandatory energy labeling and minimum energy efficiency standards are applied:

- The regulated household appliances include straight fluorescent tubes, compact fluorescent bulbs, magnetic and electronic ballasts for fluorescent lights, air conditioners, refrigerators, household washing machines, electric cookers, electric fans, video cameras, LED light bulbs, and electric kettles with a water reservoir (hereinafter referred to as electric kettles).
- The regulated office and commercial equipment and appliances include photocopiers, computer monitors, printers, commercial freezers and laptop computers.
- The regulated industrial equipment and appliances include distribution transformers and electric engines.
- The regulated means of transport include automobiles for the transport of up to nine persons, motorcycles and mopeds.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Prime Minister Decision 280/QD-TTg, approving a national program for economical and efficient use of energy for the period 2019-2030, effective as of 13 March 2019, reserved a state budget of VND 4,400 billion, in addition to other sources of funds, for the program. Decision 280 suggests the review and amendment of standards/technical and economic norms for the economical and efficient use of energy in buildings; development of green buildings and urban areas; establishment of an assessment and certification system for energy-efficient and -saving buildings; formulation of standards for and promotion of capacity of testing laboratories for evaluation; and energy labeling for building materials subject to insulation requirements. By 2030, this decision also aims to have (i) at least 80 buildings certified as green buildings that efficiently use energy; and (ii) at least 150 buildings certified as green buildings that efficiently use energy.

As mentioned above, the target of 150 buildings certified as green buildings has been reached.



Vietnam



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Government Decree 06/2022/ND-CP, effective as of 7 January 2022, on the mitigation of green house gas (GHG) emissions and the protection of ozone layer, provides commercial buildings with a total energy consumption of 1,000 TOE or more, subject to GHG inventory development, with the minimum greenhouse gas emission reduction target for the period up to 2030 of 74.3 million tons of CO2 equivalent.



Vietnam



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Prime Minister Decision 1009/QĐ-TTg, effective as of 31 August 2023, approving the scheme for implementing the Political Declaration on establishing Just Energy Transition Partnerships (JETP Declaration), suggests the efficient, effective energy use and energy transition to increase the proportion of renewable energy to 47% by 2030.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The Law on the Economical and Efficient Use of Energy suggests the following incentives for economical and efficient use of energy:

1. Projects promoting economical and efficient use of energy shall be considered for financial support from the Vietnam National Energy Efficiency Program.
2. Organizations and individuals that manufacture energy-saving products and invest in production lines or expand production with energy-saving technologies are entitled to the following incentives and support:
 - a) Incentives on import and export duties, and enterprise income tax under the tax law
 - b) Incentives under the land law
 - c) Concessional loans from the development bank, the fund for science and technology development support, the national fund for technological renovation and the environment facility, and support from the national programs on hi-tech development and economical and efficient use of energy.



Vietnam



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Prime Minister Decision 986/QĐ-TTg, effective as of 8 August 2018, on approving the development strategy of Vietnam's banking sector by 2025 and vision to 2030, suggests increasing the efficiency of allocating credit capital to meet the requirements of socio-economic development; accelerating the development of "green credit" and "green bank" to transform the economy into green growth and low-carbon growth, and making it adapt to climate change; increasing the proportion of the banks' credit investments in renewable energy, clean energy, low-carbon production and consumption; and integrating the content of sustainable development, climate change and green growth into the credit programs and/or projects. Decision 986 also assigns the Ministry of Planning and Investment to cooperate with the Ministry of Finance to allocate resources for this implementation.

According to a public report of the State Bank, the credit institutions conducting environmental and social risk assessments focus mainly on green agriculture. As for green construction, even the outstanding balance of the social and environmental risk assessment (not the outstanding credit balance) is still quite limited. One real estate developer revealed that his business has not had access to any credit package in developing green projects from compost high-end segment to social housing projects.



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Prime Minister Decision 1658/QĐ-TTg, effective as of 1 October 2021, approving national green growth strategy for the 2021-2030 period, with a vision by 2050, suggests the following green initiatives:

- Development and integration of new energy and renewable energy into the electrical grid
- Development of hydrogen fuel and offshore wind power
- Investment in green growth in regional, sectoral and socio-economic development strategies; master plans/plans towards the reduction of greenhouse gas emissions, pollutants and environmental degradation; application of circular economic models; facilitation of the development of green industries; gradual cutdown and change in investment activities that obstruct the greenhouse gas emission reduction efforts; and improvements in resilience to climate change and rising sea levels, attaching special importance to vulnerable regions.



Vietnam



Green leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take-up?

Green leases are not legislated under Vietnam laws. Green buildings are a marketing product by the developers/landlords in Vietnam market.

EMEA




















Click the relevant flag below for guidance on each location:



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Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Austria, there are various initiatives, guidelines and certification systems that promote sustainable construction. The following are particularly worth mentioning:

- **The Austrian certification system**, by the Austrian Society for Sustainable Real Estate Management (Österreichische Gesellschaft für Nachhaltige Immobilienwirtschaft — ÖGNI). The assessment method corresponds to that of the German Sustainable Building Council (Deutsche Gesellschaft für Nachhaltiges Bauen — DGNB) and its Seal of Quality for Sustainable Building. It considers all essential aspects of sustainable construction, covering the subject areas of ecology, economy, socio-cultural and functional aspects, technology, processes, and location across the entire building life cycle.
- **Klimaaktiv**, an initiative of the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie — BMK). This program specifically aims to promote the use of energy-efficient technologies and practices, and thus reduce CO2 emissions in the construction sector. In the area of construction and renovation (one of the core topics of the initiative), a certification-system was developed, which covers the criteria of energy efficiency, ecological quality, comfort and quality of workmanship and offers an indication of high-quality new buildings and renovations.
- **The ÖGNB-certification** (Gütesiegel der Österreichischen Gesellschaft für Nachhaltiges Bauen — ÖGNB). In the overall assessment, ÖGNB certification represents a comprehensive building assessment system in terms of both content and technology. The relevant criteria include resource conservation, reduction of the burden on people and the environment, comfort for users, longevity, security, planning quality, furnishing quality, infrastructure and equipment, and cost.

Certification for new buildings and refurbished buildings is not mandatory in Austria.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In Austria, there is a mandatory form of energy performance certification for buildings, known as the "**Energieausweis**." This certification was introduced with the Energieausweis-Vorlage-Gesetz 2012 (EAVG 2012), which implements the Energy Performance of Buildings Directive. It is required whenever a building is constructed, sold, rented out, or undergoes major renovations. It provides information about the energy efficiency of the building to potential buyers or tenants. The "Energieausweis" includes details about the building's energy consumption, such as heating and cooling systems, insulation and overall energy efficiency rating. It helps individuals make informed decisions regarding energy usage and costs associated with a particular building.

Regarding prescribed minimum standards, Austria's federal states have building codes/regulations in place to ensure that buildings meet certain energy efficiency criteria. Certain standards have been outlined by the Austrian Institute for Structural Engineering (Österreichisches Institut für Bautechnik — OIB) — a coordination platform of the Austrian federal states — in the OIB guidelines ("**OIB-Richtlinien**"), which are periodically updated to reflect advancements in technology and changes in energy efficiency requirements. The federal states can declare the OIB-Richtlinien to be binding in their building regulations, which is already the case in a few.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

With a commitment to reducing energy consumption and carbon emissions, the Austrian government has implemented various initiatives and schemes to encourage homeowners to improve the energy efficiency of existing buildings. The most significant initiatives include the following:

- **"Sanierungsbonus"** — the Sanierungsbonus is a flagship initiative aimed at incentivizing energy-efficient renovations of existing buildings. Under this scheme, homeowners and landlords can receive financial support for a wide range of renovation measures, including insulation, window replacements, heating-system upgrades, and the installation of renewable energy technologies. The bonus provides a subsidy of up to 50% of eligible renovation costs, with higher rates available for low-income households. To qualify for the Sanierungsbonus, applicants must meet certain energy efficiency criteria and comply with relevant building regulations.
- **"Raus aus Öl und Gas"** — this initiative focuses on phasing out the use of oil and gas for heating in residential buildings and transitioning to more sustainable alternatives. Homeowners who replace their oil or gas heating systems with energy-efficient alternatives, such as heat pumps, biomass boilers or district heating, can benefit from financial incentives and subsidies provided by the government. The Raus aus Öl und Gas program aims to reduce dependency on fossil fuels, improve air quality and promote the adoption of renewable energy sources for heating.
- **"Mustersanierung"** — as part of this program, comprehensive renovation projects of public or commercially used buildings are funded. The subsidies originate from a public fund called the Klima-und Energiefonds. It includes measures to improve thermal insulation, and measures to use renewable energy sources and increase energy efficiency.

Additionally, there are also a variety of sponsored schemes for improving the energy efficiency of existing buildings available at the state level.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

To comply with international agreements, the EU's target to stop releasing greenhouse gas emissions by 2050 and the "Fit for 55" package, which is designed to reduce the European Union's greenhouse gas emissions by 55% by 2030, Austria's federal government has adopted multiple measures in recent years:

- Three Climate Strategies (2002, 2007 and 2018)
- Climate Protection Act (Klimaschutzgesetz — KSG 2011)
- Two Programs of Measures (2013/14 and 2015-2018)
- Two amendments to the Climate Protection Act (2015 and 2018).

In the government agreement for the years 2020 to 2024, the federal government has committed to achieving climate neutrality by 2040. This goal means that Austria-wide emissions of greenhouse gases (GHG) and their reduction through carbon sinks according to the national GHG inventory will be balanced out by 2040 at the latest. To achieve this, far-reaching measures must be taken in every sector to reduce GHG emissions to zero. Residual emissions that cannot be reduced by 2040 will be compensated for within the physically foreseeable limits by storing carbon.

Regarding the reduction of CO2 emissions from buildings, Austria plans to significantly increase energy efficiency in the building sector, particularly in renovation, and to make optimization potential for energy efficiency visible. As the current annual renovation rate of around 0.8% is too low to achieve Austria's climate targets and corresponds to the level of 10 years ago, it is to be increased at least 2.5 times by 2030. This initiative runs under the name "#Mission 2030."



Austria



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

One of Austria's federal government's key energy and climate policy goals is to convert the country's electricity supply to 100% renewable energy sources by 2030 and to make Austria climate-neutral by 2040. The necessary legal and organizational framework conditions were created with the Renewable Energies Expansion Act (Erneuerbaren-Ausbau-Gesetz — EAG), which entered into force in 2022 and replaced the previous Green Electricity Act (Ökostromgesetz — ÖSG).

To achieve the target value for 2030, annual electricity generation from renewable sources must be increased by 27 terawatt-hours by 2030, based on production in 2020. Of this, 11 terawatt-hours are to come from photovoltaics, 10 terawatt-hours from wind, 5 terawatt-hours from hydropower and 1 terawatt-hour from biomass. The contribution from photovoltaics in particular is to be achieved through the target of equipping 1 million roofs with photovoltaics.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Energy taxation in Austria is to be paid for electricity, natural gas coal and aviation. There is a tax exemption for self-generated and self-consumed electrical energy from renewable energy sources from electricity producers, including communal generation plants and renewable energy communities ("Erneuerbare-Energie-Gemeinschaften").

Most notably, since 2022, certain measures to improve the energy efficiency of buildings have been tax-privileged ("Öko-Sonderausgabenpauschale"). The following expenses are considered for tax purposes as special expenses, provided that federal funding under the Environmental Promotion Act (Umweltförderungsgesetz) has been paid out for them:

- The thermal-energetic refurbishment of buildings (e.g., insulation of exterior walls and roofs, or replacement of windows and exterior doors) with the aim of improving the energy and thermal efficiency of the building
- The replacement of a fossil heating system with a climate-friendly heating system, a so-called "boiler replacement," e.g., replacing oil, gas or coal with a new climate-friendly heating system such as a heat pump, district heating or pellets

Since October 2022, a CO₂ price (CO₂ tax) of EUR 30 per ton of CO₂ has been levied in Austria. It must be paid by companies that produce or import fuels in Austria. This will increase the cost of fuel prices and heating oil. The CO₂ taxes are offset by a climate bonus of up to EUR 220 per person per year.

The Federal Act on Renewable Heat Supply in New Buildings (Erneuerbare-Wärme-Gesetz — EWG), which entered into force on 29 February 2024, is intended to generally prohibit the installation of heat-supply systems based on fossil fuels for space heating and/or hot water preparation in new buildings (with corresponding transitional provisions for projects under construction). Regarding the replacement of fossil-fuel heating systems with climate-friendly alternatives in existing buildings, various funding programs have been introduced (see topic "Incentives for green retrofit").



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

In Austria, there are several public and private green financing initiatives available for sustainable real estate projects. These include, for instance, the following:

Green Finance Initiative (GFI): The GFI is a public-private partnership that promotes sustainable finance in Austria. It aims to increase awareness and knowledge about green finance among financial institutions, businesses, and investors. The GFI provides resources, training and networking opportunities to support the integration of environmental criteria into financing decisions, including those related to real estate projects.

Austrian green bond: Austrian companies, including real estate developers, may issue green bonds to finance sustainable projects. These bonds adhere to international green bond standards and are used to fund environmentally friendly initiatives, including energy-efficient building construction or renovation.

Sustainable real estate loans: Austrian banks, such as Bank Austria or Erste Bank – Sparkasse, as well as financial institutions, offer financing options tailored to sustainable real estate projects. These loans may come with preferential terms or interest rates for developments that meet specific environmental criteria, such as energy efficiency or green building certifications.



Austria



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, in Austria, the state governments have the authority to mandate green initiatives through planning and zoning regulations.

The federal states' building codes and the planning/zoning regimes based on them often include requirements for energy efficiency, renewable energy usage and sustainable building materials. These regulations may mandate specific standards for insulation, heating systems, lighting and overall building design to reduce environmental impact. For instance, Vienna's Building Code stipulates that, when determining and amending zoning plans and development plans, consideration must be given, among other things, to the preservation or creation of environmental conditions that ensure healthy living conditions. The climate and the use of energy resources must also be considered. When determining the zoning plan, the Vienna City Council (Gemeinderat) provides a summary statement about the environmental considerations taken.

To further promote climate protection goals, the federal states' building codes may permit certain exemptions from mandatory requirements in local development plans. Projects that would otherwise be illegal under a development plan might become permissible if they include additional "green" features, such as energy efficiency measures like generating energy using photovoltaic systems. In Vienna, deviations from the development plan are permitted, provided they serve climate protection or adaptation to climate change in a long-term manner.



Austria



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Austria, generally, there are no legal regulations that oblige landlords and tenants to include certain sustainability measures or provisions in their rental agreements, meaning green leases or green lease provisions are not mandatory but optional. While green leases played a rather subordinate role until a few years ago, their importance and prevalence has been increasing recently. This is particularly the case in large residential, office or commercial real estate projects, where clauses with a sustainability dimension are steadily being included in rental agreements.

However, there are some statutory provisions that include "green" considerations. As such, under the Austrian Tenancy Act (Mietrechtsgesetz — MRG), the main tenant must notify the landlord of any significant change or improvement they intend to make to the rented property. The latter may generally refuse, but not if the change serves to reduce energy consumption or if it concerns the installation or redesign of water pipes, lighting, gas pipes or heating (including the installation of central heating supply systems, § 9 of the MRG). Furthermore, under certain circumstances, landlords are entitled to raise the rent if they carry out measures for energy efficiency (§ 18 of the MRG).



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The government has introduced the Estidama Sustainable Building Rating System, which provides guidelines and standards for developers to achieve green building certification. This rating system evaluates various aspects of a building's design, construction, and operation, such as energy efficiency, water conservation, indoor environmental quality, and waste management.

Moreover, Bahrain has invested in research and development to further advance green building technologies and methods. The country has established partnerships with international institutions and experts to exchange knowledge and expertise in sustainable design and construction. This collaborative approach has not only benefited Bahrain but has also contributed to the global green building movement.

Bahrain actively encourages developers to pursue Leadership in Energy and Environmental Design (LEED) certification, resulting in several buildings achieving LEED status. LEED certification is an internationally recognized green building rating system.

Green Building Manual (Law 212, 2019)

A building manual was developed in 2019 to help create a more sustainable urban environment by extending the ability of Bahrain's infrastructure to meet the needs of future development. The manual serves as a guide for developers, owners, operators, designers or any parties involved in construction to work towards the improvement of building performance in Bahrain. This is done by reducing the consumption of energy, water and materials, coupled with reduced greenhouse house (GHG) emissions, improving public health, safety and general welfare, and by enhancing the planning, design, construction and operation of buildings.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There is no mandatory form of energy performance certification in Bahrain, but there are a number of initiatives that have been introduced by the government.

The government of Bahrain has taken a number of critical steps to shift the country towards more efficient consumption of energy. It has implemented electricity and transport subsidy reforms, and introduced important regulations, such as minimum energy performance standards for air conditioners and lighting products.

Around 60% and 55% of the residential sector's and commercial sector's annual electricity use, respectively, is related to air-conditioning. To improve the efficiency of AC units available for retail, the government enacted a Minimum Energy Performance Standard (MEPS) and energy efficiency labeling of small AC units (Ministerial Order No. 70/2015).

Regarding lighting, two regulations are in force that effectively ban the use of incandescent lamps in Bahrain: Cabinet Order. No. 6-14/2013 was enacted and implemented in 2014 on the minimum efficiency of household lamps; and a regulation for nondirectional household lamps was enacted (Ministerial Order No. 3/2015) to facilitate the phasing out of incandescent lamps.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Bahrain, through the Electricity and Water Authority (EWA), provides support for renewable energy projects. It also offers a financing program through banks to enable individuals and investors to start renewable energy projects.

The solar energy project at the Medical University of Bahrain has benefited from the support provided by the government for renewable energy projects, and the project produces 65% of the annual electrical energy needed by the university.

Tamkeen, a state-run entity that was set up to support the private sector, also provides a financing plan to enable institutions wishing to obtain financing for the purchase and installation of solar panels to generate energy.

Other relevant initiatives and projects in Bahrain include the following:

- Installing solar energy systems on the roofs of eight public schools
- Developing a national strategy to integrate electric vehicles into the mobility system in Bahrain
- Installing solar energy systems at the Bahrain International Circuit
- Relying on solar energy for lighting parks, coasts and stadiums
- Installing solar energy systems on the fourth bridge to be built to link Muharraq Island with Manama



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

A National Energy Efficiency Action Plan (NEEAP) was published in 2017, setting out various initiatives to improve national energy efficiency. The plan identifies 22 initiatives across all sectors to achieve a national target of 6%. The target is set as a reduction of energy consumption in the year 2025, expressed as a percentage of the average final energy consumption during the baseline period (2009 – 2013). The plan represents the implementation of Bahrain's regional and international commitments under the Paris Agreement, the United Nations Sustainable Development Goals and the League of Arab States' Guidelines on Energy Efficiency.

In relation to long-term targets, in late 2023, Bahrain unveiled its National Energy Strategy: a clear, credible and responsible pathway to reaching the climate targets that Bahrain pledged to achieve at COP26, namely a 30% reduction in emissions by 2035 on the road to net-zero emissions by 2060. The strategy is rooted in the twin objectives of decarbonizing Bahrain's economy while ensuring reliable and affordable access to the energy Bahrain needs to sustain and, indeed, accelerate its growth.



Bahrain



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Bahrain has started implementing its National Energy Transition Plan, which aims to increase renewable energy resources' share in Bahrain to 5% of its total electricity generation by 2025, and advancing further to 20% by 2035.

As per Ministerial Resolution No. 2 of 2017 regarding the connections of renewable energy resources to the distribution network, the EWA has sought to simplify the connection process and has set out procedures to facilitate the integration of renewable energy resources into the EWA's electricity network (through the latter issuance of Resolution No. (1) of 2019, amending Article No. (8), of Resolution No. (2) of 2017). So far, the EWA has been successful in connecting 38 megawatts of electric power into its electricity distribution network, and over 150 megawatts are expected to be connected by 2026.



Bahrain



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are currently no specific taxes on energy consumption.



Bahrain



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are various efforts and initiatives to promote green financing between the public and private sector for sustainable real estate efforts. These include the Central Bank of Bahrain's recent introduction of ESG reporting requirements and initiatives by the Bahrain Association of Banks, Bahrain Bourse and Tamkeen, among others. Additionally, a number of banks in Bahrain offer sustainable finance loans. For example, the Bank of Bahrain and Kuwait offers a special loan facility to business owners that aim to switch partially or entirely from conventional energy sources to renewable energy sources. This financing comes with special benefits, including faster approvals, competitive interest rates and flexible repayment terms.



Bahrain



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, zoning regulations can regulate green initiatives. These currently include a mandatory green building code that has been implemented and is required to be followed under Benayat, Bahrain's building permit portal. Current zoning regulations also consider various land classifications, which include garden and agricultural lands and "green-belt" zones, which are zones that are intended only for agricultural purposes and the protection of the surrounding environment. Planning requirements also include pedestrian spaces, efficient public transportation systems, conservation of natural resources, and the like.

There is currently no regulatory mandated use of district cooling or similar more sustainable utility solutions, but these are prevalent and growing in the market, and can be found in most new large developments. The green building code provides minimum requirements in relation to new district-cooling plans, but does not mandate the adoption of district cooling.



Bahrain



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Bahrain, green lease provisions are not mandatory. Despite there being no specific regulations requiring green leases, many developers and property owners are voluntarily adopting environmentally friendly practices.



Belgium



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There is no mandatory green building certification system in any of the three Belgian regions. However, there are several voluntary frameworks being developed and used, together with the competent authorities.

In the past, international certification standards were applied, with the Building Research Establishment Environmental Assessment Methodology (BREEAM) becoming the most preeminent system. Today, BREEAM has been further refined into TOTEM, the Tool to Optimize the Total Environmental impact of Materials.^[1] Like the E-level in energy ratings, the M-level emphasizes the environmental performance of buildings. It is a product of the three Belgian regions, in collaboration with architects, promoters, contractors and universities.

There is also the GRO tool, whose name is inspired by former Norwegian Prime Minister Gro Brundtland, which focuses more on the circular principles. GRO is a tool for measuring and increasing the sustainability of construction projects. The aim of GRO is to arrive at future-oriented, comfortable buildings through an integrated design process, with a strong commitment to circular construction. The initiative was taken by the Flemish Region, and cooperation with the two other regions is starting. The website is in Dutch and French: [GRO tool – GRO tool \(gro-tool.be\)](https://gro-tool.be).

The Belgian Construction Certification Association continues to grant certification for products and building systems, according to international criteria ISO/IEC 17065, 17021-1 17024 and 17020 .

In 1959, several professional associations of contractors established a technical research center, Buildwise, which also promotes studies addressing quality, productivity and sustainability. This in turn inspired the governmental initiative in Brussels called "ecobuild,"^[2] which supports the development and structuring of supply in sustainable buildings in the Brussels-Capital Region, to help companies be more competitive and conquer new markets.

^[1] <https://www.totem-building.be/>.

^[2] <https://ecobuild.brussels/>.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In Belgium, the EU Energy Performance of Buildings Directives have been fully implemented on a regional level by various pieces of legislation, most notably the Flemish Energy Decree of 8 May 2009, the Brussels Ordonnance of 2 May 2013, the Walloon Decree of 28 November 2013 and the Walloon Government Decision of 15 May 2014.

In all three regions, newly constructed buildings or substantial renovations generally require a building energy performance study, as well as a broader study of all energy efficiency and interior climate conditions. This mechanism is not only informative but also allows the competent authorities to enforce certain efficiency standards for new buildings. Selling or letting existing buildings also requires an energy performance certificate (EPC), although this is only intended for informing the possible buyer or tenant. In principle, all EPCs are valid for a maximum period of 10 years.

EPC requirements differ in each region depending on the type of building, its surface area, and whether it is constructed, renovated, sold or let. In addition, different efficiency measurements are used, with the full set of measurements and related thresholds mostly only applying to new construction projects. Finally, the required minimum efficiency thresholds also differ between regions and are periodically increased to achieve overall long-term EU energy efficiency goals.

In Flanders

In the Flemish Region, for newly constructed, expanded or renovated residential or nonresidential buildings for which the building permit request was submitted after 1 January 2018, the maximum allowed E-rate decreases every year. Buildings with a higher E-rate will be fined, while buildings with a substantially lower E-rate may be rewarded with subsidies offered by the grid operator. Separate EPC systems exist for residential, nonresidential and public buildings. For public buildings, a floor surface of more than 250 square meters requires that a Display Energy Certificate be displayed in a publicly visible place. For selling or leasing existing buildings, an EPC has to be part of all publicity and annexed to the actual contract.

Moreover, a new renovation obligation for nonresidential buildings has been adopted in Flanders as of 1 January 2022. This obligation applies to every new owner, tenant under a lease that includes construction works, and long leaseholder (emphytéote/erfpachter) of offices or retail buildings. Basically, they have to comply with the following new energy regulations within a five-year period:



Belgium



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- Installation of roof insulation
- Installation of high-efficiency glazing
- Replacement of heating systems that are more than 15 years old which do not meet the minimum installation requirements for renovations
- Replacement of refrigeration units that are more than 15 years old and installation of systems that do not require ozone-depleting or noxious refrigerants

The following is also required within the same five-year period:

- The new owner of a nonresidential building of less than 500 square meters has to obtain a level C (or above) EPC.
- For buildings of more than 500 square meters, they have to use a minimum of 5% of renewable energy.

In Brussels

In the Brussels-Capital Region, an energy performance of buildings (EPB) certificate is required instead of an EPC. An EPB is compulsory when selling or renting a home larger than 18 square meters or an office larger than 500 square meters. As of 2025, all homes will have to have an EPB certificate. There are three different models of the EPB:

- EPB "New construction": for new constructions (houses, schools, offices, etc.) for which the first planning permission was submitted after 1 July 2008
- EPB "Residential unit": for older (possibly renovated) dwellings (planning permission submitted before 1 July 2008)
- EPB "Tertiary unit": for older offices larger than 500 square meters (planning permission submitted before 1 July 2008)



Belgium



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

As a general rule in the **Brussels-Capital Region**, the maximum allowed primary energy consumption rate for new buildings, substantial renovations and renovations that have an impact on the E-rate is 45 kilowatt-hours per square meter for houses and 90-2.5x ratio of protected volume over heat loss surface kilowatt-hours per square meter . Likewise, in the Flemish Region, each real estate transaction of an existing building requires an EPC to be obtained before and published together with each market consultation or contract negotiation.

In Wallonia

Similar standards apply in the Walloon Region, where the most important current maximum standard for new or substantially renovated or rebuilt residences, offices, service buildings and schools is an E-rate of 80 kilowatt-hours per square meter. For new or substantially renovated buildings, however, there is currently only an EPC obligation for single-family houses and apartments. For other residential buildings, offices, service buildings and schools, the implementing regulation is still lacking. Similar to the other regions, selling or letting existing buildings in the Walloon Region requires a completed EPC to be part of all publicity and contractual documents.

Q-ZEN is the new standard for new buildings: From 1 January 2021, all new buildings must be "quasi" or nearly zero-energy. A quasi zero-energy building is one that meets the following criteria:

- The envelope is well insulated and airtight (insulation requirement for each wall U_{max} , overall insulation requirement $K \leq 35$ and overheating index < 6500 Kh).
- The systems are efficient.
- The small amount of energy required for heating and hot water production is mostly produced from renewable energy sources.

This translates into an overall energy performance requirement of $E_w \leq 45$ and $E_{spec} \leq 85$ kWh/m² year corresponding to the A label.



Belgium



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

As an addition to the "Energy performance certificates and minimum energy standards" section, another form of assessment should be mentioned: the energy audit created by Article 8 of the EU Energy Efficiency Directive. As a mandatory obligation every four years, this has been implemented in the Flemish Region (mandatory for large enterprises subject to an environmental permit or notification system), in the Brussels-Capital Region (mandatory for certain large enterprises and for large energy consumers if they request (a renewal of) certain types of environmental permits) and in the Walloon Region (mandatory for large enterprises).

From 1 January 2023, every house that is sold in the Flemish Region with only an E- or F-label, according to the required EPC, needs a green retrofit within five years, in the absence of which a heavy fine will be imposed by the Flemish Agency for Energy and Climate.

Roof insulation is also made compulsory to the R-value of 0.75 kilowatt-hours per square meter. When Flemish housing inspectors notice that this insulation is not provided for, a severe penalty of 15 points will be given. This may lead to an interdiction to use the house, following a procedure before the local authority.

For the moment, the Walloon and Brussels-Capital regions do not foresee mandatory green retrofit, but the Brussels-Capital Region is working on it because it wants every house to reach EPC level C by 2050.

Most notably, since 2006 the Brussels-Capital Region has also encouraged private and public actors with a large real estate portfolio to develop and implement their own Plan for Local Action for the Use of Energy (PLAGE) program. PLAGE aims to create a tailored "energy culture" involving all employees, suppliers, clients/visitors, etc., for the institution or organization. The coordination of the whole program is entrusted to an appointed energy coordinator (energieverantwoordelijke). A PLAGE program has been mandatory since 1 July 2019 for all public services with a building surface area of over 50,000 square meters and for private services within the region's territory with a building surface area of over 100,000 square meters.

For natural persons, the Brussels-Capital Region offers a range of subsidies and even an interest-free loan for energy-saving investments (including studies, smaller works, renovations and new construction projects), with conditions that vary depending on the applicant's socioeconomic position.



Belgium



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

For companies, the Brussels-Capital Region also has a range of financial support mechanisms, depending on the size of the company (e.g., SMEs) and the type of investment: subsidies and tax reductions for energy-saving investments (including studies, smaller works, renovations and new construction projects), help from the "facilitating agency for sustainable buildings," support for investments in renewable energy production, soil depollution, and a broad range of sustainable projects (e.g., eco-construction, circular economy, waste management, etc.).

The Walloon Region offers natural persons subsidies that are revised annually (primes énergie 2015), and which increase depending on the applicant's socioeconomic position, for roof, wall or floor isolation works, installation of efficient heating or boiler systems, and energy audits.

For public services and not-for-profit organizations, the Walloon Region offers an energy-saving subsidy program called AMUREBA (previously UREBA). Investments for which subsidies are offered include works that improve a building's energy efficiency, energy audits, feasibility studies for installing certain technologies and energy accounting studies.

For companies, the same AMUREBA program (previously AMURE) also offers an energy-saving subsidy. Currently, subsidy programs are only offered for energy accounting studies, energy audits and obtaining the technical approvals necessary for a product or system to be accessible on the market.

All three regions award "green power certificates" to companies or households that are connected to the grid and autonomously produce electricity from renewable sources. This green certificate is a financial aid granted by the region when installing these energy sources. However, both the Walloon Region and Flanders reduced the scope of these certificates to large installations only and, in parallel, introduced different complementary financial aids (such as the "call green power" in Flanders). Separate calls for project-based support are launched regularly.

Finally, many municipalities and even some provincial authorities also offer local financial stimuli for certain types of energy efficiency investments.



Belgium



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

As a signatory to the UN Climate Treaty and the Kyoto Protocol, and as a fully committed member state participating in the EU climate policy (notably the European Green Deal), Belgium's main real estate objective is net-zero carbon by 2050. This applies to the residential sector (both private and social), nonresidential sector and public sector.

The main instrument put in place to meet this objective is the EPC for buildings, with gradually more and more severe thresholds to be complied with (please refer to "Energy performance certificates and minimum energy standards" for more information in this respect).



Belgium



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Belgium has committed to a clean energy transition, aligning with the goals of the Paris Agreement and the EU's climate and energy targets for 2030.

- The binding targets include the following:
 - Reducing greenhouse gas emissions by at least **40%**
 - Increasing energy efficiency by at least **32.5%**
 - Increasing the share of renewable energy to at least **32%** of EU energy use
 - Ensuring at least **15%** electricity interconnection levels between neighboring member states
- Belgium's draft National Energy and Climate Plan proposes an 18.3% share of energy from renewable sources in gross final consumption by 2030 as its contribution to the EU renewable energy target.

Since 2014, the EPB has required a minimum proportion of the energy needed in buildings to be obtained from renewable sources. How large the minimum share must be, and which quality requirements apply depends on the date of the building permit application, the nature of the works (new construction or major energy renovation) and the destination (residential or nonresidential building).

Flanders

In the Flemish Region, as of 1 January 2022, nonresidential buildings of more than 500 square meters have to meet a minimum use of 5% of renewable energy. This obligation has to be complied with within a five-year period and applies to every new owner, tenant under a lease that includes construction works, and long leaseholder (emphytéote/erfpachter) of offices or retail buildings.

The requirements in Flanders for new permit applications can be found here:

https://assets.vlaanderen.be/image/upload/v1693302908/epbeisentabel2025_sq9f78.pdf (in Dutch).



Belgium



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

As a rule of thumb, the share of energy stemming from renewables is at least 20 kilowatt-hours per square meter per year.

Brussels

In Brussels, the EPB submissions for new buildings with a surface area of more than 1,000 square meters or substantial renovation works with a surface area of more than 5,000 square meters have to include a similar feasibility study regarding alternative high-efficiency energy systems. Brussels has very ambitious targets: For a building to comply with zero or very low energy consumption targets, the recommendations of the EU (2016/1318) must be taken into account, depending on the EPB destination:

- Residential: 15 to 30 kWh/(m².year) primary energy consumption (after deduction of renewables)
- Nonresidential: 40 to 55 kWh/(m².year) primary energy consumption (after deduction of renewable energy sources)

The new rules set an indicative target of at least a 49% renewable energy share in buildings by 2030.

Additionally, renewable targets for heating and cooling will gradually increase as follows:

- A binding increase of 0.8% per year at the national level until 2026
- A binding increase of 1.1% per year from 2026 to 2030

Wallonia

Wallonia aims to reach its 2030 target of a 17.5% share of renewable energy sources. Measures focus on wind, photovoltaic energy, biofuels and the use of waste heat. Since **1 January 2023**, large nonresidential buildings in Wallonia have had to achieve a minimum **5% renewable energy share** within **five years** of transfer.



Belgium



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Every region has plenty of premiums and tax reductions for renovation, increasing the EPC level and with a possibility to deduct some expenses from existing taxes.

The federal government recently increased the VAT rate on energy in Belgium from 6% to 21%. Although this was primarily a budget exercise, its benefits as an additional stimulus for energy efficiency investments are clear. Many social public service obligations have been imposed on the grid operators protecting households that are struggling to pay their energy bills. This should serve as a social safeguard, while the increased price of energy consumption should increase efficiency.

The VAT rate on works for the installation of the following for homes less than 10 years old will be reduced from 21% to 6% from 1 April 2022 to 31 December 2023:

- Photovoltaic solar panels
- Thermal solar panels
- Solar water heaters
- Heat pumps

For heat pumps, that measure has been extended through 31 December 2024. That extension does not apply to solar panels and solar water heaters.



Belgium



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

In Belgium, public initiatives often involve government policies and incentives aimed at promoting sustainability in real estate development. Some examples include the following:

- **Green investment grants:** The Belgian government offers grants and subsidies to support investments in renewable energy, energy efficiency and other environmentally friendly projects. These grants help businesses, local governments and individuals to finance the up-front costs of implementing green technologies.
- **Renewable energy certificates (RECs):** Belgium has a system of RECs that incentivizes the production of renewable energy. Renewable energy producers can earn RECs for each megawatt-hour of electricity generated from renewable sources, which can then be sold or traded to energy suppliers to meet their renewable energy obligations.
- **Green building incentives:** Regional governments in Belgium provide incentives for green building certifications such as BREEAM and Leadership in Energy and Environmental Design (LEED). These certifications recognize buildings that meet high standards of environmental performance and energy efficiency, and incentives may include tax breaks, grants or expedited permitting processes.
- **Sustainable transport funding:** The Belgian government invests in sustainable transportation infrastructure and initiatives to reduce greenhouse gas emissions and promote cleaner modes of transport. This includes funding for public transit projects, electric vehicle charging infrastructure and bicycle-friendly urban planning.
- **Circular economy support:** Belgium has initiatives to promote the circular economy, including funding programs for circular business models, resource efficiency projects and waste reduction initiatives. These programs aim to shift toward a more sustainable and resource-efficient economic model.

These are just a few examples of public green finance initiatives in Belgium, indicative of the general political climate geared toward promoting environmental sustainability and supporting the transition to a low-carbon economy.



Belgium



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Private initiatives typically involve real estate developers and investors incorporating sustainable practices into their projects. This could mean designing and constructing energy-efficient buildings with features like efficient insulation, LED lighting and renewable energy systems such as solar panels or geothermal heating. Additionally, there is a growing trend to incorporate green spaces, such as rooftop gardens or urban parks, into real estate developments to enhance sustainability and livability.

On a sector level, Agoria, a Belgian federation for the technology industry, and Febelfin, the Belgian financial sector federation, have collaborated on the development of a special tool for helping banks when evaluating loan requests for energy-saving or green investments. The tool uses a reference list indicating how much profit a certain green technology might provide in the future. The tool offers banks more certainty when assessing whether the proposed cost cuts will indeed be realized, thereby removing a barrier for the financing of sustainable real estate.

In terms of financing, banks and financial institutions in Belgium offer green financing options specifically tailored to support sustainable real estate projects. These may include green loans, green mortgages, green bonds, sustainability-linked loans, green business financing, sustainable investment funds or other financial products with favorable terms for projects that meet certain environmental criteria. These initiatives aim to incentivize and support the transition toward more sustainable and environmentally friendly real estate development in Belgium.



Belgium



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In all three regions, the well-developed framework of zoning and planning laws represent a formidable instrument to encourage and impose sustainable real estate development at the macro level.

Examples vary widely on a case-by case basis.

For example, urban planning instruments impose measures that address emissions of air pollutants, particularly through the reduction of (additional) automobile traffic. They can also impose measures that do not reduce automobile traffic, but still have an impact on the concentration of pollution in the air. These are spatial measures that reduce the mixing of pollutants with less polluted air and promote ventilation between buildings.

Another example is heating via shared local renewable networks.



Belgium



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases per se are not mandatory and not yet common in the three Belgian regions. However, in large residential, office or commercial real estate projects, clauses with a sustainability dimension are increasingly incorporated into lease contracts. These often relate to waste treatment and recycling, lighting and heating policies, and so on. In general, the initiative mostly comes from private landowners. That being said, tenants' willingness to not only accept these terms but also to fully cooperate reveals a great potential. There is certainly room for public policies encouraging green lease aspects or stimulating the introduction of full green lease contracts as a whole.



Czech Republic



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Environmental certification is still not mandatory in the Czech Republic. Over the past few years, the share of certified buildings has significantly increased, particularly for office and logistics properties. The most common certifications on the market are (i) the Leadership in Energy and Environmental Design certificate, (ii) the Building Research Establishment Environmental Assessment Method certificate and (iii) the DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen), a certificate by the German Sustainable Building Council. Since 2019, the WELL Certification, which additionally assesses the building's impact on its users' physical and mental health, has been gaining in popularity. Since 2010, the Czech Republic has also had a national model called SBToolCZ (Sustainable Building Tool), which offers certification for building development plans and subsequent certification once the building has been constructed, with the Czech Technical University in Prague serving as the respective development and training center. However, it remains a voluntary system and has not been widely adopted.

According to a consultancy company report from 2023, a recognized building certification is seen as desirable on the market, for both new and refurbished buildings. Certifications are thus established as a relevant decision-making criterium for potential tenants, contributing to lower vacancy risk and higher rental premiums.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The requirements concerning the energy efficiency of buildings are regulated by Act No. 406/2000 Coll., on Energy Management, as amended, and by its implementing regulations.

Compliance with the requirements is proved by the relevant building's Energy Performance Certificate (EPC) (in Czech, průkaz energetické náročnosti budovy), which is valid for 10 years from issuance or until a major change to the building occurs. This certificate is required for all new buildings and has to be obtained for existing buildings upon the occurrence of certain circumstances (such as major reconstruction, modification of the heating solution, or planned sale or lease of the building). All buildings are classified based on their energy performance into one of seven energy classes from A to G, with A being the most efficient.

When a constructor applies for a building permit for the construction of a new building, it must submit documentation confirming that the applicable energy performance requirements (nearly zero-energy consumption standard) have been met.

The owner of an existing building must ensure that the respective energy consumption level stated in the EPC is included in the information and advertising materials when selling a building or leasing premises. If the owner hires an agent to arrange for the sale or lease of its premises, the graphical part of the EPC or a verified copy of it must be provided to the agent, so that the energy consumption information may be stated in the agent's information and advertising materials.



Czech Republic



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Czech Ministry of Industry and Trade runs the EFEKT III, a national program established for the period from 2022 to 2027, which is intended to fund energy saving and use of renewable energy resources. Based on the information published by the ministry, the program prioritizes the preparation phase, providing partial funding for project development, advisory and designing energy management systems. The relevant application conditions and available funds are specified each year.

Another governmental subsidy program currently in place is the Green Savings Program (Zelená úsporám). The program is managed by the State Environmental Fund. It focuses on improving the energy efficiency of residential housing. Owners of multiunit houses may apply for a subsidy to implement a wide variety of energy-saving measures, including green roofs, photovoltaic panels and chargers for electric vehicles.

The ENER program run by the National Development Bank offers interest-free loans for businesses to finance energy-saving projects. The ENER program complements the EFEKT program and is only focused on projects implemented within Prague. The loans can be used for a wide variety of energy-saving reconstructions, including (i) insulating business buildings and replacing windows, (ii) reconstructing electricity and gas distribution systems, (iii) replacing HVAC units, (iv) installing energy-efficient lighting solutions, etc. Businesses operating in a wide range of sectors are eligible to apply.

Energy-efficient technologies using renewable energy in buildings are also funded from the EU structural funds. The environmental operational program run by the Czech Ministry of Environment also includes energy savings as one of its priorities. Currently, the areas of support in the field of energy savings focus on decreasing energy consumption and streamlining the shift from fossil fuels in selected regions.



Czech Republic



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Czech Republic is dedicated to achieving the CO2 reduction targets in line with the EU Fit for 55 package, according to the National Action Plan of the Czech Republic in the field of energy and climate, as proposed for update in October 2023. To achieve the energy reduction goals set out by Directive 2012/27/EU on energy efficiency and the revision of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010, the Energy Management Act and its implementing regulations are regularly amended.

Since 2020, all new building permits or notifications of a building not requiring a building permit must be substantiated by certain documents concerning energy consumption. As a standard, all newly constructed buildings must be designed to fulfill the requirements for buildings with nearly zero energy consumption. During the construction process, the building authority may require the constructor to provide the EPC (as described in "Energy Performance Certificates and Minimum Energy Standards"), prepared based on the project documentation. Only a specialist authorized by the Ministry of Industry and Trade can prepare the EPCs and carry out subsequent energy audits of buildings.

A number of specific buildings are excluded from the EPC regime. These mainly include (i) buildings that are designated as cultural monuments or are part of a cultural reservation (which covers a significant part of Prague city center), (ii) buildings designed and used for religious purposes, and (iii) relevant major changes in buildings where their owner proves — by means of an energy audit — that it is not technically or economically appropriate to meet the energy requirements with regard to the operational lifetime and purpose of the building. Furthermore, an EPC does not have to be obtained when selling or leasing a building or part of a building if (a) the building concerned was constructed and its latest major construction change was performed prior to 1 January 1947 and (b) the parties involved agree so in writing.



Czech Republic



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Renewable energy sources (wind, solar, hydroelectric, ocean, geothermal, biomass and biofuels) are strongly regulated by the EU. In 2023, the co-legislators increased the EU's renewable energy target for 2030 to 42.5%, with the intention of reaching 45%, with the Czech Republic pledging its national contribution to this. In the Czech Republic, the basic legislative document in the field of energy efficiency and energy savings is Act No. 406/2000 Coll., on Energy Management, as amended, which implements most of the EU directives dealing with the use of renewable energy sources. The current EU and Czech strategy follows the path of incentives for renewable energy use rather than mandating strict requirements.

Under the Act on Supported Energy Sources (No. 165/2012 Coll.), several incentives are available to producers of energy from renewable or secondary sources, including cogeneration. These promotions include feed-in tariffs, auction bonuses and green bonuses. The Energy Regulatory Office determines the feed-in tariffs for facilities generating electricity from renewable sources on an annual basis and in advance for the next calendar year, and separately for individual types of renewable energy sources. However, as far as electricity generation from renewable sources is concerned, support is only available with respect to plants put into operation before the end of 2021.



Czech Republic



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

As a member of the EU, the Czech Republic has implemented the EU Emissions Trading Scheme via Act on Conditions on Greenhouse Gas Emissions Allowances Trading No. 383/2012 Coll., as amended, adopted in 2012. Auctions of allowances produce income, which the state uses to, among other things, finance activities leading to a decrease in greenhouse gas emissions and support industrial innovations and measures aimed at increasing the energy efficiency of buildings.

In general, energy-efficient technologies using renewable energy in buildings are also funded from the EU structural funds. As mentioned in "Incentives for Green Retrofit", the governmental subsidy program currently in place, the Green Savings Program, includes incentives for green roofs, photovoltaic panels and chargers for electric vehicles.

There are certain taxes that are referred to as ecological and that generally concern solid fuels or electricity. Certain items are excluded, such as solid fuels used for cogeneration of electricity and heat. Under Act No. 261/2007 Coll., certain tax reliefs apply to environmentally friendly electricity if certain statutory requirements are met. However, this tax only applies to taxpayers, who, as suppliers, supply electricity to consumers.



Czech Republic



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

We have seen an emerging trend on the commercial loan market with individual banks offering better interest rates for real estate projects demonstrating sustainability ambitions and engagement to observe good environmental practices. Green clauses are also making their way into facilities agreements, and banks are privileging financing projects that aim to obtain a sustainability certification. Furthermore, banks are becoming increasingly reluctant to provide financing for real estate that uses coal for heating.

On the consumer loan market, banks offer better mortgaging conditions for financing "green" real estate, particularly for projects that are designed to achieve the A-class EPC (as described in "Energy Performance Certificates and Minimum Energy Standards").



Czech Republic



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In the Czech Republic's new Construction Code, Act No. 283/2021 Coll., which enters into full force on 1 July 2024, sustainability plays a central role, particularly in planning documentation of higher rank, such as regional development policies or zoning plans. As a result, the proposed development projects' impact on the future sustainable development of the affected territory is assessed. All new buildings, equipment, activities and technologies (collectively, projects) that must be assessed are listed in Annex No. 1 of Act No. 100/2001 Coll., the Environmental Impact Assessment Act.

In addition, the Construction Code requires that the building be designed, constructed and removed in such a way as to ensure the sustainable use of natural resources, in particular by reusing or recycling materials and structures from the removed building or by using raw or secondary environmentally friendly materials in the construction. This concept is also reflected and evaluated in the planning and zoning documents.

Municipalities may choose to establish a regulatory plan for a specific area, which may include conditions for a sustainable environment and green infrastructure, including the definition and use of land of the territorial system of ecological stability.



Czech Republic



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green lease provisions are not mandatory in the Czech Republic. That said, green leases have been growing in popularity, with basic and rather general green clauses appearing the most often.

Large private sector landlords and their tenants regularly include provisions in leases to reflect their own internal green corporate strategies or ambitions to obtain or maintain a sustainability certification. The clauses most often prescribe basic sustainability practices and collection of and reporting on data; detailed mandatory regimes requiring measurable results or material contractual sanctions for nonobservance remain rather rare. Alternatively, green lease terms and sustainability commitments are seen attached in the form of a separate annex. In addition, landlords issuing house rules for larger commercial sites that include certain environmentally friendly language is largely considered market standard.

In addition, there are organizations, such as the Czech Green Building Council, a member organization of the World Green Building Council, supporting green practices in real estate. For its part, the Czech Green Building Council integrates companies and associations from various economic sectors related to the real estate market and the construction development industry.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Two environmental laws named "Loi Grenelle I" and "Loi Grenelle II," implementing the so-called "Grenelle de l'Environnement," were enacted in 2009 and 2010. The main purpose of these laws was to significantly reduce buildings' energy consumption.

In addition, and within the context of these laws, a mandatory thermal regulation named "Régulation thermique 2012" ("**RT 2012**") was enacted. This regulation was subsequently followed and replaced by a new mandatory thermal regulation named "Réglementation environnementale 2020" ("**RE 2020**").

The RE 2020, which is in line with the goal of reducing greenhouse gas (GHG) emissions by a factor of four by 2050, sets out new and more ambitious standards for the construction of buildings. Whereas the RT 2012 provided for the construction of low-energy buildings, the RE 2020 introduces the concept of positive energy buildings.

The RT 2012 was a thermal regulation and, therefore, focused on the thermal aspects of construction: insulation, heating, air-conditioning, lighting, and hot water. Its aim was to create buildings with zero energy loss. In contrast, the RE 2020 aims to build positive buildings, i.e., buildings that produce more energy than they consume.

Other optional certifications/labels have been introduced or created in France. The most commonly used labels are those delivered by Haute Qualité Environnementale (HQE), Building Research Establishment Environmental Assessment Method (BREEAM) and Leadership in Energy and Environmental Design (LEED). These certifications/labels are widely used by the French construction industry.

More specifically, HQE distinguishes between 14 areas of sustainability, including post-construction verification.



France



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

France's first thermal regulations were introduced in 1975, and these are being amended regularly. Constraints, standards and objectives have been reinforced by the RT 2012, which has been replaced, as mentioned in "Green Certification", by the RE 2020.

The RE 2020 introduces three main requirements: reducing new buildings' carbon impact by taking into account all of the building's emissions over its life cycle as of its construction stage by using bio-sourced materials and encouraging the use of low-carbon energy sources; improving the energy performance of new buildings by introducing, in particular, the "bioclimatic need" indicator (known as "Bbio"); and guaranteeing cool temperatures during scorching summers.

The RE 2020 came into force on 1 January 2022 for dwelling premises and 1 July 2022 for office premises.

Buildings for which planning permission is granted after these dates will therefore have to comply with the requirements of the RE 2020. The energy consumption thresholds set by the new environmental regulations now apply and will be verified by means of an RE 2020 certificate.



France



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

To reduce energy consumption in France by 40% in 2030, 50% in 2040 and 60% in 2050, official buildings, public agencies building, social houses, and dwelling and office buildings should be renovated.

According to Section L. 100-4 of the French Energy Code, France's objective is to "have a building stock that meets low-energy building (BBC) standards" by 2050. Achieving these targets involves improving construction methods and recycling building waste. It also requires more virtuous, energy-efficient practices in housing. All these actions are essential to achieve carbon neutrality by 2050.

Within this context, an investment for social housing plan has been produced and remains a goal to achieve. It aims to reduce the annual consumption of 800,000 apartments.

Different environmental laws have also been regularly enacted to meet this ambitious target.

The environmental law, the "Loi de Transition Énergétique," which was enacted on 17 August 2015, reinforces the target of reducing energy consumption by setting up an obligation to carry out energy refurbishment works when restoring façades and reroofing or converting lofts. In addition, all major renovation works on state buildings now involve an energy performance and carbon performance component.

The environmental law, the "Loi Elan," which was enacted on 23 November 2018 and completed by a decree dated 23 July 2019, the "Décret tertiaire," sets up a gradual reduction in energy consumption in the concerned buildings to prevent climate change. Final energy consumption should be reduced by 40% in 2030, 50% in 2040 and 60% in 2050 (compared with 2010). This gradual reduction applies to all newly constructed buildings and existing buildings of the "secteur tertiaire" (tertiary sector) with a surface area of 1,000 square meters or more.

Finally, the environmental law, the "Loi Climat et Résilience," which was enacted on 22 August 2021, aims to accelerate the ecological transition of the French society and economy by, notably, prohibiting the leasing of dwelling premises that do not meet specific energy performance criteria.



France



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Tackling climate change is a priority for the French government. France is among the 55 countries that signed the Kyoto Protocol in 1997. As a signatory to the protocol, France is required to (i) implement specific policies to reduce CO2 gas emissions and (ii) promote renewable energy. In this context, European countries have been required to reduce their CO2 gas emissions from 2008-2012 by 8% in comparison to their 1990 levels.

Over the past few years, France has already significantly reduced its CO2 gas emissions. This is partly due to the low use of coal and gas to generate energy, the high proportion of electricity generated through nuclear activities or hydraulic installations, and France's good performance in terms of energy efficiency. The EU is also on track to reduce its emissions by 20% in accordance with the Kyoto Protocol.

Also, in accordance with the Kyoto Protocol, France created a national inventory system — the SNIEBA (National System for Air Emissions Inventories and GHG Balance) — in 2011. Although the RT 2012 did not set any maximum gas emission target, France's target is a fourfold reduction in GHG emissions by 2050 following the "Grenelle de l'Environnement" conferences.

At present, France is one of the industrial countries emitting less GHGs.

Every local planning/zoning regime (Plan Local d'Urbanisme) enacted at city level must (i) promote energy performance by producing renewable sources of energy and (ii) reduce CO2 gas emissions. It is forbidden to ban sustainable constructions or installations. For instance, Paris is in the process of enacting a specific "bioclimatic" local planning regime, "Plan Local d'Urbanisme bioclimatique," to create a more energy-efficient city by promoting, notably, renovation and low-carbon construction.

In 2015, France organized the 2015 Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change. At the end of this conference on 12 December 2015, more than 180 countries reached an international agreement to (i) limit the global average temperature increase to 2°C, (ii) state that the necessary financing to meet this target would have to be implemented by the parties to this agreement, (iii) set up a new meeting in 2018 to confirm success in achieving the target and (iv) provide that a first global inventory should take place in 2023, and then every five years after that, to assess nationally determined contributions to limit climate change.



France



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

In 2023, during the United Nations Climate Change Conference in Dubai (COP 28), France launched the "Buildings Breakthrough," aiming for zero emissions from the building sector by 2030.

In addition, and as mentioned in "Incentives for Green Retrofit", the "Loi Elan" sets out that final energy consumption should be reduced by 40% in 2030, 50% in 2040 and 60% in 2050 (compared with 2010).



France



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In France, the target set by the "Grenelle de l'Environnement" was to use 23% of renewable energy sources by 2020.

New buildings (including individual houses/joined houses) that were to fall within the scope of the RT 2012 had to use, as a matter of principle, at least one renewable energy source and comply with different construction and technical rules set forth under the different decrees ("décrets") and orders ("arrêtés") implementing the RT 2012.

These decrees and orders also specified the performance requirements for dwellings in the case of replacing or installing renewable energy sources (e.g., wood-burning heaters, stoves, etc.). To promote this initiative, financial aid and tax reduction schemes were created.

France also created public regional entities, such as the Energy Info Spaces in 2001, with the purpose of advising private householders on energy efficiency and renewable energy sources.

Through the enactment of the "Loi de Transition Energétique" on 17 August 2015, France set up ambitious targets, namely (i) 40% less GHG emissions in 2030, compared to its 1990 levels, (ii) 30% less fossil fuel consumption in 2030, compared to 2012, (iii) an increase in the share of renewable energies to 32% of final energy consumption by 2030 and to 40% of electricity production, and (iv) a reduction in final energy consumption by 50% in 2050, compared to its 2012 levels.

More recently, the "Loi Climat et Résilience" requires certain buildings to incorporate energy production systems, green roofs or any other equivalent process into their roofs and requires certain outdoor car parks to have half of their surface area shaded by solar panels or green roofs.



France



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Facilities operated or owned by any public or private individual or company that could cause damages or trigger disadvantages to health and public safety, agriculture, or nature and the environment are subject to specific regulations. Prior authorization or a declaration detailing the dangers or disadvantages may be required to operate these facilities. Companies that are liable to pay the general tax on polluting activities are subject to double taxation in the sense that they are liable to pay (i) a specific fee for the authorization and then (ii) an annual fee for operating the facility.

Various measures have been implemented to exempt all or part of some investments from business and real estate taxes.

In addition, VAT is levied at the reduced rate of 5.5% on works that improve the energy quality in residential premises and are completed for more than two years. The aim is to support (i) households by reducing energy bills and (ii) activities and employment in the construction sector. Work qualifying for this reduced rate must relate to certain equipment, such as insulation materials of glass walls or insulating shutters, heating control equipment, or equipment for energy production from a renewable source, except those using the radiative energy from the sun (solar panels).

The "Loi de Transition Énergétique" has also set up energy transition tax credits equal to 30% of the cost of the works, up to a limit of EUR 8,000 for a single person and EUR 16,000 for a couple, and zero-interest eco-loans to finance energy refurbishment.



France



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The French government recently enacted measures to contribute financially to the renovation of existing official buildings. As such, the French Banque Publique d'Investissement, a French public investment bank, was created to finance these renovation projects.

Individuals are also encouraged to renovate their houses to install low-energy consumption systems. Public aids and tax credits have been created for this purpose. Among them is the "MaPrimeRénov" or the "Éco-prêt à taux zéro" (zero-rate loan for the renovation of existing buildings and housing). In addition, the VAT rate was reduced to 5.5% for energy-reduction work and repairs.

The French National Agency for Habitat (Anah) took the initiative of helping low-income owners/occupiers improve the thermal characteristics of their buildings. Under certain conditions, some financing aids may be granted.

Private funding initiatives are also available. For example, energy suppliers, such as the EDF-GDF, provide financing for purchasing green heating systems.



France



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

The French government encourages cities and other regional areas with more than 50,000 inhabitants to establish strategies regarding climate and energy. To this end, local planning/zoning regimes (Plan Local d'Urbanisme) must promote improvement works regarding buildings' energy performance.

Energy efficiency is also promoted in local planning/zoning regimes. For this purpose, the documentation of the planning/zoning regime must contain environmental provisions. In addition, since 2005, any mayor in France has been entitled to develop any green policy to improve the energy performance and promote the use of renewable energy. For instance, as mentioned in "CO2 and Energy Targets", Paris is in the process of enacting a specific "bioclimatic" local planning regime, "Plan Local d'Urbanisme bioclimatique," to create a more energy-efficient city and make Paris a carbon-neutral city by 2050 by promoting, notably, renovation and low-carbon construction and by encouraging the development of renewable energies and a zero-waste approach. The purpose of this "bioclimatic" local planning regime is also to achieve the objective of 10 square meters of green space per inhabitant by increasing the amount of breathing space and cool areas and by encouraging green spaces and the presence of flora and fauna.

All planning/zoning regimes must promote energy performance by producing renewable energy sources and reduce CO2 gas emissions. It is also forbidden to ban sustainable constructions or installations.

All local planning/zoning regimes can make builders comply with their energy performance requirements, even if these are stricter than what the law provides for.



France



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

There is no mandatory requirement to include green clauses in leases either within the private or the public sectors in France, and we don't see this changing in the foreseeable future. It is up to the parties to decide whether to include green provisions in their leases. We have seen in practice that certain types of green clauses are being more frequently incorporated into landlords' drafting and, significantly, being accepted by tenants, often without amendment. Examples of this are provisions requiring the tenant to share information with the landlord and undertake best efforts to contribute to reducing energy consumption.

Since 14 July 2013, an environmental annex must be attached to any lease agreements regarding rented premises for office and retail use with a surface area exceeding 2,000 square meters. Its content, which is defined by law, is for the landlord and the tenant to exchange information regarding the energy characteristic and performance of the features available in the rented premises, and the waste processing operations.

In addition, a performance diagnostic of the building (Diagnostic de Performance Énergétique) must also be attached to all lease agreements. The main purpose of the diagnostic is to inform the tenant about the building's potential energy consumption.

As mentioned in "Incentives for Green Retrofit", the "Loi Elan" sets out that final energy consumption should be reduced by 40% in 2030, 50% in 2040 and 60% in 2050 (compared with 2010).

To organize the monitoring and control of the obligation to reduce final energy consumption, the French State has set up, through the "Agence de l'Environnement et de la Maîtrise de l'Énergie" (Environment and Energy Management Agency), an IT platform called "OPERAT." which is intended to collect, anonymously, from 2022 onward, consumption data from the buildings concerned by the "Loi Elan."

No later than 30 September each year, landlords and tenants shall transmit various data relating to the previous year (tertiary activities carried out in the premises, surface area, annual energy consumption by type of energy, etc.) to this IT platform. Leases will, therefore, must detail the agreement reached between the parties on the modalities of transmitting the requested information to this IT platform.



France



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Failure to provide the requested information on the IT platform may give rise to publicity measures ("name and shame") on a dedicated website. Failure to meet the targets for reducing energy consumption will also expose landlords and tenants to the same publicity measures, and to a fine of up to EUR 1,500 for individuals and EUR 7,500 for legal entities, although the first inspections will not take place before 2031.



Germany



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The most widely used certification in Germany is the one awarded by the German Sustainable Building Council (Deutsche Gesellschaft für Nachhaltiges Bauen or DGNB). Under this voluntary system, a building's quality is assessed over its entire life cycle. Particularly being certified in this assessment are some 50 sustainability criteria, including ecology, economy, sociocultural aspects, technology, process work flows and sites. The system is based on voluntarily outperforming the concepts that are common today. If a performance requirement is met, the DGNB awards the DGNB certificate in bronze, silver, gold, or platinum. After successful certification in gold or platinum, buildings can get an additional award, "DGNB diamond," for their architectural quality and durability. The additional award "DGNB climate positive" for climate-neutral buildings or "DGNB special environmental label" can also be awarded. In addition, there is the option of simple pre-certification in the planning phase.

Federal government buildings are certified in accordance with the Evaluation System for Sustainable Buildings (Bewertungssystem Nachhaltiges Bauen). The certification system and rules are similar to the DGNB system, but have been tailored to the specifics of federal government buildings.

The other two most frequently used certifications in Germany are the international Leadership in Energy and Environmental Design (LEED) and Building Research Establishment Environmental Assessment Methodology (BREEAM).

Certification for new buildings in accordance with the above standards is not mandatory in Germany.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In Germany, the Energy Performance of Buildings Directive has mainly been implemented via the Buildings Energy Act (Gebäudeenergiegesetz or GEG). The GEG sets out the requirements for energy performance certificates for buildings. It contains formal requirements for the certificates and stipulates the minimum information that must be provided. Energy performance certificates exclusively serve to provide information about the energy characteristics of a building and are intended to enable a rough comparison of buildings.

There are two types of certificates — one is based on a building's energy demand and the other on the building's energy consumption. Energy performance certificates must be presented by the seller or landlord to the potential buyer or tenant before the sale or renting of a building or apartment. Furthermore, where a building is open for a high level of public traffic, an energy performance certificate must be displayed by the owner in a place visible to the public. In principle, the obligated party can choose to either fulfil this obligation by means of an energy performance certificate based on the building's energy demand or its energy consumption. In two cases, however, this obligation can only be fulfilled by means of a certificate based on the building's energy demand: for (i) all constellations regarding new buildings and (ii) when residential buildings that have fewer than five apartments and for which the application for a construction permit was submitted after 1 November 1977 are sold.



Germany



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Under German law relating to apartment leases, landlords are entitled to raise the rent if they carry out measures to increase energy efficiency. The annual rent may be increased by up to 8% of the modernization costs, subject to certain absolute limits.

The GEG stipulates that energy efficiency measures for buildings can be funded from the federal budget. On this basis, the German state-owned bank KfW offers financial loans on favorable terms — and sometimes even (direct) financial subsidies — for measures that increase buildings' energy efficiency. These are available for both constructing new energy-efficient buildings and modernizing existing buildings (especially in connection with heat supply measures) to boost energy efficiency. Companies can also obtain funding for various energy efficiency measures in the form of loans and financial subsidies from the Federal Office of Economics and Export Control (Bundesamt für Wirtschaft und Ausfuhrkontrolle or BAFA).

Under the German Act on Renewable Energy (Erneuerbare-Energien-Gesetz or EEG), operators of renewable energy plants can receive certain subsidies in the form of the market bonus (Marktprämie), the tenant electricity surcharge (Mieterstromzuschlag) or the feed-in tariff (Einspeisevergütung). This includes photovoltaic systems on rooftops. Photovoltaic systems with an installed capacity of up to 1 megawatt-hour can receive subsidies without the need to award the contract for their construction in a tender. The introduction of the tenant electricity surcharge is intended to further promote the installation of photovoltaic systems on residential buildings. Under the tenant electricity surcharge mechanism, the operator of the system negotiates the price for the purchase of energy individually with the tenant, but additionally receives a statutory surcharge — the said tenant electricity surcharge.

However, due to the successful expansion of renewable energies in recent years, Germany is increasingly relying on the market to determine the price and less on subsidies. In particular, this has led to a significant reduction in these EEG subsidies. Therefore, the feed-in tariff has now become much less attractive.



Germany



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The federal government of Germany has adopted the Federal Climate Protection Act (Bundes-Klimaschutzgesetz or KSG). Its goal is to implement the requirements of international agreements, such as the Paris Climate Accords and its international community target of keeping the increase in the global average temperature well below 2°C compared to the preindustrial age and preferably limiting the increase to 1.5°C.

The KSG stipulates that greenhouse gas (GHG) emissions must be reduced by at least 65% by 2030 and by at least 88% by 2040. Net greenhouse gas neutrality must be achieved by 2045. Negative GHG emissions are to be achieved from 2050. To achieve these targets, the KSG stipulates maximum annual GHG emissions for individual sectors for each individual year. For the building sector, the maximum permitted quantity for 2020 is set at 118 million tons of CO2 equivalents; for 2030, the maximum permitted quantity is 67 million tons.

However, this sector-specific approach may be softened by a reform of the KSG. According to the draft reform, targets will continue to be set for each individual sector; however, compliance with the KSG's requirements will no longer have to be achieved by each sector individually. Instead, it will suffice if reduction targets are met in total across all sectors. The draft reform of the KSG is currently being discussed in the German Parliament. It remains to be seen whether it will be adopted.

In addition, the Energy Efficiency Act (Energieeffizienzgesetz or EnEFG) sets the target of reducing final energy consumption (Endenergieverbrauch) in Germany by at least 26.5% compared to 2008 to a final energy consumption of 1,867 terawatt-hours by 2030, and primary energy consumption (Primärenergiebedarf) by at least 39.3% to 2,252 terawatt-hours in the same period. On public bodies, the EnEFG imposes further specific annual savings targets. However, the EnEFG does not contain any specific requirements for the building sector.



Germany



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

To implement the targets of the KSG and the EnEfG, the GEG stipulates that newly constructed buildings — both residential and nonresidential — must be built as nearly zero-energy buildings. This means that threshold values for a building's annual primary energy requirement must not be exceeded, and that the building's energy demand is, as far as possible, covered to a very large extent by energy from renewable sources. In particular, at least 65% of the heat from a building's heating system must be generated from renewable sources or unavoidable waste heat. In the case of existing buildings, a building's energy efficiency must not deteriorate as a result of modification measures. In the case of extensions and expansions, certain threshold values also apply with regard to the energy efficiency of these new parts of the building. The GEG provides for some exceptions in this respect, in particular for buildings that are only used temporarily for residential purposes.

Finally, the individual German federal states (Bundesländer) have set their own reduction targets. For example, the Baden-Württemberg Climate Protection and Climate Change Adaptation Act (Klimaschutz- und Klimawandelanpassungsgesetz Baden-Württemberg or "KlimaG BW") provides for reduction targets with regard to GHG emissions in individual sectors (as well as the KSG on the federal level). According to the KlimaG BW, GHG emissions in the building sector, for instance, are to be reduced by 49% by 2030 in Baden-Württemberg.



Germany



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

The further development and increased use of renewable energies and the substitution of fossil fuels contribute significantly to the reduction of GHG emissions. Therefore, the German federal government has adopted target percentages for energy consumption from renewable sources in the EEG.

The EEG sets the target that at least 80% of gross electricity consumption in Germany should come from renewable energies by 2030. To this end, the law provides for an expansion and electricity volume path that contains annual expansion targets. Furthermore, the EEG also provides that the integration of renewable energies into the existing electricity grid must have the highest priority, and that the expansion of the corresponding renewable energy plants is in the overriding public interest.

As described in "CO2 and Energy Targets", the GEG stipulates that 65% of the heat generated by newly installed heating systems must be produced from renewable energies or unavoidable waste heat. However, the law provides for numerous exceptions and transitional periods. For example, the obligation for new buildings outside of a new development area (Neubaugebiet) only applies from 2026.

In contrast, the Building Electromobility Infrastructure Act (Gebäude-Elektromobilitätsinfrastruktur-Gesetz or GEIG) does not set minimum percentages of energy consumption from renewable energies. However, it also imposes requirements on the building owners in terms of sustainability. According to the GEIG, newly constructed residential buildings with more than five parking spaces must equip these parking spaces with the infrastructure for recharging electric vehicles (EVs). For nonresidential buildings and in the case of renovations, similar, although less comprehensive, obligations to provide recharging infrastructure for EVs apply.



Germany



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Germany introduced a national emissions trading system for the heating sector in 2021, which is similar to the emission trading system at the European level (EU ETS 1). This means that GHG emissions from heating have their own CO₂ price, with the result that the use of nonrenewable sources for heat generation is becoming increasingly expensive. This idea was adopted by the EU, and the building sector is now to be included in a separate European emissions trading system (EU ETS 2), (presumably) starting 2027.

Furthermore, as mentioned in "Incentives for Green Retrofit", to reduce the building sector's emissions, Germany — via the KfW and the BAFA — launched various programs providing incentives to owners of homes and other buildings for energy efficiency measures.

As the target for the building sector under the KSG (see "CO₂ and Energy Targets") was not met in 2021, in 2022, the Federal Ministry of Housing, Urban Development and Building (Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen) and the Federal Ministry of Economics (Bundwirtschaftsministerium) presented an immediate action plan for the buildings sector, which provided for various measures to meet the sector target in the future. In particular, this included even more extensive funding for the energy-efficient refurbishment of private buildings and support for local authorities in the energy-efficient refurbishment of public buildings and facilities. These measures are largely still in force under the federal funding program for efficient buildings (Bundesförderung für effiziente Gebäude).

On the other hand, the Act on Energy Services and Other Energy Efficiency Measures (Gesetz über Energiedienstleistungen und andere Energieeffizienzmaßnahmen) takes a different approach. Among other things, it obliges the public sector and large companies to conduct regular energy audits. The aim is to help to identify potential energy efficiency measures; however, it is up to the addressees to decide whether they actually use these identified energy-saving potentials.

In addition, German tax law also provides for various regulations to promote energy efficiency in buildings. Under the Energy Tax Act (Energiesteuergesetz), taxes have been raised on oil and gas used to generate energy. This act has not only been intended to further reduce the use of oil and gas for energy generation, but also to generate income for the German state. The Income Tax Act (Einkommenssteuergesetz) provides for tax reductions for energy efficiency measures in buildings used for personal residential purposes. A certain proportion of the expenses for these measures can be offset against the taxpayer's rate of income tax.



Germany



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Individual federal states (Bundesländer) have also introduced further measures, particularly in the form of mandatory solar panels on the roofs of certain buildings. In the state of Baden-Württemberg, e.g., such an obligation to install a photovoltaic system has applied to all newly constructed nonresidential buildings and large parking lots since 1 January 2022. Starting 1 May 2022, it was extended to newly built residential buildings and, since 1 January 2023, to existing buildings in the event of extensive refurbishment.



Germany



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Environmental, social and governance (ESG) criteria have become integral in shaping the landscape of real estate financings in Germany. Financial institutions and investors are increasingly recognizing the significance of sustainability considerations in their decision-making processes. Real estate developments incorporating energy efficiency, environmental sustainability and social responsibility are more likely to secure financing. Projects with robust ESG performance may benefit from lower interest rates and favorable terms, reflecting a commitment to responsible and sustainable practices.

The Federal Financial Supervisory Authority published guidelines in December 2019 on dealing with sustainability risks, targeting credit institutions, investment firms, insurance companies, fund management companies and pension funds. These guidelines, while being nonbinding, outline good-practice principles for the appropriate management of ESG risks, emphasizing the integration of ESG factors into existing types of risks, such as credit, market, liquidity and operational risks.

The EU has been actively developing and implementing regulations focused on ESG aspects in various sectors, including real estate finance. The EU Taxonomy Regulation, which entered into force on 1 July 2020, plays a pivotal role in this context. It provides a classification system to identify which economic activities can be considered environmentally sustainable, thereby guiding investment toward more sustainable projects, including those related to real estate. In addition to the Taxonomy Regulation, the EU's Sustainable Finance Disclosure Regulation mandates more transparency in how financial products' sustainability is reported, which is crucial for real estate investments. These regulations are part of a comprehensive EU framework to facilitate sustainable investment and ensure that investors have clear information on the sustainability of their investments. The Corporate Sustainability Reporting Directive mandates companies, including non-EU companies listed on EU markets, to report on their sustainability practices.



Germany



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are various public and private programs to promote the sustainability of buildings. Germany's KfW Förderbank covers a broad spectrum of development programs in Germany and abroad. Its low-interest loans can flow to developers involved in energy-efficient construction and rehabilitation, as well as to companies and private individuals involved in renewable energies, such as sun, wind, and biomass. Several private financial institutions have programs to promote green buildings and green financings. In addition, Germany's 16 federal states (Bundesländer) offer financial support to companies, private individuals, and institutions in the fields of energy efficiency and renewable energies. The principal amounts of the loans available differ from federal state to federal state and from project to project, taking into consideration the needs of the region and the type of project. In the private sector, "crowdfunding platforms" are becoming popular. For instance, the German Environmental Foundation (Deutsche Umweltstiftung) is supporting the establishment of a crowdfunding platform focused on sustainability projects. As of fall 2014, private individuals and companies gained the opportunity to invest in these environmental projects and, hence, have helped small companies with their financing.



Germany



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

During the last few years, both federal and state governments in Germany have mandated green initiatives and adopted legislation in different fields of law.

Based on federal regulation, municipalities are directly obliged to consider aspects of climate protection in creating zoning plans. According to Section 1(5), sentence 2 of the German Federal Building Code (Baugesetzbuch or "BauGB"), municipalities must create zoning plans that ensure a humane environment and protect the natural basis of life. However, according to Section 1a (5) BauGB, the aspects of climate protection must always be weighed up against other public and private concerns. In this regard, courts have ruled that aspects of climate protection do not take precedence in principle.

In contrast, German building law not only provides for a general obligation to consider climate targets, but it also makes specific suggestions as to how municipalities can integrate climate protection measures into zoning and development plans. For example, if the municipality draws up a zoning plan, it can determine if the municipal area should be equipped with certain installations that counteract climate change. In particular, the municipalities are authorized to regulate the generation, distribution or storage of electricity and heat from renewable energies. The regulation makes further specific proposals for the implementation of climate protection measures in sections 9 and 9 (1) No. 25 BauGB. For example, these measures propose that the municipality can stipulate the planting and maintenance of plants. Therefore, municipalities are free to specify a tree-planting pattern for parking lots or order the greening of buildings. Consequently, German building law provides for a variety of measures that empower the local government to enforce green initiatives.



Germany



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

However, German building law does not only empower municipalities to implement climate protection measures. It also empowers the developer. Section 248 BauGB gives the developer the right to oppose certain development plans if these would prevent climate protection measures. For instance, if the development plan stipulates a certain building height that is exceeded by the installation of solar panels, the installation may still be legal. It therefore makes it possible to use the development plan in the first instance and subsequently conduct energy-efficient retrofits even though it may violate the development plan. However, these options are limited. Every deviation from the development plan must be weighed against the interests of neighbors that might be affected by the deviation. This shows that climate protection in German building law cannot be enforced against all reason. It must always be set in relation to other interests.

On the level of the different German federal states (Bundesländer), governments support sustainable urban development by establishing sustainability regulations and promoting sustainable projects. However, each state pursues its own initiatives, which are adapted to the different local conditions. The states set up strategies with sustainable goals they want to achieve, finance sustainable projects and set up committees that continually redefine the objectives. Below are some examples pursued by German states:

- The government of Bremen developed a concept for a sustainable business park within its "green economy strategy." The aim is to enable the businesses located there to operate sustainably and ecologically. To achieve this goal, the business park itself will provide for sustainable infrastructure. For example, the park's energy supply system is based on renewable energies. Moreover, all types of water (rainwater, wastewater from production, process water) shall be directed into a biological recycling process so that they can be reused. In addition, extensive greening of the building roofs is planned, and light emissions should be minimized.
- Hesse launched the "Growth and Sustainable Renewal" funding program. The project aims to promote sustainable urban development by involving local stakeholders and granting subsidies based on sustainability considerations. Municipalities may receive subsidies for the financing of sustainable measures (e.g., re-naturalizing ditches, connecting existing green spaces, upgrading green spaces, additional greening), evaluated based on the guidelines issued by the state for promoting sustainable urban development. Currently, 45 different projects are part of the program.



Germany



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

There is no statutory requirement under German law to include green clauses in lease agreements. However, certain statutory provisions promote the sustainable use of buildings and could be considered green clauses in other jurisdictions. For example, heating and warm water costs must be largely charged to tenants based on actual consumption. Furthermore, tenants of residential premises must tolerate construction works performed by landlords during energy modernization. However, tenants generally do not have any legal means to enforce energy modernization in Germany.

In October 2015, an interdisciplinary working group led by the German Private Institute for Sustainable Building (Deutsches Privates Institut für Nachhaltige Immobilienwirtschaft), which is the German certifying body of BREEAM, announced a new set of guidelines and recommendations for green leases. The working group developed sample provisions for green leases that aim to lay important foundations for sustainable building use while giving the contractual parties considerable leeway in its implementation. Furthermore, in 2018, the Zentraler Immobilien Ausschuss e.V. (ZIA) Central Real Estate Committee published guidelines and sample clauses for green leases. An update of the ZIA brochure on green leases from 2018 is being prepared.

In practice, green clauses are becoming more and more frequent in commercial lease agreements. Landlords are increasingly trying to introduce green clauses when negotiating new lease agreements, and also when negotiating amendments to existing lease agreements. While landlords (and, infrequently, tenants) often try to make the proposed green clauses binding obligations, often only nonbinding, best-effort clauses are agreed on in the end. This is likely largely because there is currently no legal requirement to implement binding clauses in lease agreements. One exception is the tenant's binding obligation to provide the landlord with consumption data, which is frequently agreed on between the parties. The majority of green lease agreements with binding, rather than nonbinding, obligations are requested by landlords to ensure compliance with the requirements of an existing or planned green building certification, such as the DGNB, BREEAM or LEED.



Hungary



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Hungarian law does not currently regulate green certification for buildings and there is currently no official regulation or procedure for obtaining such certification.

However, it is possible to obtain green certification based on the green certification types already in use in other EU member states, such as the Building Research Establishment Environmental Assessment Methodology (BREEM), Leadership in Energy and Environmental Design (LEED), German Sustainable Building Council (DGNB) and WELL Building Standard (WELL). Although a large number of domestic projects have already obtained green certification based on the mentioned types, these systems are not based on Hungarian legislation, and therefore their application is not mandatory.

This means that in Hungary, green certification is not granted on the basis of a certification by a public authority, but is issued by an entity or company authorized to issue green certification.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Yes, the Hungarian regulation of the mandatory energy performance certifications is based on Government Decree No. 176/2008. (VI. 30.) on the certification of the energy performance of buildings.

In accordance with the provisions of the decree, it is mandatory to certify the energy performance of buildings in the following circumstances:

- The construction of a new building
- The **sale** or **lease** of an existing building or an individual building unit
- State-owned public buildings with a useful floor area of more than 500 square meters used for public authority purposes

The following types of buildings are not subject to the decree:

- Independent buildings (that are not attached to another building) with a useful floor area of less than 50 square meters
- Buildings used for residential and leisure purposes for less than four months per year
- Parade buildings, sheeting or tent structures intended for use for a maximum of two years
- Buildings used for religious purposes
- Low energy-demand agricultural, logistic and industrial buildings, and parts of buildings used for non-residential purposes in which the air temperature does not exceed 12 degrees Celsius during the operating time of the heating system, or is heated for less than four months and cooled for less than two months
- Workshops or buildings in an industrial area, where the internal heat gain from the technology is greater than 20 watts per square meter during the period of normal use, or where an air exchange of more than 20 times the normal air exchange is required or occurs during the heating season



Hungary



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

A new funding scheme has been introduced in Hungary under Government Decree No. 210/2014 (VIII.27.) for the following investments in strategic sectors:

- The manufacture of equipment for the transition to a net-zero emission economy
- The manufacture of key components designed for the production of the equipment specified in the previous point and used primarily as direct inputs
- The production or recovery of critical raw materials for the production of equipment and essential components as defined in the previous points

The funding will be available throughout Hungary until the end of 2025 for companies that can prove that they would have invested outside the European Economic Area without the aid.



Hungary



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Based on the provisions of Act XLIV of 2020 on climate protection, the Hungarian government undertook the following actions:

- Hungary will reduce its greenhouse gas emissions by at least 40% by 2030 compared to 1990.
- After 2030, if final energy use in Hungary increases above 2005 levels, the increase will be met exclusively from carbon-neutral energy sources.
- Hungary aims to achieve a share of renewable energy sources in gross final energy consumption of at least 21% by 2030.
- Hungary will reach full climate neutrality by 2050, i.e., the remaining domestic emissions and removals of greenhouse gases will be in balance by 2050.

Despite the above, there is currently no Hungarian legislation in place to reduce CO2 emissions from buildings.



Hungary



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There is currently no Hungarian legislation in force that contains such a provision.



Hungary



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There is currently no Hungarian legislation in force that contains such a provision.



Hungary



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

To improve the energy efficiency of the domestic housing stock, the Green Home Programme of the National Bank of Hungary is now offering a fixed-rate loan to residential customers.

The loan encourages the construction of green homes, so the conditions stipulate that the dwelling must have an energy rating of at least "BB" and a maximum total energy demand of 90 kilowatt-hours per square meter per year. The maximum loan amount is HUF 70 million, and the loan amount can be up to 80% of the value of the property, although in some cases, banks will finance lower values.



Hungary



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, the territorial delimitation of environmental protection areas, such as nature protection areas, Natura 2000 sites and water protection zones are indicated on zoning plans.



Hungary



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Currently, there is no legislation or mandatory contractual terms in force under Hungarian law requiring sustainability elements in lease agreements.

The parties are free to decide on the terms of the contract and the allocation of the relevant costs, so they have the option of including sustainability requirements, but in practice, this is rarely the case.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The Italian legal system does not provide for a general obligation for new and refurbished buildings to obtain a sustainability certification. However, such a certification may be required in the context of public subsidies or incentives granted for renovation works or the like.

The most common (voluntary) sustainability certifications for buildings are listed and described below.

The Istituto per la Trasparenza, l'Aggiornamento e la Certificazione degli Appalti ("**Protocollo ITACA**") represents the primary certification model in Italy. It covers the environmental sustainability level certification of different kinds of buildings (e.g., residential, office, commercial and industrial — for both new construction and restructuring) in many Italian regions.

The Protocollo ITACA is a set of regional protocols and has technical-scientific requisites agreed at a national level. (Depending on its needs, each region has drafted a regional Protocollo ITACA, based on the national Protocollo ITACA.)

The Protocollo ITACA is managed by a specific committee (Comitato di Gestione) formed by the regional representatives. This regional type of management is very important for Italy, considering the great microclimatic differences between regions and the different traditional building construction technologies.

Finally, the Protocollo ITACA evaluates the building's environmental sustainability based on the following main criteria:

1. Quality of the site
2. Energy resources consumption (e.g., summer/winter energy consumption, hot water production, natural lighting, renewable energy and use of eco-compatible materials)
3. Impact of the "environmental loads" (e.g., the emission of the "greenhouse gas" solid and liquid waste and the permeability of the external areas)
4. Indoor quality
5. Service quality



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Unlike the Protocollo ITACA, the CasaClima Nature is a certification model that evaluates a building not only in terms of its energy performance, but also with respect to its effects on the environment and on the health of the occupants. As of 2005, the CasaClima Nature certification is compulsory in the Trentino Alto Adige region for new buildings and buildings that have undergone significant renovation works, save for some specific exceptions (e.g., religious and rural buildings). The certification is also compulsory in the case of selling and leasing buildings.

The CasaClima Nature quality certification evaluates a building's sustainability based on the following indicators:

- Overall energy efficiency of the building
- Environmental impact of the building materials used
- Hydraulic impact of the building
- Indoor air quality
- Protection from radon gas
- Natural lighting
- Acoustic comfort

The technical directive CasaClima Nature 1.6.2 replaced the previous CasaClima Nature 1.6 and applies to new buildings and buildings undergoing substantial modification as of 1 September 2017. This amended version of the directive introduced some changes to the requirements that have to be met to qualify for the certification. It likewise gave more detailed information regarding technical aspects.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Some of the changes relate to the following:

- Use of ProCasaClima2022 for all the calculations required for the certification (relevant to the building's environmental and hydraulic impact score)
- In terms of calculating the environmental impact, the possibility to include the specific ecological values of a given material/product if the same is provided with an Environmental Product Declaration in compliance with the ISO 14025 and EN 15804 standards
- New guidelines relevant to banned products, materials and substances
- Minimum requirements for controlled mechanical ventilation aimed at fulfilling the requirements applicable to indoor air quality
- Inclusion of materials/products used as thermal and acoustic insulation for interiors in the scope of the control relevant to emissions of formaldehyde and total volatile organic compounds
- Revision of the limit values of volatile organic compounds for liquid indoor products
- Identification of the product's certifications acceptable under the CasaClima Nature criteria for low-emissions product/materials
- Identification of the substances to be verified and analyzed when measuring the indoor air quality
- Identification of the methods for measuring the external and internal illuminance and of the methods for calculating the average daylight factor
- More specific identification of the acoustic tests to be performed for satisfying the requirements of acoustic comfort in multifamily residential buildings

The LEED 2009 Italia Nuove Costruzioni e Ristrutturazioni is a certification model relevant to new buildings for institutional (e.g., libraries, museums, churches, etc.), commercial (e.g., offices, stores) and residential (including hotels) use.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

This evaluation model provides for the observance of certain mandatory prerequisites to achieve a certain score for the following:

- Sustainability of the site
- Water management
- Energy and environment
- Materials and resources
- Indoor environmental quality
- Project innovation
- Regional priority (which takes into account local characteristics in assessing a more appropriate project and building practices)



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

To implement the Energy Performance of Building Directive 2002, Italy issued Legislative Decree 192/2005, which introduced the mandatory Energy Efficiency Certificate (APE). This decree has been gradually updated over the years.

The decree addresses, among other things, the following: (i) methodology for determining the energy performance of buildings; (ii) the transfer of information regarding the buildings' energy performance in the case of purchase or lease; (iii) the general criteria for the energy certification of buildings and (iv) the implementation of the minimum requisites regarding energy performance.

When transferring information concerning buildings' energy performance, the APE is compulsory under the following circumstances:

- New building construction
- Major renovations of existing buildings
- Sale, donation or lease of buildings

In building sales or leases, the proposed buyer or tenant has the right to be provided with the relevant APE at the beginning of the negotiations.

Moreover, ads announcing a sale or lease of buildings must indicate the energy performance class of the building/unit.

The APE is valid for 10 years from the date of release and must be updated following each renovation/requalification work that determines a change of the building's relevant energy performance.

However, in the case of failure to comply with the compulsory and routine check of the building's energy facilities, the APE will lose its validity.

As for the energy performance standard, pursuant to Legislative Decree 192/2005, all new buildings and buildings that have undergone significant renovation works have to be "nearly zero-energy buildings" and comply with specific and stringent energy-related requirements, detailed in Legislative Decree 192/2005.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Over the years, the Italian government has approved various government-funded schemes for improving the energy efficiency of existing buildings, most of which are currently still in force. The most common and widely used scheme is the so-called "Conto Termico."

The scheme is open to both private individuals and public entities.

Private individuals can use the incentive scheme to implement small projects regarding plants producing heat from renewable sources and from high-efficiency systems (e.g., condensing boilers, heat pumps, biomass boilers/stoves/fireplaces and solar heating systems combined with solar cooling technology for the production of cold).

In addition to the above, undertakings and public entities can also use the incentive scheme for projects improving the insulation efficiency of the envelope of existing buildings, such as insulating walls and roofs, replacing windows and installing solar screening.

Moreover, the incentive scheme finances energy performance certifications and energy performance evaluations as requisites for the implementation of the aforementioned projects.

For projects improving insulation efficiency, the incentive consists of a contribution equal to 40% of the eligible expenditure. Each type of improvement, such as replacing windows, is associated with a maximum eligible expenditure.

The sum of the maximum eligible expenditure, such as those associated with replacing windows and those associated with insulating walls and roofs, cannot exceed the maximum incentive payable.

For small projects regarding plants producing heat from renewable sources and from high-efficiency systems, the incentive is calculated based on the quantity of energy produced and the environmental sustainability of relevant technology.

The Conto Termico allocates EUR 400 million yearly for public entities' projects and EUR 500 million yearly for private individuals' projects.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Another government-funded incentive to promote energy efficiency is the white certificate (certificati bianchi) mechanism. Introduced in 2005, the mechanism consists of tradable securities issued by the Energy Market Manager certifying the achievement of end-use energy savings through energy efficiency measures and projects. One certificate is equal to one tonne of oil equivalent saved. The certificates can be issued in favor of energy distributors, energy service companies (ESCO), public and private entities that have implemented a certified energy management system (e.g., ISO 50001), and public and private entities that have appointed a certified expert energy manager. However, entities that do not meet the above-mentioned requirements can still access the mechanism through eligible entities (e.g., an ESCO), which will submit the relevant application.

Lastly, with reference to public buildings, there is the Central Public Administration Energy Requalification Program (PREPAC), aimed at improving the energy efficiency of public buildings by at least 3% each year. The incentive can cover up to 100% of the planned expense, within the limits of the resources available for the relevant year and considering any other cofinancing. Among the interventions that can benefit from the PREPAC incentives, there are replacement of windows, installation of shading systems, replacement of winter air-conditioning systems with condensing boilers, and installation of cogeneration or trigeneration systems. Proposals have to be submitted by 15 July of each year and must relate to (i) buildings owned and used by the public administration and (ii) energy efficiency interventions indicated in the APE or the preliminary diagnosis.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Italian National Integrated Plan for Energy and Climate (PNIEC) of 2019, enacting EU Regulation No. 1999/2018 on the European climate framework, establishes different strategies that have to be implemented for Italy to align with the European sustainability targets. In particular, these strategies relate to (i) decarbonization, (ii) energy efficiency, (iii) energy security, (iv) the internal market, and (v) research, innovation and competitiveness. The PNIEC also provides for specific interim targets related to each of the topics above. With reference to decarbonization, the Italian PNIEC aims to reduce CO2 emissions in accordance with the European targets established by the Green Deal:

1. 43.7% by 2030 (compared to 2005 levels)
2. Net zero by 2050

With reference to energy efficiency, the PNIEC sets a target of reducing primary energy consumption by 43% and final energy consumption by 39.7% (compared to the 2007 reference scenario) by 2030, with different participation from different sectors (i.e., real estate field — 3.3 Mtep per year; transportation field — 2.8 Mtep per year; industrial field — 1.0 Mtep per year; service field — 2.4 Mtep per year).

The PNIEC aims to reach these targets through different tools, such as the following: (i) creating a list of technologies, systems and products to reduce the use of carbon in the Italian economy; (ii) financing decarbonization and energy efficiency measures in the industrial sector with the revenue from the EU ETS mechanism; (iii) promoting green buildings and energy efficiency in general; (iv) promoting reuse and recycle practices in the industrial sector; and (v) promoting green transport.

In July 2023, Italy notified a proposal for updating the PNIEC to the European Commission. Upon review, the European Commission highlighted the need for Italy to amend the PNIEC to better align it with the climate targets established by the Green Deal.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Another Italian measure aimed at implementing the EU targets is the National Energy Strategy. This act was approved by an intra-ministerial decree in 2017 and provides for a 10-year plan defining the objectives, policies and actions to improve the national energy sector. In particular, the National Energy Strategy is built around five main topics: (i) diversifying the energy sources by increasing the share of power from renewable sources; (ii) promoting measures and policies to improve energy efficiency in various sectors, such as the building, industrial and transport sectors; (iii) promoting environmental sustainability by adopting policies to reduce greenhouse gas emissions, manage energy waste and protect ecosystems; (iv) ensuring the security and resilience of the country's energy supply, diversifying sources and promoting energy autonomy; and (v) supporting technological innovation and research in the energy sector.

Under Legislative Decree 192/2005 (mentioned in "Energy Performance Certificates and Minimum Energy Standards"), which relates to the minimum requisites regarding energy-saving in the real estate sector, all new buildings, owned and occupied by both public and private entities, must be "nearly zero-energy buildings" beginning 2021. ("Nearly zero-energy buildings" refer to buildings whose energy consumption is very low or almost zero and is met, to a significant extent, by energy produced on-site from renewable sources.)

Lastly, following the recent increase of energy costs, the EU approved the "Save Gas for a Safe Winter" resolution. It aims to reduce the overall European consumption of gas by requesting member states to adopt measures to reduce — among other things — gas consumption in public and private buildings, with a few exceptions concerning critical infrastructures (e.g., schools and hospitals) and particular circumstances (e.g., the limits do not apply with reference to the parts of buildings that are meant to be operated 24/7).

Italy enacted the European resolution through Decree of the Ministry of Environment No. 383 of 2022, which established new temperature thresholds for public and private buildings featuring thermal air-conditioning systems fueled by natural gas, as well as new time frames for their operativity. In particular, the decree reduced the systems' overall time frame to 15 days with reference to their ignition period and one hour with reference to their daily ignition duration. Moreover, the maximum air temperature values have been reduced by 1°C.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In June 2023, the PNIEC was renewed in light of the amendments to the Renewable Energy Directive (RED) through Directive No. 2018/2001 (RED II). In addition to what has already been explained in "CO2 and Energy Targets", the plan provides instructions to reach, in accordance with the European targets, 40.5% gross national energy consumption with renewable energy in electricity, heating, cooling and transportation by 2030.

To satisfy the 40.5% target as stated in the RED II, Legislative Decree No. 199/2021 was published. This decree applies to new buildings — those constructed or restructured as of June 2022 — and stipulates that renewable energy should satisfy at least 60% of hot water energy consumption and 60% of the sum of consumption for hot water, heating and cooling. For public buildings, the percentage has been increased by 5%.

In November 2023, Terna (an Italian electric transmission company) published a monthly report on the electric system, which provided data on the use of renewable energies, among other things. The report compares renewable energy production/consumption in November 2022 and 2023, highlighting an overall increase of renewable energy. Specifically, there was an increase (+86.6%) in hydroelectric-generated power, wind generation (+51.9%) and photovoltaic generation (+28.1%), and a slight increase in geothermal generation (+0.5%),

Lastly, on 20 November 2023, Directive No. 2413/2023 (RED III) entered into force, amending and updating the RED II. With particular reference to the renewable energy sector, the directive provides for a more ambitious European target of a 42.5% share of renewable energy with reference to the overall European final energy consumption. It encourages member states to allocate at least 5% of the capacity of new energy installations to innovative solutions.

The RED III also recognizes the vital role of buildings in the sustainable transition, highlighting that buildings have a great untapped potential for reducing greenhouse gas emissions. It also provides for binding targets concerning the share of renewable energy used for heating and cooling buildings. In particular, the RED III establishes an increase of 0.8% per year at national level and 1.1% from 2026 to 2030, with the ultimate target of reaching 49% of the renewable energy quota by 2030.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The principal incentive in Italy for encouraging more efficient use of energy in buildings has consisted of tax relief on various energy-saving measures, through which households and companies may deduct from their income taxes (generally over a period of 10 years from when the costs are incurred) a portion of the costs incurred to increase the energy efficiency of existing buildings. These energy efficiency measures include (i) reducing energy consumption for heating the building, (ii) improving the building's thermal performance (by improving insulation in flooring or windows, including frames) and (iii) installing solar panels.

Among these incentives, the "Superbonus" and the "Ecobonus" aim to improve the energy efficiency of existing buildings.

The Superbonus consists of fixed tax deductions (70% for 2024) of the expenses incurred for the implementation of specific projects aimed at, among other things, improving the thermal insulation of buildings, replacing air-conditioning systems, installing photovoltaic panels and carrying out energy efficiency measures. The Superbonus is open to individuals, outside the exercise of business, arts and professions, both resident and nonresident in the state, who incur the expenses for implementing the subsidized interventions.

The Ecobonus incentive was first introduced in 2007 and, similarly to the Superbonus, aims at incentivizing energy efficiency projects for private buildings through tax deductions that should be divided in 10 annual installments of different value.

Resident and nonresident taxpayers (including professionals, companies, and public and private entities not engaging in a commercial activity) can benefit from the Ecobonus with reference to existing buildings and for specific energy efficiency projects, including, among other things, replacing windows, installing solar shading, and upgrading heating and air-conditioning systems.

Both the Superbonus and the Ecobonus assign a maximum eligible expenditure for each type of intervention, and the sum of the maximum eligible expenditure cannot exceed the maximum incentive payable.

The above incentives have been confirmed until 31 December 2024. Further reconfirmations are more than likely, considering the European target of net-zero emissions by 2050, which requires — among other things — the decarbonization of the real estate sector.



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Through the National Recovery and Resilience Plan (NRRP), the Italian government has introduced various initiatives to improve the energy efficiency of public and private buildings to achieve the European target of total decarbonization of the civil sector by 2050. Among other things, the NRRP provides for several far-reaching measures for improving buildings' energy efficiency, including (i) financing the energy and seismic renovation of residential buildings and encouraging the in-depth redevelopment and transformation of public buildings into "nearly zero-energy buildings," (ii) supporting the development of more efficient district heating networks, (iii) building new and greener schools and renovating the existing ones to halve energy consumption, and (iv) providing funds to encourage private buildings' energy transition, mainly through tax-saving measures (as described in "Regulation").

Among the initiatives provided for by the NRRP, there is the increase of the National Energy Efficiency Fund, an incentive that supports energy efficiency interventions to ensure the achievement of national energy efficiency targets. The fund provides for two different types of financial aids (low-interest financing of 0.25%, and guarantees on individual financing transactions that are requested from financial institutions), which can cover different kinds of projects, including energy requalification of buildings and reduction of energy consumption in industrial processes. The fund is aimed at public administrations, private companies and energy-saving companies. However, as of 1 January 2024, access to the fund is temporarily closed to private companies.

Moreover, the Ministerial Decree of 4 July 2019 ("**Fer Decree**") introduced incentives aimed at promoting the spread of renewable energy. Among the incentivized projects, the Fer Decree also includes the installation of photovoltaic panels meant to replace roofs of rural buildings on which asbestos is/was present. The measure has a double objective, since it promotes the development of new renewable energy plants, while also improving the safety of buildings.

The Ministry of Enterprises and Made in Italy has also launched several tenders related to the NRRP funds to promote the sustainable transition, including through financing energy efficiency projects. Among them was the project named "Sustainable investments 4.0," which made available to small and medium enterprises (SMEs) operating in the southern part of Italy a fund amounting to EUR 400 million to promote and finance, among other things, energy efficiency projects (e.g., implementing energy consumption monitoring systems and installing thermal or electrical energy production plants from renewable sources).



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Furthermore, several regions have issued calls for tenders aimed at improving the energy efficiency of public buildings. For example, the Piemonte region has published the "Energy efficiency and energy production from renewable sources in public buildings — public-private partnership contracts" tender, open to public entities to provide grants for implementing projects for the energy efficiency of buildings and promoting renewable energy sources. The tender concerns public buildings used for public activities (e.g., institutional, social, educational or cultural activities).

Alongside financing the energy transition of public buildings, regional tenders may also concern private undertakings' projects, mostly with reference to SMEs. For example, the Liguria region has provided a fund of EUR 4,060,000 aimed at reducing SMEs' energy consumption and greenhouse gas emissions.

Lastly, in the context of green public procurement, minimum environmental criteria (CAM) may apply, providing for specific sustainability-related criteria that public procurement stations have to apply with reference to certain categories of works, including construction works.

In particular, the CAM establish criteria related, among other things, to the sustainability of materials, safeguarding of water resources, ESG risk assessment and more.

With regard to the private sector, several banks offer businesses and households energy-efficiency loan financing.



Italy



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

At a national level, through Legislative Decree No. 199/2021, it is mandatory to use a fixed quota of renewable energy for heating, air-conditioning and hot water production to obtain the building permit for the construction of new buildings or for material restructuring of existing buildings.

Requests for permits made before June 2022 must show that 50% of the building's energy consumption is from renewable sources. Beyond this date, the requirement has been increased to 60%. For public buildings, the percentages have been increased by 5%.

Regional legislation may also further increase the required percentages.

The above-mentioned obligation does not apply in the case of buildings connected to district heating that accounts for energy consumption for heating and hot water.

Finally, in drafting new land planning instruments, municipalities must evaluate the feasibility of including district heating facilities.



Italy



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green lease provisions are not mandatory in Italy, but they are becoming more common when the landlord is an institutional investor and owns the entire building.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Luxembourg has a nationally recognized certification for buildings known as Lëtzebuerger Nohaltegkeets-Zertifizéierung — Luxembourg sustainability certification ("LENOZ").

Introduced in 2017 by the Luxembourg law of 23 December 2016 introducing sustainability certification for housing, as amended ("**Law of 2016**"), as supplemented by the Grand-Ducal Regulation dated 27 April 2022 amending the Grand-Ducal Regulation dated 23 December 2016 relating to sustainability, LENOZ certification is designed to serve the specific needs of the residential sector, including single-family houses and multiunit residential buildings.

The purpose of the LENOZ certification is to raise awareness of sustainable housing and bring more transparency to the property market. The certificate provides a great deal of information, according to the specific requirements set forth under its Schedule I, about the certified dwelling and serves as a guide throughout the entire construction process. It can be used to assess the consequences of decisions taken by the owner of the building, not only in terms of energy efficiency but also in terms of the sustainability of the home, its location and indoor air quality.

The LENOZ certification is based on data provided in the building's energy performance certificate (EPC) (as such certificate is described in detail in the section entitled "Energy performance certificates and minimum energy standards" hereunder.)

The LENOZ certification can be issued by architects, consulting engineers, energy consultants and other professionals authorized to issue EPCs. The Ministry of Housing and Spatial Planning grants financial support to building owners that would like to apply for a LENOZ certification for their residential property.

However, any construction, transformation or demolition of a building requires prior authorization from the mayor of the commune. The certificate issued by the mayor, stating that the planned construction has been duly authorized, must be posted in the vicinity of the construction site by the project's contracting authority.



Luxembourg



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Other internationally renowned certifications delivered by Deutsche Gesellschaft für Nachhaltiges Bauen, Leadership in Energy and Environmental Design ("LEED"), the Building Research Establishment Environmental Assessment Methodology ("BREEAM") or Haute Qualité Environnementale also apply in Luxembourg. However, they have mainly been designed for functional buildings or large buildings.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In Luxembourg, the EU Energy Performance of Buildings Directives (2002/91/EC) have been fully implemented on a national level by the Grand-Ducal Regulation of 9 June 2021^[1] ("**GDR 2021**"), which merges the Grand-Ducal Regulation of 30 November 2007 on the energy performance of residential buildings ("**GDR 2007**") and the Grand-Ducal Regulation of 31 August 2010 on the energy performance of commercial and office buildings ("**GDR 2010**").

As mentioned under the section entitled "Green certification," EPCs have been mandatory since the implementation of the GDR 2007 for all existing residential and nonresidential buildings. Any building permit for a new building or an extension or modification of an existing building needs to be completed by an EPC.

The GDR 2021 sets out minimum energy performance requirements for new buildings, extensions, substantial alterations and conversions. Chapter 3 of the regulation specifies the circumstances in which an EPC is compulsory. These are as follows:

- During the construction of a new building subject to an application for planning permission
- When extending a building
- When modifying a building
- When a building has been substantially altered
- When there is a change of ownership of an existing building or part of an existing building in the case of a sale
- When there is a change of tenant of an existing building or part of an existing building
- In the case of a building in which an energy reference area greater than 250 square meters is occupied by a public authority and frequently visited by the public

^[1] [Grand-Ducal Regulation of 9 June 2021 — Legilux \(public.lu\)](#).



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

However, the EPC is not necessary when a property is being sold for demolition, or when it is being sold by formal means, public auction or property seizure.

Article 15 of the GDR 2021 mandates that an extra EPC unique to the parts in question be prepared when a functioning building has parts meant for residential use.

As an illustration of the obligations previously outlined in the GDR 2007 and GDR 2010, Article 17 of the GDR 2021 mandates that the EPC be accessible for review by a prospective tenant or buyer. The building's categorization must also be mentioned in commercial media marketing.

In the case of a sale, when the change of ownership becomes effective, the original EPC must be attached to the contract. However, in the case of a lease, a certified copy must be provided.

The EPC is a document that describes the energy quality of a house or apartment. The expert assesses the building's primary energy requirements and heating requirements (building geometry, construction type, insulation, ventilation, heating and water systems) and the building's greenhouse gas emissions (particularly CO₂). The property is then classified into one of the categories, from A (very high energy performance) to I (poor energy quality).

For residential buildings, there is a single type of EPC, maintaining consistency despite energy performance requirement updates.

Nonresidential buildings have two types of EPC, covering new and existing constructions based on energy needs or consumption, respectively. The General Directorate of Energy oversees the certification system, aided by external experts if necessary. A national database collects EPCs, with plans to expand to nonresidential buildings.

The duration of the EPC remains the same as that set by the 2007 and 2010 texts, i.e., 10 years.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Luxembourg government encourages energy renovation measures for both renovation projects and new constructions, employing various subsidies under the Klimabonus subsidy program (formerly PRIME House), introduced by the Law of 2016 (discussed in the "Green Certification" section) and the Grand-Ducal Regulation of 7 April 2022^[2] determining the implementing measures for the Luxembourg law of 23 December 2016 ("**GDR 7 April 2022**").

Any owner, whether it is a single-family house or a multiunit dwelling, can apply for financial aid. Eligible applicants include natural persons (individuals), legal entities established under private law and public legal entities, excluding the state. This subsidy is granted once per installation and covers both insulation measures to reduce the building's specific heating requirements and the installation of renewable energy technologies. It covers the following systems:

- Solar thermal - using solar panels to heat up water for your home
- Solar photovoltaic - using solar panels to generate electricity for your home or the grid
- Heat pumps - an energy-efficient alternative to a boiler or air conditioner, moving air from outside to heat your home, and vice versa to cool it in the warmer months
- Wood-fueled boilers and stoves - biomass boilers or stoves that use renewable energy, such as wood chips or pellets, to heat your home
- Implementation or connection to a heat network - giving excess energy generated to the energy grid in return for a payment and getting a subsidy on this connection to the network
- Attic floor and roof insulation

^[2] [Grand-Ducal Regulation of 7 April 2022 — Legilux \(public.lu\)](#).



Luxembourg



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Some communes in Luxembourg grant additional or supplementary aid on top of that given by the state for energy savings or renewable energy.^[3] Gas and electricity suppliers also have energy efficiency aid programs.

The Klima Agency in Luxembourg,^[4] a federal government office created to support and advise all actors in their commitment to climate protection and energy transition, has set up a calculator that helps people to understand which subsidy they are eligible for under the state, the community and any supplier support. The calculator will also indicate potential packages of installations that can be installed, such as solar panels or a heat pump.

^[3] [Subsidies aimed at combatting climate change | Ville de Luxembourg \(vdl.lu\)](#).

^[4] [Klima-Agence — Subsidy simulator](#).



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Luxembourg is currently implementing the EU's climate objectives into its national legislation. Draft bill No. 8320, currently being discussed at the Luxembourg Parliament, is intended to amend and adapt the existing Luxembourg Climate Law of 15 December 2020 ("**Climate Law 2020**").

The new bill No. 8320 aims to transpose four European texts into national law,^[5] including Directive (EU) 2023/9593 (on the inclusion of emissions from the maritime transport sector in the Emissions Trading Scheme (ETS), and the establishment of a new standalone "ETS 2" applicable to the building, road transport and fuel sectors).

The EU's new objective is a net reduction in emissions of at least 55% by 2030 (compared with 1990), as set out in the European Climate Act (Regulation (EU) 2021/1119), and to achieve climate neutrality by 2050 at the latest. Also provided in the European Climate Act, the European Commission recommends a reduction in emissions of at least 20% by 2040.

Currently, the applicable climate law sets a target of reducing greenhouse gas emissions at a national level by 55% by 2030 compared with 2005 levels. This target concerns all emissions allocated to Luxembourg under Regulation (EU) 2018/842. For the building sector, the target is currently set at a 64% reduction in greenhouse gas emissions by 2030 compared to 2005.

The long-term objective is to achieve climate neutrality, or net-zero emissions, in Luxembourg by 2050 at the latest.

^[5] Directive (EU) 2023/9582 concerning the commercial aviation sector; Directive (EU) 2023/9593 (on the inclusion of emissions from the maritime transport sector in the ETS, and the introduction of a new standalone "ETS 2" applicable to the buildings, road transport and fuel sectors); Regulation (EU) 2023/9564 (on the introduction of a mechanism for the border carbon adjustment mechanism); Regulation (EU) 2023/9575.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Recently, Luxembourg set a new renewable energy target due to the Revised Directive EU/2023/2413,^[6] which is the legal framework for the development of clean energy across all sectors of the EU economy, supporting cooperation between EU countries toward this goal.

The Paris Agreement, which was unanimously adopted on 12 December 2015, established a new basis for global climate action. At the center of the Paris Agreement is the target of limiting global warming to well below 2 degrees Celsius compared to preindustrial levels and pursuing efforts to limit it to 1.5 degrees Celsius.

Given the EU objectives set forth above in the "CO2 and energy targets" section, Luxembourg's integrated national energy and climate plan (PNEC) for the period 2021-2030 was adopted in 2020. However, as part of the 2018-2023 coalition agreement, the government further decided to do its utmost to comply with the Paris Agreement and to take into account the findings of the Intergovernmental Panel on Climate Change Special Report on global warming of 1.5 degrees Celsius.

Against this background, the PNEC was duly amended to integrate the national energy and climate plan, defining the framework for Luxembourg's energy and climate policy up to 2030.^[7]

Luxembourg is likely to aim for a 35% renewable energy goal by 2030, up from the current 25% in the 2020 PNEC. Luxembourg met its 11% target in 2020 and reached 11.7% of renewable energy in its total energy consumption in 2021 according to Eurostat figures.^[8] This figure should be considered in the context of Luxembourg's small size and the significant role of the transport sector, particularly fuel tourism, in its energy consumption.

^[6] [Directive \(EU\) 2023/2413](#).

^[7] [Commission Recommendation \(EU\) 2024/631 of 18 December 2023](#).

^[8] [Statistics | Eurostat \(europa.eu\)](#).



Luxembourg



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Moreover, to encourage real estate investment projects aimed at producing electricity from renewable energy sources, the state may grant an incentive to private individuals, municipalities and municipal syndicates, companies, and associations, as set out in the GDR 7 April 2022 amended by the GDR of 24 February 2023.^[9]

^[9] [Grand-Ducal Regulation of 24 February 2023 — Legilux \(public.lu\)](#).



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

An aid scheme for medium energy-consuming (minimum 2%) companies was set up in Luxembourg following the tripartite agreement of 28 September 2022. As a result, the amended law of 15 July 2022, which introduces an aid scheme for businesses severely affected by the increase in energy prices arising because of Russia's aggression against Ukraine, has entered into force.

In particular, a new financial aid intended to cover the extra costs of natural gas and electricity for medium energy-consuming companies was introduced.

In addition, reference is made to draft bill No. 8276 amending the amended law of 4 December 1967 on income tax.

Draft bill No. 8276 envisages the implementation of certain elements of the so-called "Solidarit itspak 2.0" agreement concluded at the end of the Tripartite Coordination Committee meetings on 18, 19 and 20 September 2022. It aims to promote and accelerate the ecological and energy transition, as well as the digital transformation at the company level. It also contributes to the achievement of the ambitious national objectives of the PNEC adopted by the Government Council on 21 July 2023.

The draft law intends, among other things, to extend the scope of the tax rebate for investment by specifically targeting investments and expenses made by Luxembourg companies in the context of digital transformation or ecological and energy transition projects. The new tax rebate for investment shall apply from the 2024 tax year.

The main change provided for by the bill is the abolition of the additional tax subsidy and the introduction of a new income tax subsidy due to investments made in the context of the digital transformation or the ecological and energy transition of the company.

The new tax rebate will also be granted for operating expenses related to these investments, which is not currently permitted.

The rate of the new tax subsidy applicable to investments and operating expenses in digital, ecology or energy is 18%.

Given that the nature of investments can be very diversified, encompassing both operating expenses and investments related to digital transformation or the ecological and energy transition, the bill proposes to set up a system of attestation and certification.



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The Luxembourg-EIB Climate Finance Platform^[10] (LCFP) is a joint initiative between Luxembourg and the European Investment Bank to mobilize and support investment in international climate finance, focusing on climate change mitigation (reducing greenhouse gas emissions) and adaptation (building resilience to climate impacts). The LCFP engages in impact investing across various sectors:

- Renewable power: investing in clean energy sources such as solar, wind and hydropower
- Energy efficiency: supporting projects that enhance energy efficiency in buildings, industries and transportation
- Sustainable agriculture: promoting climate-smart agricultural practices and technologies
- Reforestation: contributing to forest restoration and carbon sequestration
- Green buildings: encouraging sustainable construction and retrofitting

These investments not only combat climate change but also contribute to broader sustainable development goals.

The LCFP aims to increase the impact of climate financing by mobilizing private sector investment, thereby acting as a catalyst for additional financing.

Luxembourg plays a pivotal role as the sole contributor to the LCFP's trust fund. Its commitment provides the essential financial support for the platform's operations. By ensuring stable funding, Luxembourg enables the LCFP to operate effectively, while the government's unwavering dedication ensures efficient execution of climate finance initiatives. Moreover, Luxembourg's contributions are projected to leverage up to EUR 18.2 billion in project funding, demonstrating an impressive multiplier effect that enhances the platform's influence and encourages additional financing for climate-related endeavors.

^[10] [Luxembourg-EIB Climate Finance Platform](#).



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes. These national initiatives are mainly described under the PNEC mentioned in the "Renewable energy" section.

In the field of new building construction, the national level of requirement for a nearly zero energy residential building (nZEB level, nearly zero energy building) has been mandatory for every new building since the beginning of 2017 and is now close to the "passive house" level, which is a globally recognized benchmark. These nearly zero energy buildings are usually designated as AA buildings in national EPCs.

In 2020, Luxembourg presented its national strategy for the renovation of buildings (Long-Term Renovation Strategy), which was welcomed by the European Commission.

A number of support instruments have also been developed and introduced to support the energy renovation of buildings. These instruments, as described in detail above, include investment aid for households (state subsidy scheme Klimabonus combined with grants offered by municipalities and obligated parties under the Energy Efficiency Obligation Scheme (EEOS)) and municipalities (via the Climate and Energy Fund), as well as the introduction of low-interest climate loans for energy renovation.

To give a new impetus to energy efficiency, in 2015, Luxembourg introduced a mechanism that obliges natural gas and electricity suppliers to make concrete energy savings by incentivizing energy efficiency measures among final consumers in the sectors they themselves have identified. This mechanism has been extended for the period 2021 to 2030 at an ambitious target level.

In the industrial sector, the voluntary agreement between the government and the Federation of Luxembourgish Industrials (FEDIL) on improving energy efficiency in Luxembourg's industry was reformed for the period 2021 to 2023 to improve energy efficiency by including the consideration of on-site renewable electricity consumed by businesses. Investment support programs for companies to improve energy efficiency and promote renewable energy have also been reformed and temporarily adapted in the context of soaring energy prices to maintain the competitiveness of businesses.

In the field of renewable energy, the Energy Efficiency of Residential Buildings Regulation introduced an implicit requirement on the use of renewable energy. The regulation on feed-in tariffs has been regularly adapted in recent years to create attractive incentives for investment, in particular in the areas of biomass, wind and photovoltaic, as well as for photovoltaic cooperatives.



Luxembourg



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

As a rule of thumb, lease contracts can qualify as "green lease" contracts if they fulfill stringent and/or mandatory requirements with the aim of improving the energy efficiency of the leased premises. These green leases typically contain clauses charging operating costs based on consumption, regularly sharing data on energy and water consumption and waste generated by the occupancy of the building, or obliging both parties to commit to renewable forms of energy.

According to Luxembourg regulations, the EPC needs to be provided by the landlord to the tenant and, as a general rule, it is attached to the lease agreement.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The implementation of green building practices in Morocco, while strongly encouraged, is not mandatory. In this context, there are several certifications to which one can choose to adhere.

We can particularly mention the following:

- The Moroccan Thermal Building Regulations (RTCM)

The RTCM, as approved by Decree No. 2-13-874 of 15 October 2014, set the rules for the energy performance of buildings and establishes the National Committee for Energy Efficiency in Construction.

- The standards set by the Moroccan Standards Institute ("Institut Marocain de Normalisation") (IMANOR)

IMANOR works toward standardization and certification in various sectors, including construction (i.e., sustainable construction standards, building performance standards, sustainable city and community planning standards, thermal insulation standards, and acoustic standards).

- Excellence in Design for Greater Efficiencies (EDGE), a green building certification system developed by the International Finance Corporation (IFC), part of the World Bank Group

EDGE aims to promote resource-efficient building practices in emerging markets by offering a measurable and credible way to demonstrate the environment benefits of building green. EDGE certification is managed by entities like Green Business Certification Inc. and Bureau Veritas.

- Haute Qualité Environnementale and others



Morocco



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There is no mandatory form of energy performance certification for most buildings in Morocco. However, energy audits have become mandatory for Moroccan companies as of 10 April 2019 following the publication of Decree No. 2-17-746. Businesses in the industrial sector are subject to mandatory audits if their total final energy consumption exceeds 1,500 tons. Businesses in the tertiary sector, enterprises in transportation and distribution of energy, and individuals are subject to mandatory audits if their total final energy consumption exceeds 500 tons. As for businesses in other sectors not explicitly outlined in this decree, the standard will be defined by the Minister of Energy and the minister responsible for the sector concerned.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

There are several government-funded and sponsored schemes in Morocco for improving energy efficiency. These initiatives include the following:

- The Moroccan Agency for Sustainable Energy (MASEN), a state-owned limited company, is one such initiative for improving energy efficiency. Its mission is to foster a competitive renewable energy sector in Morocco by leading development programs for renewable energy projects with greater emphasis on solar, wind and hydro technologies.
- The Program for Energy Efficiency in Industry (PEEI) promotes energy efficiency measures in the industrial sector. It includes mandatory energy audits and sets minimum energy performance standards for equipment, as outlined in Law 47-09 on energy efficiency.
- L'Agence Marocaine Pour L'Efficacité Énergétique (AMEE) is a public institution that aims to implement energy efficiency programs by proposing national, sectoral, and regional plans for energy efficiency development. For instance, AMEE has implemented the "Eco-Binayate" label with the main goal of promoting environmental sustainability in construction practices with regard to new residential buildings that fall under thermal regulation requirements. This label is awarded to buildings that are evaluated against a set of criteria encompassing factors such as project organization, construction quality, building performance, environmental considerations, ventilation systems and optimization of water consumption. The label is then rewarded to buildings that are able to meet or exceed certain energy efficiency standards.
- Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco is a program designed in collaboration with the United Nations Development Program that aimed to include energy efficiency in the global building sector.
- Tax incentives have been implemented to improve energy efficiency. The Moroccan government offers tax exemptions to social housing developers that comply with national energy standards and promote energy-efficient construction practices.

These programs aim to reduce energy consumption, lower carbon emissions and promote sustainable construction practices throughout Morocco.



Morocco



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Morocco aims to achieve a 45.5% reduction in greenhouse gas emissions by 2030 compared to business-as-usual scenarios, with significant contributions expected from the building sector. This includes efforts to improve energy efficiency in buildings and promote the use of renewable energy sources, such as solar and wind. Morocco aims to reduce energy use in buildings by 19% in the residential sector and by 10% in the services sector. No exclusions have explicitly been made.



Morocco



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

We are not aware of any regulations requiring a percentage of energy consumption to come from renewable sources. However, Morocco has established several measures to promote energy efficiency and the use of renewable energy in buildings.

Morocco has also set ambitious national targets for renewable energy integration. By 2030, the country aims to source 52% (20% solar, 20% wind, 12% hydro) of its total installed power capacity from renewable energy, including solar, wind and hydropower.



Morocco



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Morocco's regulatory framework and tax incentives are designed to promote energy efficiency and the use of renewable energies. These measures help reduce the country's dependence on energy imports, improve environmental sustainability and support economic growth through the development of green technologies and practices.

In this context, a reduced VAT rate applies to renewable energies. As a transitional measure, in accordance with the 2024 Finance Law, the VAT rate of 14% in force on 31 December 2023, which applied to sales operations carried out by producers of electrical energy created from renewable energies, has been reduced as follows:

- 12% from 1 January 2024
- 10% from 1 January 2025

Most of these national regulatory measures concern fields other than construction. To promote the use of energy efficiency techniques, the Moroccan Ministry of Energy Transition and Sustainable Development has taken steps to strengthen financing mechanisms and tax incentives. These measures cover areas such as the import of renewable energy equipment for the agricultural sector, exemption from the annual tax on electric and hybrid cars, etc.



Morocco



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Yes, there are public green financing initiatives designed to support sustainable real estate projects in Morocco, such as the following:

- **The EU** has introduced a EUR 624 million package to support Morocco's green transition, including the "Energie verte" program aimed at greening Morocco's economy and energy sector.
- **MASEN** supports renewable energy projects through permitting, land acquisition, financing, and state guarantees.
- **Green bonds:** Morocco has issued green bonds to finance projects like solar power plants and energy-efficient buildings.
- **Green Value Chain program:** The European Bank for Reconstruction and Development (EBRD), with the support of the EU, the Green Climate Fund and South Korea, developed the Green Value Chain program to enable businesses to finance green technologies that integrate energy and resource efficiency
- **The IFC's EDGE program:** The IFC has invested USD 12.2 billion globally in green buildings, with USD 73 billion in certified assets, and provides concessional financing to support green construction practices.
- **Morocco Sustainable Energy Financing Facility (MorSEFF):** The EBRD has set up the MorSEFF program to support investment in sustainable energy in the workplace. The credit line is deployed through national banks. The projects financed must generate 20% energy savings and 20% greenhouse gas reductions.



Morocco



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, the national and local governments are able to mandate green initiatives through planning and zoning regimes. One such initiative is Law No. 47-09, which aims to increase efficiency in the use of energy resources to avoid waste, reduce energy costs on the national economy and enhance sustainable development. Specifically, this law requires all establishments, businesses and individuals to periodically conduct an energy audit. It also sets the minimum criteria for energy performances with regard to appliances and electrical equipment powered by gas, liquid or gaseous petroleum products.

Other examples of green initiatives mandated by the local authorities include the following:

- Incorporating renewable energy requirements in new developments
- Implementing building codes that require energy-efficient designs, materials and technologies
- Designating areas for parks, green belts and other green spaces to enhance urban sustainability
- Encouraging the development of green public transportation infrastructures



Morocco



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

There is no requirement to include green leases or green lease provisions in a leasing agreement. While not mandatory, there is increasing interest in adopting green lease provisions among environmentally conscious businesses and international investors. However, it is more common for large corporations to take up green leasing options. For example, Maghrebail, a leasing subsidiary of BMCE (a major Moroccan Bank) has confirmed its support for green lending and climate-resilient technologies in a new partnership with the EBRD.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Different environmental certification methods for buildings exist in the Dutch market. These include (i) Building Research Establishment Environmental Assessment Method (BREEAM), (ii) Energy label, (iii) Energy Performance Coefficient (EPC)-norm, (iv) Eco-Quantum (EQ), (v) Municipal Practice Guideline (Gemeentelijke Praktijk Richtlijn) (GPR) (GPR Gebouw, GPR Materiaal, GPR Vastgoed), (vi) Leadership in Energy and Environmental Design (LEED), (vii) Passive House Planning Package (PHPP), (viii) Cradle-to-Cradle (C2C) tool Woningbouw xx, (ix) WELL Building Standard and (x) Actual Energy intensity indicator (Werkelijke Energie intensiteit indicator) (WEii). Among these, BREEAM has become the most commonly used model in the Netherlands to classify new and renovated buildings.

In June 2008, the Dutch Green Building Council (DGBC) was established as a "market initiative" by the real estate and construction sector to align the government's sustainability policy with the interests of the real estate stakeholders. As an independent, nonprofit organization, the DGBC aims to increase the number of sustainably (re)developed buildings. The DGBC is part of the World Green Building Council. Back then, it was supported by the (now dissolved) Building Research Foundation (Stichting Bouw Research) when it was developing and administering the assessment method BREEAM-NL, the Dutch version of the British BREEAM certificate.

Currently, there are four different BREEAM-NL certificates. The first one is "BREEAM-NL for New Buildings & Renovations." This first version of the certificate was launched in September 2009, with the first building designs being certified in April 2010. This certificate is mostly used for offices, retail establishments, schools, light industry, housing units and data centers. The second certificate, "BREEAM-NL In Use," was introduced in June 2011, and applies to existing buildings that are older than two years. It gives insight into the building's current sustainable condition and opportunities for improvement. The third certificate, "BREEAM-NL Area Development," was launched in September 2011 and assesses the building's sustainability from the perspective of the entire area where the building is located. The fourth certificate, "BREEAM-NL Demolition & Disassembly," was launched in 2013 and applies to demolition and disassembly projects. The assessment methodologies in relation to the existing BREEAM certificates are subject to ongoing amendments to cater to new developments in the market. Both BREEAM-NL for New Buildings & Renovations and BREEAM-NL In Use provide different certifications for residential and nonresidential works. With four BREEAM-NL certificates created within the first four years and the updates and expansions within each category, the desire for building verification in the Netherlands is apparent.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

BREEAM-NL for New Buildings & Renovations rates buildings using five different star ratings, which are as follows: (i) Pass $\geq 30\%$; (ii) Good $\geq 45\%$; (iii) Very Good $\geq 55\%$; (iv) Excellent $\geq 70\%$; and (v) Outstanding $\geq 85\%$. BREEAM-NL In Use contains a different rating system, which is as follows: (i) Unclassified $< 10\%$; (ii) Acceptable $\geq 10\%$; (iii) Pass $\geq 25\%$; (iv) Good $\geq 40\%$; (v) Very Good $\geq 55\%$; (vi) Excellent $\geq 70\%$; and (vii) Outstanding $\geq 85\%$. BREEAM-NL Area Development measures sustainability levels using the following six categories: (i) management; (ii) synergy; (iii) sources; (iv) spatial development; (v) welfare and prosperity; and (vi) the area's climate. Lastly, BREEAM-NL Demolition & Disassembly measures sustainability taking into account the following eight categories: (i) management; (ii) health; (iii) energy; (iv) transport; (v) water; (vi) materials; (vii) waste and land use; and (viii) ecology.

With regard to legal framework, the Dutch Housing Act (Woningwet) requires the owner of an existing building to carry out energy-saving measures if local authorities deem it necessary. Under the law, authorities can impose penalty payments. As of 1 January 2022, sustainability has explicitly become part of the housing cooperative's statutory task or tasks. With the entry into force of the Environment and Planning Act (Omgevingswet) (EPA), the authorities intended to contribute to sustainable development, the habitability of the land, and the protection and improvement of the living environment. The EPA states that a company is required to save energy by making energy-saving provisions with a payback time of within five years. An owner of a residential or nonresidential building can also succeed in this requirement by taking measures listed in the Recognized Energy-Saving Measures List (Erkende maatregelenlijst). This list contains the measures to be taken by the owners of residential and/or nonresidential buildings to comply with the energy-saving obligation, and the measures to be considered when a party acts in a manner that could adversely affect the environment.

Under the Building Decree (Bouwbesluit 2012), which applies to new buildings, including residential and nonresidential buildings, minimum standards are set for energy performance according to the "Nearly Energy-Neutral Buildings" (Bijna Energieneutrale Gebouwen) (BENG). The energy performance requirements are determined based on three individually achieved demands. These requirements arise from the "Energy Agreement for Sustainable Growth" (Energieakkoord voor duurzame groei) signed in 2013 and from the European Energy Performance of Buildings Directive.



Netherlands



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The Building Decree contains multiple sustainability requirements, including those arising from the European Energy Performance of Buildings Directive. All applications for new construction permits must meet the requirements of the BENG. These building regulations set standards for the maximum energy requirement, fossil energy use and the generation of renewable energy in buildings.

The Energy Performance Buildings Decree (Besluit Energieprestatie Gebouwen) provides the energy label obligation regarding nonresidential buildings. The energy label must be available upon delivery, sale and lease of the building. As of 1 January 2023, it is prohibited to use all office buildings, new and refurbished, with a minimum of 100 square meters, without a valid energy label of at least C.

Residential and/or nonresidential buildings will have to meet the requirements of the Environmental Performance for Buildings (Milieu Prestatie Gebouwen) when applying for a permit under the EPA.



Netherlands



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Instruments that have been put in place

Since 1 January 2008, the mandatory form of energy performance certification for buildings in the Netherlands has been the "energy label" (Energie label). When selling or leasing a building, building owners are obliged to provide the purchaser or tenant with an energy label. As stated in "Green certification", it is prohibited to use certain office buildings without, at a minimum, energy label C. An energy label is valid for 10 years after issuance. Therefore, the certificate cannot be older than 10 years from the date that both parties signed the purchase or lease agreement. Since 2009, the label establishing a building's energy performance has needed to be displayed in a visible place for public view in the following types of buildings: (i) public buildings with a floor area of more than 250 square meters; (ii) public government buildings with a floor area of at least 250 square meters; and (iii) all other types of public buildings (e.g., schools, hospitals, stores, supermarkets, restaurants, hotels) with a floor area of at least 250 square meters.

Since 1 January 2015, a "final energy label" has been mandatory upon the sale, lease or delivery of residential units. The label displays a dwelling's energy performance and lays down which energy-saving measures can be taken for that particular dwelling. The label categories range from A to G (A being the highest level, with few energy-saving measures possible, and G being the lowest level, requiring several energy-saving measures). The validity term of the label remains at 10 years. In addition, at the beginning of 2015, all owners of residential properties in the Netherlands that previously failed to request energy labels received "temporary" energy labels for their dwellings. The authorities sent out these temporary energy labels during the first months of 2015 to about 5 million owners of residential properties. These temporary energy labels permit market players to explain to owners of residential properties how they can make their dwellings more energy efficient. These temporary energy labels do not have a formal status and merely amount to data indications with regard to the dwelling (i.e., information from the Land Register). Since 1 January 2015, owners of residential properties have been obliged to request final energy labels from the authorities upon the sale or lease of existing dwellings. As such, also beginning 1 January 2015, the authorities have been enforcing this obligation by controlling the issuance of an energy label upon the sale, new lease or delivery of a building. Failure to comply with this obligation will lead to penalties of up to EUR 900 for individuals, and penalties of up to EUR 20,250 and a ban on using the building in question for companies.



Netherlands



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The "National Plan on Neutral Energy Building" ("**National Plan**") was launched in June 2011 by a former agency of the Ministry of Economic Affairs (Agentschap NL). The National Plan describes measures to foster energy saving in the Netherlands and lays down a strategy to ensure that all buildings completed after 2020 will be in accordance with the BENG. Energy neutrality for buildings entails that a building generates as much energy as it consumes. The National Plan is revised and updated every five years in line with the developments to provide clarity and reliability for companies facing complex and expensive investments.

"Green Deals" were established by the authorities in 2011. These are agreements between authorities and companies, public organizations, and individuals that attempt to remove barriers facing companies and institutions that strive to save energy. Some of these barriers include the principal/agent problem of actors' conflicting interests (e.g., for leased premises and public organizations with separate financing of the building and yearly energy costs) or the short payback periods that customers require. Initially, deals were only meant for energy-saving measures. However, they can now also apply to commodities such as biodiversity and mobility. A "bottom-up" approach characterizes Green Deals as the responsibility for realizing green growth shifts to society, whereas the role of the authorities becomes increasingly facilitating. The Green Deal scheme is cautious with government subsidies and primarily aims to remove barriers to investment in green mechanisms.

The Climate Agreement (Klimaatakkoord) signed in 2019 is the successor of the Energy Agreement for Sustainable Growth 2013. The Climate Agreement contains agreements with five sectors on measurements that have to be taken to achieve the Paris climate targets of 2015. The Climate Agreement contributes to the climate goals from the Climate Act 2019 (Klimaatwet). The measures announced in the Climate Agreement include extra investments, such as sustainable energy sources; the introduction and implementation of a CO₂ tax for companies; and the introduction of environmental zones. These measures can affect the real estate sector.



Netherlands



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The rules laid down in the Climate Agreement 2015 in Paris prescribe that CO2 emissions must be reduced. Therefore, the Netherlands must reduce CO2 emissions by 60% (compared to those in 1990) by the end of 2030. In 2050, emissions must be reduced by 95%. As mentioned in "Incentives for green retrofit", in 2019, the Dutch government signed (in association with multiple civil society organizations) the National Climate Agreement (Klimaatakkoord). In this national agreement, concrete agreements were made for all sectors. In the 2021-2025 Coalition Agreement (Coalitieakkoord), these climate goals have been tightened with new intermediate steps: 60% CO2 reduction in 2030, 70% in 2035 and 80% in 2040. This has an indirect effect on the construction and building industries as they are responsible for more than 40% of CO2 emissions.

In December 2019, the Supreme Court of the Netherlands ordered the government to cut greenhouse gas emissions by at least 25% by 2020. It marked an end to a six-years-long legal battle in a case brought by environmental campaigners on behalf of 900 Dutch citizens. It was expected that the outcome of this case would strengthen the government's commitment to CO2 reduction in the following years.



Netherlands



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

According to Article 22 of Directive 2009/28/EC (Renewable Energy Directive), every EU member state needs to submit a report on its progress concerning the facilitation and use of energy from renewable sources during the two preceding years. The Dutch authorities issued several reports on this topic. The latest was published in 2022. In the aforementioned National Climate Agreement 2019, it was agreed that 70% of all electricity will come from renewable sources.



Netherlands



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The Netherlands offers fiscal subsidies meant to encourage more efficient energy use in buildings. Two main schemes are available: (i) the Energy Investment Allowance (Energie-investeringsaftrek) (EIA) and (ii) the Environmental Investment Allowance (Milieu-investeringsaftrek) (MIA). The EIA covers energy-saving measures or costs for energy research, energy advice or tailored advice, while the MIA covers sustainable renovation plans. Both schemes offer an approximate 11% net benefit of the investment.

The main tax scheme is the EIA, which provides incentives in the form of financial benefits to entrepreneurs who invest in energy-saving business assets and sustainable energy. The scheme applies to any entrepreneurs that pay income or corporate taxes in the Netherlands. Except for depreciation, the investment (i.e., purchase and production costs) of these business assets is 45.5% extra deductible of the fiscal gains (as of 2024). An application for the scheme can be submitted if (i) energy investments were made for a minimum sum of EUR 2,500, (ii) the business asset had not been in use before, (iii) the business asset is on the so-called "energy list" of energy-saving business assets and sustainable energy, and (iv) an EIA and an MIA have not been requested at the same time.



Netherlands



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The Netherlands Ministry of Finance and the Ministry of Infrastructure and Environment have launched a scheme for green projects (Regeling groenprojecten 2022) whereby banks can offer credit for lower interest rates to investors who plan to invest in green real estate projects. Banks can offer lower interest rates because of the tax benefits that the authorities give to "green" savers and investors. The Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland) reviews applications for the scheme in the name of the Ministry of Economic Affairs. The Netherlands Enterprise Agency seeks to make the "real estate chain" more sustainable by (i) assisting with the growing demand for sustainable real estate, (ii) promoting energy savings that lead to cost savings, (iii) spreading knowledge via publications, such as the Sustainable Buildings Newsletter (Duurzame Gebouwen Nieuwskrant), (iv) actively supporting the Sustainable Housing Platform, (v) cooperating on the platform's and the DGBC's projects, such as green lease and performance contracts, (vi) making retail real estate more sustainable and (vii) promoting the use of sustainable energy. The Netherlands Enterprise Agency also offers the Investment Subsidy for Sustainable Energy and Energy Saving, or "ISDE subsidy" (Investeringssubsidie duurzame energie en energiebesparing), which can be used to make dwellings more sustainable. One can request a refund after purchasing a (hybrid) heat pump, solar boiler or electric cooking facility. The amount of the subsidy one will receive depends on the type and the amount of energy-saving measures one undertakes.

Private financing initiatives for sustainable real estate projects can be provided by the Triodos Bank, which has committed itself to offering green financing for sustainable real estate projects. The Triodos test for sustainable real estate assesses buildings according to the following four aspects: (i) yield; (ii) people; (iii) planet; and (iv) project. The Triodos Bank has also had a closed-end real estate fund since 30 June 2004, which exclusively invests in buildings that are sustainably built and/or managed. In case of such an investment, the property management contract contains a standard annex in which sustainable management of the property must be defined. The stated management includes (i) issuing reports on energy consumption, (ii) stimulating sustainable use and behavior by the tenant, (iii) laying down ambitions regarding the use of materials and (iv) advising on the improvement of properties. The attractiveness of the fund and of sustainable real estate is exemplified by the 97.6% occupancy rate of the buildings in the fund portfolio. Another bank, the ASN Bank, also has a Green Projects Fund (Groenprojectenfonds) that supports sustainable real estate and green projects in the wind and solar energy sectors. CBRE Dutch Office Fund and PGGM Private Real Estate Fund both invest in sustainable real estate projects.



Netherlands



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Before the Netherlands Buildings Decree 2012, the legal framework for local authorities to establish environmental and sustainability standards for real estate projects was limited.

With the entering into force of the Buildings Decree 2012, local officials gained the authority to impose sustainability standards on real estate projects, because requests for environmental permits to construct new residential and office buildings with a minimum floor area of 100 square meters can only be granted if an "environmental performance calculation" (milieuprestatieberekening) is submitted. The calculation needs to be made according to the "Determination Method for the Environmental Performance of Buildings and GWW-works" (Bepalingsmethode Milieuprestatie Gebouwen en GWW-werken), which makes it possible to calculate the environmental effects of construction. Together with the national environmental database, this calculation method forms the basis in determining a construction's effect on the environment based on the different materials used. This calculation method is also used for the issuance of certificates for buildings (e.g., GreenCalc, BREEAM-NL).

Aside from public law requirements for sustainable buildings, several municipalities have established their own sustainability policies. Through these policies, municipalities encourage property developers and builders to build sustainable buildings. Nonetheless, parties to a real estate project remain free to use contract law to set standards for the sustainability level of their project within the limits of existing regulations.



Netherlands



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green lease provisions remain optional in the Netherlands. Under the widely used industry-standard Lease Agreement and General Lease Conditions regarding office space, a specific sustainability/green lease provision has been adopted in line with the energy label obligation of energy label C. The industry-standard Lease Agreement and General Lease Conditions regarding commercial space also contain a specific sustainability/green lease provision, according to which parties underline the importance of sustainability and, thus, will support one another in reaching their formulated sustainability targets.

The Dutch green lease provisions were set up by the former agency Agentschap NL and the Sustainable Housing Platform (Platform Duurzame Huisvesting). This platform is an alliance between sector, knowledge and umbrella organizations that play an important role in (i) housing in existing nonresidential premises, (ii) maintenance and management of buildings and (iii) investment in building facilities. The platform is currently the active player in the promotion of green leases and removal of "split incentives." These split incentives still form a barrier for building owners to take sustainable or energy-saving measures. In a traditional contract, the landlord is required to pay the investment costs, even when the lower energy bill will ultimately benefit the tenant. Such a setup may cause a landlord not to take far-reaching measures. A green lease, on the other hand, enables parties to reach an agreement on a fair distribution of the costs, as a result of which both tenant and landlord can profit from the sustainable and energy-saving measures that are undertaken.



Poland



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Poland, environmental issues in the field of architecture and construction are becoming increasingly important. These include issues relating to sustainable architecture, energy efficiency and ecological building materials. Whilst still voluntary, green certification for commercial facilities is progressing rapidly. From April 2023, it became mandatory for every building to have a building energy certificate, i.e., a certificate concerning a building's energy assessment, indicating the building's energy needs for heating and ventilation, hot water, air-conditioning and lighting.

For commercial buildings, in addition to the most basic certificates assessing buildings' energy performance, certificates providing a broader assessment of a building are also common. The most popular of these certificates on the Polish market are British Researcher Establishment Environmental Assessment (BREEAM) and Leadership in Energy and Design (LEED). According to data published in April 2023 by the Polish Green Building Association, about 1,600 buildings in Poland are certified, and this number continues to grow dynamically. Between 2022 and 2023, there was a 27% increase in certificates awarded, i.e., by almost 8 million square meters.

The renovation of existing buildings by 2050 is one of Poland's biggest infrastructure challenges, which is why, in 2022, the Polish Council of Ministers adopted the Long-Term Strategy for the Renovation of Buildings. This strategy defines what actions need to be taken in renovating buildings to achieve high energy efficiency and low carbon performance of buildings in Poland, with the aim of modernizing them in line with the EU's transition toward a climate-neutral economy.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In accordance with Directive 2002/91/EC, Poland has introduced energy certificates for real property. Since April 2023, having an energy certificate for a building is mandatory, and failure to have one is subject to a fine. The energy evaluation system for buildings was introduced based on amendments to the Act of 7 July 1994, Construction Law ("**Construction Law**") and functioned in compliance with those provisions until 9 March 2015. From 9 March 2015, the energy evaluation system has been functioning in accordance with the provisions of the Act on Energy Performance of Buildings of 29 August 2014.

Energy certificates are drawn up according to an energy evaluation that determines a building's integrated energy performance. Once the integrated energy performance has been determined, the corresponding energy class is then allocated to the building. The energy certificate is valid for 10 years. In 2023, there were ongoing consultations regarding the introduction of a classification of buildings on a scale from A+ to G, while the latest amendment to the regulation has not yet included certificates in this change. However, due to the planned introduction of the directive on the neo-energy performance of buildings, Poland will have to implement the obligations that arise in it, which will require additional time.

The energy efficiency audits described in the Act on Energy Efficiency (AEE) dated 20 May 2015 are mandatory for entities claiming so-called "white certificates" (for more details, please see the "Incentives for green retrofit" section). The AEE describes the procedure for conducting the audit and the entities authorized to conduct it.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The AEE introduces a support scheme aimed at promoting energy efficiency. It aims to achieve a national final energy-saving target of no less than 65 terawatt-hours of electricity.

The AEE obliges entities from the public sector to implement at least two of the energy efficiency measures it describes. These measures include, in particular, (i) implementing and financing a project to improve energy efficiency, (ii) acquiring a device, installation or vehicle characterized by low energy consumption and low operating cost, or modernizing or replacing existing equipment, (iii) modernizing buildings so that they become energy-efficient, (iv) running an energy audit on the buildings that the entities manage and (v) implementing low-emission projects, such as replacing appliances or heating systems that do not meet low-emission standards.

To obtain white certificates, an application for an energy efficiency certificate must be submitted to the President of the Energy Regulatory Authority together with an energy efficiency audit. White certificates are property rights resulting from the documents certifying respective reductions in energy consumption (so-called "certificates of energy efficiency"). The volumes of electrical energy and natural gas sales to be covered by white certificates or the substitution fee in each calendar year are set out in the secondary legislation to the AEE. Consequently, the legislation (indirectly) sets the maximum price (cap) of white certificates (substitution fee). No minimum price is guaranteed by law.

In addition, it is possible to fulfill the obligation within the framework of nonrefundable subsidy programs to co-finance energy efficiency improvement projects. The reference values of final energy savings and the method of calculating these values, necessary to determine the amount of the final energy saved under nonrefundable subsidy programs, are set out in the Decree of the Minister of Climate and Environment.

Energy-efficiency projects can be prepared by any entity that can bid in tenders for receiving "white certificates". These projects can include a number of initiatives that reduce the consumption of energy, including thermo-modernization of buildings, or their renovation or reconstruction.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Energy efficiency has a positive impact on both the economy and the surrounding physical environment. By undertaking various actions aimed at improving energy efficiency, the global community can reduce the overall energy demand, increase energy security and increase business competitiveness.

With respect to reducing greenhouse gas emissions, Poland is bound by obligations imposed by the EU, which has obligated its member states to comply with a set of binding directives and decisions aimed at achieving certain levels of reductions of greenhouse gas emissions.

Thus, Poland is obliged, among others, to comply with a rule named "Fit for 55," which requires net emissions to be reduced by at least 55% (compared to 1990) by 2030 and zero emissions to be achieved for all buildings by 2050.

On 30 December 2019, the Minister of State Assets submitted the National Energy and Climate Plan for 2021-2030 (NECP) to the European Commission, thus fulfilling the obligation imposed on Poland by the provisions of the Regulations of the European Parliament and of the Council (EU) 2018. The NEPC presents assumptions and objectives as well as policies and actions for implementing the five dimensions of the energy union, i.e., energy security; the internal energy market; energy efficiency; decarbonization; and research, innovation, and competitiveness.

The NECP sets the following climate and energy targets for 2030:

- A 7% reduction of greenhouse emissions in non-EU Emission Trading Scheme (ETS) sectors compared to 2005 levels
- A 21%-23% share of renewable energy sources (RES) in the gross final energy consumption (the 23% target will be achievable if Poland is granted additional EU funding, including for a fair transition), taking into account the following:
 - A 14% share of RES in transport
 - An annual increase of 1.1 percentage points in the share of RES in heating and cooling



Poland



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

- An increase in energy efficiency by 23% compared to PRIMES2007 projections
- A reduction in the share of coal in electricity production to 56%-60%

The NECP will be adjusted accordingly if necessary due to modification of the objectives or strategic orientations contained in national development policies, draft strategies (e.g., the draft Energy Policy of Poland until 2040) and new EU recommendations on medium- and long-term climate and energy policies (targets for 2030 and 2050).

It is also planned that the technical and building regulations, which implement the provisions of the Energy Performance of Buildings Directive into national law, will be amended to make all new buildings nearly zero-energy buildings.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

The national target for the share of RES in the gross final energy consumption is set out in Poland's Integrated National Energy and Climate Plan for the years 2023-2030 ("**NECP**"). Poland pledged to achieve a 21%-23% share of RES in the gross final energy consumption by 2030 (total consumption in electricity, heating and cooling and for transport purposes). The target is likely to be updated later this year as part of the planned revision of the NECP.

According to the Act of 20 February 2015 on Renewable Energy Sources ("**RES Act**"), electricity suppliers and certain categories of energy consumers are obliged to acquire and redeem certificates of origin confirming that a certain share of electricity, generally representing a prescribed portion of electricity sold to end consumers, was generated from RES (so-called green certificates). These entities include, in particular, large industrial electricity consumers (i.e., with an annual electricity consumption of more than 100 gigawatt-hours) that have submitted a relevant declaration to the President of the Energy Regulatory Authority (ERA). The property rights resulting from the certificates of origin are transferable and can be sold via the Polish Power Exchange (Towarowa Giełda Energii). The clearing price of green certificates is generally determined by demand for and supply of renewables. Demand is determined by the amount of the quota obligation announced each year (5% in 2024), while supply is determined by investments in renewable energy production capacity.

The green certificate system described above used to be the main support system for renewable electricity production from 2005 to 2016 and successfully contributed to the rapid growth of renewable capacities in Poland, especially biomass and onshore wind. The system is being phased out with the introduction of an auction-based support system for RES, which was effectively introduced in 2016, largely due to the fall in green certificate prices resulting from the oversupply of certificates on the market. Both systems continue to operate in parallel, but new RES installations (i.e., those that started producing electricity after 1 July 2016) are excluded from the green certificate support system and can only be beneficiaries of the auction support system. This means that the green certificates system will effectively be phased out by 2031.



Poland



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Notwithstanding the above, energy consumers who would like to demonstrate their efforts to reduce the environmental impact of their business operations can obtain guarantees of origin, which serve as official confirmation that the electricity was produced from RES or high-efficiency cogeneration. Guarantees of origin are transferable but only have informative value for energy consumers, i.e., they certify to the final customer who purchases them that the amount of electricity injected into the distribution network or into the transmission network specified in this document originates from RES or high-efficiency cogeneration.

Redemption of green certificates also exempts suppliers of electrical energy to end customers from the excise tax relating to the volume of electrical energy covered by the redeemed certificates (PLN 5/megawatt-hour (MWh), approximately EUR 1.25/MWh). Suppliers may also meet their obligation by paying a "substitution fee" for the volume of electricity not covered by green certificates (amount equal to 125% of the average price of certificates from the previous year but no more than PLN 300.03/MWh, approximately EUR 70/MWh). However, unlike when redeeming green certificates, paying the substitution fee does not exempt suppliers of electricity to end customers from the excise tax relating to the volume of electricity covered by that payment.



Poland



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are currently no tax incentives on energy consumption.



Poland



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Polish banks are starting to grant so-called "green loans," where it is important to meet ESG criteria so that borrowers can count on more favorable financing terms, due to the purpose of the investment. Banks are mainly looking at reducing energy consumption and zero emissions through the use of RES, as well as the tangible environmental benefits of the financed project.



Poland



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

The use of environmentally friendly solutions for constructing new buildings or reconstructing existing ones is regulated by several legal acts in force in Poland. Moreover, an increasing number of formal and legal regulations are being drafted to provide for environmental considerations in all aspects of the implementation of the construction project.

The basis for this legislation is the principle of sustainable development, which constitutes one of the basic principles of land-use planning in Poland. The principles of sustainable development and environmental protection are the basis for drawing up and updating the following:

- The concept of national spatial planning
- The strategy for developing provinces
- Spatial development planning for provinces
- Studies of conditions and directions of spatial development of municipalities
- Local spatial development plans

Under the Act on Spatial Planning and Development of 27 March 2003, spatial planning includes, in particular, requirements of environmental protection. However, a large part of the country is not covered by local spatial development plans.

The next act is the Construction Law. Under this law, a building structure should be designed and constructed in such a way that would ensure that the basic requirements are fulfilled with respect to appropriate conditions of hygiene, health and environmental protection, and appropriate building energy performance and energy-use rationalization.



Poland



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Moreover, a number of investment projects are required to prepare an environmental impact assessment (EIA) and then obtain the environmental decision. The EIA is one of the main instruments to manage and legally protect the environment. The EIA must be analyzed by each investor that intends to implement an investment project on the territory of Poland to know whether an EIA is needed for its ongoing project. The main legal act that regulates the EIA in Polish law is the Act on Provision of Information about the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments of 3 October 2008.

Another example are the regulations related to energy saving and thermal insulation for buildings designed, newly built or rebuilt, or to a change in a building's manner of use (Ordinance on technical conditions to be met by buildings and their location of 12 April 2002).



Poland



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Poland, green lease provisions are not mandatory but are starting to be adopted increasingly in commercial leases. Therefore, there is no commonly used and established template for "green" provisions. This means that lease agreements contain both so-called "dark green clauses," which introduce significant obligations on the parties, and more general provisions (so-called "light green clauses") that specify that each party will endeavor to comply with the principles of sustainable development and performance of the building. Many of these solutions are not commonly recognized as green provisions, while in fact they are.

The most frequent obligations in green leases are to carry out finishing work and to use building materials with a low environmental impact. In addition, the parties often agree on provisions obliging the lessor to provide the relevant building with a certificate, as mentioned in the first paragraph, but also commit to joint cooperation between the lessor and lessee to define appropriate strategies, initiatives and targets for improving the environmental performance of the leased space.

In addition, green leases may include obligations to ensure that the energy supplied to the leased premises (on the lessee's side) and to the building (on the lessor's side) comes from renewable sources. In connection with green clauses, the parties also include associated costs in the list of service charges.



Spain



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The primary certification model in Spain is VERDE, which consists of a certification process based on the evaluation of buildings using the tool VERDE. VERDE acknowledges the reduction in the building's environmental impact compared to a standard reference building. This building is a model conceived according to the minimum parameters established by law and common practice.

It was developed by the Technical Committee of the Green Building Council (GBCE), which is an autonomous organization and a member of the World Green Building Council (WGBC), a nonprofit international association. The GBC is currently recognized as an established council of this organization.

The evaluation criteria are grouped into the following subjects:

- Site selection, project planning and development
- Energy and atmosphere
- Natural resources
- Indoor environmental quality
- Service quality
- Social and economic aspects

It is a voluntary system, but it is widely adopted and understood by the construction industry.



Spain



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Countries within the EU are required to have implemented measures under the Energy Performance of Buildings Directive 2002 (and amended in 2010), with implications for developers, occupiers, owners and managers of buildings. The 2002 directive's remit is broad. It includes requirements to set minimum energy performance requirements for both new and refurbished buildings, a feasibility assessment of alternative heating and energy supply systems for new buildings, and separate systems of certification for privately owned and larger public buildings.

Energy performance certificates (EPCs) and display energy certificates (DECs) in the EU have the potential to drive significant energy efficiencies in the commercial sector, where the land-tenant "split incentive" issue is seen as a substantial barrier to investment. As landlords typically do not feel the costs of energy consumption, there is little incentive for them to invest in efficiencies that would drive down these costs. Similarly, tenants on typically short-term leases are not incentivized to invest in energy-saving measures, with payback periods of sometimes up to 25 years.

While EPCs predict a building's energy performance, they suffer from the perception that there can sometimes be a substantial disparity between that building's predicted and actual energy performance. These can vary considerably according to the occupant's operational characteristics, the way it uses the building and its energy demands. By contrast, DECs are intended to display a building's actual energy usage rather than the theoretical EPC rating, but take-up is currently poor in the commercial sector.

Spain implements these EU measures as follows:

- The Energy Performance of Buildings Directive was given legal force in Spain by Royal Decree 235/2013 of 5 April. This royal decree was repealed by Royal Decree 390/2021 of 1 June, which regulates the basic procedure of the energy performance certification of buildings ("**RD 390/2021**"). It entered into force on 3 June 2021 and introduced the following modifications:



Spain



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- **Mandatory on-site inspection:** To grant the EPCs, the new regulations establish that an on-site visit by competent technicians is mandatory. Until now, it was common for some technicians to issue the EPCs without visiting the property in person, but now, at least one in-person visit is required. This visit must be made a maximum of three months in advance. Subsequently, the EPCs may be registered up to one month after the date of preparation. During the visit, the technicians will take all the necessary data and carry out verifications for the EPC.
- **Extension of the mandatory certification to other properties:** In addition to the buildings that were already subject to the obligation to obtain EPCs (i.e., new buildings; buildings or parts of existing buildings that are sold or rented out to a new tenant; buildings or parts of buildings frequently visited by the public where a total useful floor area of over 250 square meters is occupied by a public authority), RD 390/2021 extends the scope to also cover the following buildings:
 - Buildings with a useful surface area greater than 500 square meters intended for administrative, health, commercial, public residential, educational, cultural, recreational, logistic, hotel or sports use
 - Buildings or parts of building occupied by a public administration with a useful surface area greater than 250 square meters, regardless of whether they are visited by the public
 - Buildings and single-family homes that are required to pass the Technical Inspection of Buildings or are going to carry out energy rehabilitation (All residential buildings older than 50 must complete the Building Evaluation Report, which includes EPCs.)
- **Validity of the EPC:** Until now, EPCs were valid for 10 years unless some improvement work was carried out in the property and the owner wanted to renovate it for sale or rental. From 3 June 2021, if the energy rating is G, the validity will be five years. In all other cases (from A to F), it will continue to be valid for 10 years.



Spain



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- **Obligation to disclose the energy rating in any advertisement for the rental or sale of a property:** Both individuals and companies are obligated to disclose the energy rating when advertising the rental or sale of buildings, whether through real estate agencies, billboards, websites, real estate portals, catalogs, the press or similar.
- **Consequences of not having an energy certificate:** There are three types of penalties — minor, serious and very serious — and the amounts of the penalties range from EUR 300 to EUR 6,000 as follows:
 - Very serious infraction: falsifying information in issuing or registering certificates, acting as a certifying technician, or advertising a certificate that is not registered
 - Serious infraction: failing to comply with the calculation methodology of the basic certification procedure, not presenting the certificate to the autonomous community for registration, displaying a label that does not correspond to the actual certificate, and selling or renting a property without the seller delivering the certificate in force to the buyer or lessee
 - Minor infraction: advertising the sale or rental of a property that must have a certificate without mentioning its rating, not displaying the efficiency label when it is mandatory, issuing certificates without the minimum information, failing to comply with the obligations to renew or update the certificates, not incorporating the certificate into the building book and advertising the project's rating when the finished building already has a rating
- The referred EPCs must include objective information regarding a building energy performance of a building and reference values, such as minimum energy performance requirements, to make it possible for potential owners or tenants of the building (or a unit of a building) to compare and assess its energy performance. They should also include recommendations for the improvement of the property's energy performance.
- The EPCs evaluate the energy performance of buildings and give a qualification grade from "A" to "G," with "A" being the most efficient and "G" the least efficient.



Spain



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

- The energy performance label included in the EPC applies to all of Spain. The label is to be included in any offer, promotion and advertisement in connection with the sale or lease of a building or building unit. It must be stated in every case whether it refers to the EPC of the project or of the completed or existing building. In no event shall the registration of the label as a mark be permitted.
- RD 390/2021 also establishes that new buildings occupied and owned by public authorities shall be nearly zero-energy buildings. The "nearly zero-energy buildings" requirements are set out in the Technical Construction Code approved by Royal Decree 314/2006.



Spain



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Spanish government has created the National Energy Efficiency Fund (NFEE), cofinanced by the EU. Its aim is to invest in projects that reduce energy consumption in the production and installation sector. The fund will start off with EUR 350 million each year from the European structural funds that correspond to the Spanish government. The Spanish government will provide 35% of the endowment fund; the rest will come from settlements under the system of obligations, revenue generated from auctioning the allowances and budget appropriations, if applicable.

The NFEE will invest in energy efficiency in buildings, transport, industry, services and agriculture.

The following plans are expected to be adopted:

- Plan for saving energy and reducing emissions in tertiary sector buildings
- Plan for improving equipment technology and industrial processes
- Plan for increasing energy efficiency of means of transport
- Plan for increasing energy efficiency in agrarian developments and agricultural machinery

The funds will be dedicated to energy efficiency for buildings intended for residential use and nonresidential use. This plan is supposed to create an investment of approximately EUR 832 million.

The Ministry of Industry, Tourism and Commerce, and the Institute for Energy Diversification and Saving (IDAE) have approved the Integrated National Energy and Climate Plans (INECP) covering 2021 to 2030. It establishes the objective of reducing greenhouse gas emissions by 23% compared to 1990 and for 74% of energy to come from renewable sources. This Plan is already in force.



Spain



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The aim of the IDAE, which is a public body dependent on the Spanish Ministry of Industry, Tourism and Trade, is to promote energy efficiency and strategies for energy saving. Investment is one of the IDAE's strategic action lines. The way in which the IDAE takes part in projects depends on the circumstances of each specific case, the sector concerned, the technology involved and the turnover. This statement is substantiated by the following:

- [Fondo JESSICA-F.I.D.A.E.](#): This is a fund investing in energy efficiency and renewable energy projects.
- [PAREER](#) program: This is a program for the energy rehabilitation of buildings in the residential sector.
- [Biomcasa II](#) program: This is a program investing in biomass thermal projects in buildings.
- [Grandes Instalaciones Termicas \(GIT\) program](#): This program provides financing to qualified firms for large thermal installations from renewable sources in the building sector. It was launched in response to the need to boost the implementation of large thermal energy production installations in the building sector through the use of renewable energies, such as biomass, solar thermal and geothermal energies.
- [Third-party finance](#): This is one of the most suitable mechanisms available to undertake investment projects in energy saving and efficiency and energy generation using various sources, including renewable energies. The IDAE, the main promoter of this financing mechanism in Spain, has been using it successfully since 1987.
- [Project finance and provision of services](#): This financing mechanism applies to projects investing in energy saving, energy efficiency and renewable energy sources that have undergone a prior economic/technical feasibility analysis. It is a new model of financial collaboration that entails drawing up and signing two agreements: a framework collaboration and service agreement and a project finance agreement (i.e., a business loan).
- [Other ways that the IDAE can participate in energy projects](#): This includes joint ventures, economic interest groupings, shares in corporations, share accounts and technology development agreements.



Spain



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

In 2012, Directive 2012/27/EU of the European Parliament and the Council, on Energy Efficiency, was approved to create a new common framework for the promotion of energy efficiency within the EU. This directive is derogated by Directive 2023/1791 of 13 September 2023 ("**Directive 2023/1791**") with effect from 25 October 2025.

The main objective of this new Directive 2023/1791 is to comply with the legal requirements of the "Fit for 55" package, a measure aimed at regional decarbonization by 2030 by reducing emissions of these gases by at least 55% compared to 1990. The previous target set out in Directive 2012/27/EU was 40%.

Directive 2023/1791 aims to achieve a much more efficient use of energy and, consequently, large energy savings. Specifically, it sets the objective of reducing energy consumption across the EU by 11.7% by 2030, compared to the 2020 target, making the EU's final energy consumption not exceed 763 million tons of oil equivalent.

Spain is fully committed to achieving the energy efficiency improvement targets imposed by the directive and reiterates its commitment through the [Integrated National Energy and Climate Plan](#) (PNIEC) 2021-2030.

The structure of the PNIEC is faithful to the content required by the directive and sets forth the measures for improving energy efficiency underway in Spain and those that it plans to execute.

The PNIEC aims to reduce greenhouse gas emissions by 32% compared to 1990 by establishing the following measures that directly affect the building sector:

- Integration of thermal renewable energies in buildings: It revises and raises the energy efficiency and renewable energy requirements set forth in the Technical Building Code and the Regulation on Thermal Installations in Buildings for new buildings and renovations, including technical modifications and digitalization objectives.



Spain



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

- To reduce the energy consumption of existing residential buildings for residential use through energy rehabilitation actions, the PNIEC proposes the following rehabilitation actions:
 - Replacing heat and cold production equipment, and moving heat transfer fluids, including improving the thermal insulation of piping networks and equipment to reduce losses in the transportation of fluids
 - Installing free outdoor air cooling, and recovering heat from the exhaust air
 - Installing new centralized district or district heating and cooling systems or those serving several buildings, as well as refurbishing and expanding existing ones
- Apart from the above-mentioned measures, the PNIEC also provides for the following actions:
 - Thermal building envelope: The building's thermal envelope will be acted on to achieve a reduction in the building's heating and cooling demand. Energy efficiency actions may be taken, among others, on facades, roofs, floors, exterior carpentry, glazing and solar protection.
 - Thermal installations: Actions will be taken on thermal installations for heating, air-conditioning, domestic hot water production and ventilation, regulated by the Regulation of Thermal Installations in Buildings. The measure considers incorporating renewable thermal energy sources to cover the demand in accordance with the final energy consumption targets established in the PNIEC.
 - Information and communication technologies: This includes the use of monitoring, control and automation tools to manage equipment for efficient energy consumption.
 - Efficient heating and cooling networks: This include connection to efficient heating and cooling networks that enable the supply of heat, cooling and domestic hot water to the building from waste energy, renewable energy and other efficient renewable energies and other efficient systems.



Spain



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

- The above-mentioned measures also apply to buildings for the tertiary sector (i.e., buildings for commercial purposes), for which the following measure is also provided in the PNIEC:
 - Lighting installations: Action will be taken on the buildings' interior lighting installations, adapting them to the energy efficiency values required according to the use of each zone, implementing systems to regulate and control lighting depending on the activity in each zone of the building, and adapting the lighting level according to the contribution of natural light.

The plan provides a broad range of energy savings and efficiency measures in all sectors, some of which are already being executed despite the restrictions brought on by the current economic scene.

In conclusion, the new PNIEC operates as a central tool in Spanish energy policy, and its enforcement will allow Spain to achieve the energy savings and efficiency goals set by Directive 2023/1791. This will improve the competitiveness of the Spanish economy, with the expectation of seeing it reflected in the indicators of economic activity and employment.



Spain



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Exploiting renewable resources will allow nations to become less reliant on each other and global market volatilities. It will also provide further opportunities for investment in new industries and new technologies.

The availability of specific traditional forms of renewable energy (wind, solar, water) and their potential to contribute to a country's renewable energy resources are greatly affected by that country's geography and climate.

The PNIEC establishes that, in 2030, renewable energy must represent 42% of gross final energy consumption and 74% of power generation in Spain. The PNIEC defines a series of intermediate targets for the share of renewable energies, setting it to 30% by 2025. This means that renewable electricity generation will have to increase, according to the data contained in the PNIEC, by approximately 3,300 kilotonnes of oil equivalent in the period 2022-2025, which will require a rapid increase in the capacity of the generation fleet from renewable energy sources.

To bring about this plan, many studies have been conducted to assess the potential of most renewable energies. Among them are the Spanish Wind Atlas (that provides a preliminary assessment of the wind resources available throughout Spain), the potential biomass project, a study on how to generate energy from waves and other studies on the use of solar energy.

The conclusion to be drawn from these studies is that the potential for renewable energies in Spain is great. In first place among renewable energies is solar energy, and in second place is wind energy (generating around 340 gigawatts). Hydroelectric potential generates around 33 gigawatts.



Spain



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

If national and local governments are to achieve the very ambitious CO2 reduction targets that they have been set, or have set themselves (see section "CO2 and energy targets"), it is clear that policymakers must be prepared to make themselves both part of the solution and, in many cases, more unpopular.

This means that we can expect to see green regulation proliferating over the next few years as governments strive to find the right balance of carrot (e.g., tax reliefs and other incentives for green investment) and stick (e.g., taxes on energy consumption) policies to suit their aims. For the real estate industry, this means increasing regulation of both ownership and occupation and use of real estate. As buildings account for around 40% of the EU's energy usage, it seems that the real estate sector is likely to bear the brunt of this new regulation.

In Spain, the Tax Measures for Energy Sustainability Act created other environmental taxes, such as the tax on the production of used nuclear fuel and radioactive waste in centralized facilities. It created two other taxes with environmental effects: the tax on the value of the production of electrical energy and the payment for the use of continental waters in the production of electricity. However, these could hardly be considered environmental taxes, in the sense that they will probably have little impact on electricity production or consumption.

The Environmental Tax Measures Act created a new tax on fluoridated gases and made amendments to other existing taxes.

[Law 10/2022](#) of 14 June 2022 on urgent measures to promote the building rehabilitation activity in the context of the recovery, transformation and resilience entered into force. This law encourages more efficient use of energy in buildings by establishing tax benefits. In this sense, it introduces the following tax benefits in the personal income tax (IRPF):

- It establishes deductions in the IRPF applicable to the amounts invested in energy rehabilitation works in existing buildings.
- It establishes that aids granted under various programs for the energy rehabilitation of buildings are not included in the IRPF taxable base.



Spain



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In addition, at the municipal level, the city councils may also approve tax benefits applicable to the taxes under their jurisdiction. For example, the Barcelona City Council grants a 50% reduction of the real estate tax for a period of three years for implementing voluntary solar collection installations. In addition, it has also provided for a reduction in the tax on construction, installations and works when the purpose of the works is to incorporate systems for the thermal or electrical use of solar energy, provided that these are not compulsory installations. The application of the discount will be conditioned on the fact that the installations for heat production include collectors approved by the competent administration.



Spain



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are no private green financing initiatives for sustainable real estate projects in Spain apart from the financial services offered by different banks.

However, there are public initiatives for financing sustainable real estate projects, particularly the financial measures provided by the NFEE and the IDAE, as explained in the section on "Incentives for Green Retrofit."

Moreover, on 30 April 2021, the Recovery, Transformation and Resilience Plan (PRTR) was approved. This plan was articulated in four main axes: (i) ecological transition; (ii) digital transformation; (iii) social and territorial cohesion; and (iv) gender equality. These four axes are developed through 10 policies, which in turn integrate 30 components or lines of action. One of these is Component 2: Housing Rehabilitation and Urban Regeneration Plan.

Component 2 encourages granting of aids to homeowners, neighborhood communities and private companies for implementing actions aimed at obtaining an accredited improvement in the energy efficiency of multi-family buildings and single-family dwellings, isolated or grouped, with special attention to the building envelope (facades and roofs) that separates the interior of the building from the exterior.

The beneficiaries of the aid may cover between 40% and 80% of the costs, depending on the energy savings achieved, and may reach 100% in the case of economic viability. The maximum amount of aid ranges from EUR 6,300 to EUR 18,800 per dwelling, depending on the energy savings achieved.

This aid program is managed by the autonomous communities, which publish the call for applications in their official gazette.

On the other hand, Component 2 of the PRTR also encourages financing of rehabilitation actions. It contemplates the creation of lines of guarantees provided by the Instituto de Crédito Oficial (ICO) to partially cover the risks of loans granted by private financial institutions for the rehabilitation of buildings and housing. The terms of this new line of guarantees of EUR 1.1 billion are regulated according to the agreement signed between the competent authority and the ICO and the collaboration agreements signed with the private financial institutions.



Spain



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

This line of financing is available to homeowners or communities of owners that undertake renovation work on residential buildings located in Spain. The maximum amount per project is EUR 30,000, with a repayment term of one to 15 years.

The PNIEC continues to support installations in buildings as a priority, and specifically encourages the creation of specific financing lines for the rehabilitation of residential buildings to improve their energy rating. These financing lines will prioritize actions affecting a large number of buildings: rehabilitation and urban regeneration actions affecting areas identified as priority areas (neighborhoods) within the framework of housing policy. Within these programs, there are programs ("Renove Plans") focused on actions or interventions that do not affect the building as a whole, but rather individual homes of private owners for the renovation of window frames (windows and carpentry), roofs and facades independently, boilers and heaters, among others.



Spain



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Local entities are beginning to establish sustainable measures through local rules and zoning and planning regulations to promote the construction of green buildings (such as the introduction of innovative urban waste management methods).

National and local governments can also mandate "green" initiatives through laws and regulations. It is common in Spain for the national government to implement "green" initiatives and for local governments to develop these initiatives.

As an example, in terms of heating systems, the national government adopted a royal decree (recently amended) that regulates the energy efficiency and safety requirements of heating facilities in buildings. It develops the action plan of the Energy Savings and Efficiency Strategy in Spain.

As another example, the Barcelona City Council has implemented some guidelines in terms of energy saving and efficiency, such as energy efficiency in buildings in terms of heating, air-conditioning and illumination.

Moreover, the IDAE has published a [guideline](#) for regional and local authorities responsible for urban planning and development, which sets out some strategies for promoting high-energy and high-environmental-quality buildings.

In this sense, the guideline recommends the use of municipal regulations and urban planning regulations, as they can favor the use of building solutions that require less energy, use efficient or renewable energy installations, etc.

On the other hand, recently, some regional governments have developed a territorial sectorial plan for the implementation of renewable energies (i.e., Catalonia, Basque Country, Community of Valencia, Castilla y León, Navarra, etc.).

These plans define the areas available for renewable energies in such a way as to allow the implementation of the renewable power required to cover the country's electricity demand. In addition to the generation elements, the associated infrastructures, such as evacuation or storage lines, will be taken into account.



Spain



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

The definition of these zones will be based on the application of criteria that must ensure that these projects are compatible with the limitation of the environmental, urban and landscape impact, while guaranteeing that the necessary power can be installed to guarantee the country's energy supply. At the same time, they will have to ensure that the land is compatible with other uses, such as agricultural activities, and avoid the accumulation of projects in certain areas of the territory.



Spain



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases per se are not yet commonly used in Spain. As yet, there are no specific provisions regarding green leases; therefore, general regulations on lease agreements may also apply in green leases. In this regard, the parties may agree and set up green clauses in the lease agreement to improve sustainability of buildings.

The only requirement in this regard is the EPCs .

Given that the current legislative framework on construction in Spain promotes the construction of green buildings, we expect that Spain will also regulate or establish measures for lease agreements in the near future.

Companies, especially large ones, but increasingly also medium-sized ones, are developing specific corporate social responsibility or ESG programs linked to sustainability and the environment. One of the focuses is the incorporation of green clauses in the leasing of offices, commercial premises or industrial buildings.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There are no mandatory certifications in Sweden. However, the use of certifications for buildings is increasing. In 2015, Sweden was ranked 10th on a worldwide ranking of the use of Leadership in Energy and Environmental Design (LEED), measuring the amount of certified square meters and the amount of LEED projects. On a per capita measure, Sweden ranked fourth. The following are examples of classifications and certifications used in Sweden:

- The classification "Environmental Buildings" is a system for classifying standards of building in relation to energy, interior environment and materials. There are three levels within this classification system: (i) GOLD; (ii) SILVER; and (iii) BRONZE. The classification system can be used both for existing and newly constructed buildings and, as of December 2022, there were more than 2,300 buildings certified or provisionally certified as Environmental Buildings.
- The Building Research Establishment Environmental Assessment Methodology (BREEAM-SE) is used to certify new production buildings, and the building's environmental performance is assessed in several different areas, such as the building's energy use. GreenBuilding is a certification system with a focus on low energy use and energy efficiency. The Sweden Green Building Council (SGBC) controls both the BREEAM-SE and the GreenBuilding certifications. The GreenBuilding certification will be phased out due to increased investment in other certification schemes. A two-year phase-out began in 2023, and no new registrations will be made in the system. For existing projects, the last reporting dates will be January to April 2024. These reports will continue until 30 April 2025, after which GreenBuilding will be completely phased out. BREEAM-SE is used to assess the building's environmental performance in a number of different areas. For example, the building's energy use, indoor climate, water management and waste management are assessed and scored.
- The SGBC has also introduced Citylab, an optional program for creating sustainable urban areas. It is the first certification system for sustainable urban development developed for Swedish conditions. Different organizations and companies participate in this program, and sustainability is top of mind throughout the development process. Within Citylab, two different certifications are possible: (1) certification of the planning process for the implementation of urban development projects and (2) certification of the sustainability of a city district.



Sweden



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

- Another classification is called KRAV, which is also optional and relates to energy consumption. This is intended particularly for tenants with store businesses. The classification requires that 100% of energy used in the store come from renewable energy sources and also addresses other issues to decrease the use of energy.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The mandatory form of energy performance certification in Sweden is provided for under the Energy Performance Certification Act (Sw. Lag (2006:985) om energideklaration för byggnader). The legislation prescribes that owners of certain buildings must ensure that an energy performance certification is obtained if the building concerned has a floor area greater than 250 square meters and is frequently visited by the public. An energy performance certification should also be obtained when constructing a new building. The requirements also apply to buildings that are completely or partly leased. In addition, the property owner needs to obtain an energy performance certification if the building will be sold. The legislation applies to private houses and public buildings and buildings used for commercial purposes.

However, there are exceptions to the requirement for energy performance certification. Among those exempted from obtaining an energy performance certification are the following: (i) buildings that are mainly used for religious purposes; (ii) industrial plants and workshops; (iii) certain types of vacation homes; (iv) agricultural buildings; or (v) buildings with a floor area of less than 50 square meters (mainly private houses).

The Swedish National Board of Housing, being the supervisory authority, issues regulations regarding the energy performance certification and provides experts in charge of certification. The new system was introduced on 1 January 2014, and states that all buildings classified after that date must get a classification, which ranges from A to G. There are no prescribed minimum standards regarding the outcome of an energy performance certification, since older buildings may have a poorer rating than newly constructed buildings. If the owner did not comply with the required certification, the supervisory authority has the right to demand a penalty.



Sweden



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Sweden's local governments established an information council to spread knowledge on energy-saving measures to owners of buildings, landlords and consumers, in accordance with the recommended means in the EU Directive. This information council is organized by the local governments. There is also the Swedish Energy Agency (Sw. Energimyndigheten), which is responsible for widespread information and supervisory of energy issues.



Sweden



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Swedish government aimed to reduce its 1990 CO2 emission level by 40% by 2020. To comply with the EU's Energy Efficiency Directive, which states that, by 2021, all new buildings should be so-called "nearly zero-energy buildings," the Swedish government decided on two goals.

- The first goal was to have the intensity of energy lowered by 20% between 2008 and 2020.
- The second goal stated that, by 2016, the energy savings in the end consumption should be at least 9% of the annual average quantity between 2001 and 2005, which is equivalent to 33 kilowatt-hours (kWh). The end consumption is mainly relevant for buildings, since buildings account for a large part of the emissions.

By 2045, Sweden must have no net emissions of greenhouse gases into the atmosphere and, after that, achieve negative emissions. To achieve net-zero emissions, additional measures may be credited. Emissions from activities within Swedish territory must be at least 85% lower than emissions in 1990. By 2050, public buildings should have reduced their use of purchased electricity by 50% compared to the 1995 levels. The construction and industry sectors are imposed with specific interim targets, given that they account for approximately 40% of the end consumption of energy.

Other measures are also taken to increase the portion of nonhazardous waste from the construction industry. At present, 50% of the prepared waste from the construction industry is being recycled. By 2020, the Swedish government aims to increase this to 70%. Even if the statistics are not entirely reliable, the Swedish Environmental Protection Agency announced that Sweden had already reached the goal for 2020 in 2015.



Sweden



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There are no such binding regulations. According to the consideration rule in the Swedish Environmental Code, practitioners should primarily use renewable sources when taking measures that would affect the environment. Nonetheless, the Swedish government set a goal that, by 2020, 50% of the total energy consumption should come from renewable energy sources. That goal had already been reached in 2012, when as much as 51% of the total energy consumption was based on renewable energy sources.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Sweden has a number of instruments for supporting the development of renewable energy sources. The following are examples of these instruments:

- There is a system that concerns energy certificates whereby producers of renewable energy, mainly solar energy, hydro power, wind power and biofuel, are assigned a certificate for every kWh produced. The producers are then able to sell the energy to electricity companies, which, in turn, sell the energy to end consumers. In this way, the producers get extra revenue above the market price, with the purpose of increasing interest in investing in renewable energy sources. The goal for 2030 is that Sweden, together with Norway (which has a common energy certificate market), should produce at least 46.4 terawatt-hours of new renewable electricity generation and meet volume-related obligations by 2035. The system was introduced in 2011 and is regulated in the Energy Certificate Act (Sw. [Lag \(2011:1200\) om elcertifikat](#)). The Swedish Energy Agency is the supervisory authority and issues the energy certificates.
- To provide incentives for producing energy from sustainable sources, smaller producers of energy from renewable sources, such as solar energy, are entitled to a tax deduction of SEK 0.6 (approximately EUR 0.06) per kWh produced. Private individuals who invest in systems for storing self-generated electricity have the opportunity to apply for a tax reduction of 50% of the cost of labor and materials, with a maximum amount of SEK 50,000. The tax reduction is available for installations carried out and paid for after 1 January 2021.
- One of Sweden's main tools to decrease the level of emissions is its tax on CO₂ emissions. Nonetheless, there is still a deduction right for certain businesses concerning taxes on CO₂ and other energy taxes. The Swedish Environmental Protection Agency suggests that this deduction right be modified, but no change in legislation is expected in the near future.



Sweden



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are private initiatives that focus on informing and developing sustainable real estate projects. One of the private initiatives that has emerged in Sweden in recent years is the issuance of green bonds, which aims to support the expansion of sustainable investments and act as an attractive tool for both issuers and investors, where the listed real estate industry has played a key role in the development (e.g., the Swedish real estate company Vasakronan issued and listed its first green bond in 2013 and, subsequently, retail companies such as H&M have done the same). Although green bonds have existed globally for over a decade, they are still not standardized in Sweden, and there is no universal definition of a "green" bond. Instead, the available guidelines for green bond issuers consist of voluntary frameworks, leading to different methodologies and regulations between issuers, arrangers and investors. The Green Bond Principle and the Climate Bond Standards are examples of voluntary guidelines that promote transparency and integrity in the green bond market by clarifying the process and requirements of green bond issuance.

Commercial leases

The Swedish Energy Agency, together with different representatives for landlords, tenants and authorities, has funded a project that is led by the industry association, the Swedish Property Federation (Sw. Fastighetsägarna). The project was introduced in 2011, and mainly focuses on developing a standard agreement for green leases to be used by its members. The standard agreement states the minimum demands for green lease agreements. There are also optional commitments for both landlords and tenants. The standard green lease agreement is optional to use, aims to increase the use of environmentally friendly premises, and underlines, for instance, the positive effects of gaining the acknowledgment of customers, employees and distributors. There are a number of landlords that have implemented, or who have had their own green lease agreements influenced by, the standard green lease agreement.

Construction

The Swedish construction industry has developed an information system (BASTA) that aims to spread information on sustainability, particularly on chemicals used in the construction industry.



Sweden



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

The local government has the ability to prescribe rules on the extent of development in accordance with the Swedish Planning and Building Act. However, the local government has no authority to specifically impose requirements on green developments and buildings. An overall objective for the local governments is to comply with the national objectives set by the Swedish government. Therefore, the local governments should take into consideration the overall effects of their planning, one of which is the environmental effect. According to the National Board of Housing, there is an increased interest in planning the measures so that cycle paths, walkways and public transportation are given increased space in the urban development.

The Swedish government currently provides no rules on the extent of local development. The Swedish government may prescribe plans concerning regional development, but these plans have an overall perspective.



Sweden



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases are not mandatory in Sweden. However, a number of operators in the real estate industry are starting to use green leases. There is an ambition to try to increase the use of green leases without public intervention. Private initiatives from the construction and leasing sector, which are supported by authorities, such as the standard agreement on green leases developed by the Swedish Property Federation, indicate that take-up is increasing.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The standardized Swiss cantonal building energy certificate (called GEAK in the German-speaking part and CECB in the French-speaking part of Switzerland) assesses the following:

- The quality of the building envelope
- The overall energy balance
- The direct CO2 emissions

It classifies the inspected building into a predefined category based on a scale from A (very good) to G (poor), inspired by the energy label for electrical appliances. There is also a GEAK Plus certificate, which includes an advisory report with options for energy-related renovations in addition to the above standard assessment.

The application of the GEAK tends to be limited to residential buildings, administrative and school buildings, hotels, retail spaces, restaurants, and mixed-use buildings in these categories. The GEAK is only issued by certified GEAK experts. The property owner is free to choose such an expert.

In most cantons, obtaining the GEAK is voluntary. However, the GEAK is mandatory to obtain subsidies in some cantons. Obtaining a GEAK Plus is also mandatory throughout Switzerland for subsidies of more than CHF 10,000 from a building renovation program. In the cantons of Vaud, Fribourg and Neuchâtel, it is mandatory for certain changes of ownership of certain types of buildings, depending on their size and use cases. On the other hand, the canton of Basel-Stadt requires all buildings heated with fossil fuels and older than 15 years to have a GEAK Plus, although no further obligations are associated with this.



Switzerland



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Minergie is also the Swiss building standard for comfort, efficiency and climate protection for new buildings and renovations. Again, this is entirely voluntary, as this label is based on a private initiative with no legal basis. There is a simplified certification procedure for refurbishments. The high-quality building envelope and controlled air exchange play a special role here. Minergie buildings also consistently use renewable energies and exploit the potential of solar energy. They are CO₂-free in operation and minimize greenhouse gas emissions during construction.

Alternatively, the Swiss Sustainable Building Standard (SNBS) is suitable for larger properties owned by institutional investors. The SNBS, which is also voluntary, assesses the sustainability of buildings comprehensively. This means that SNBS equally considers the needs of society, the economy and the environment in the planning, construction and operation of a building. In addition to the topics of renewable energies, greenhouse gas reduction, environmentally friendly construction and operation, it also covers social issues such as participation, high quality of use (e.g., through barrier-free construction) and health. Under the social and environmental pillars, the SNBS also takes into account economic aspects, such as site selection and earnings potential.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

So far, there are only a few examples in this regard: In the canton of Vaud, a revision of the cantonal law on energy is currently in progress. It will require the renovation of existing buildings, specifically those classified as G and F under the CECB, as these buildings will need to improve their energy efficiency over a period of 10 to 15 years. However, this law is also subject to an optional referendum by the people.

To date, only the canton of Geneva has implemented a mandatory energy performance certificate (indice de dépense de chaleur — IDC). The IDC is an energy performance indicator of a building's energy consumption to accommodate its heating needs (heating and sanitary hot water). Since 2023, the IDC has been mandatory for every heated building. The index is calculated by dividing the annual energy consumption by the gross floor area of the building. The unit used is "megajoule per square meter per year." All buildings with an IDC greater than 450 megajoules must undergo an energy audit. The canton of Geneva has also introduced thresholds for significant breaches. Initially, buildings with an index of more than 800 megajoules per square meter per year will be required to conduct energy renovation measures. The canton will issue administrative decisions requiring owners to reduce the index to below 450 megajoules per square meter per year within three years of receiving an official decision. However, buildings with an index between 450 and 800 megajoules per square meter per year must also take measures to improve their energy efficiency.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Swiss state system is very finely divided into federal, cantonal and municipal levels. Each of these levels has its own schemes with its own requirements to obtain benefits from incentives. This can range, for example, from federal support for core refurbishment to municipal support for balcony solar panels (e.g., the city of Zurich). It is therefore difficult to make general and nationwide statements about the structure of the funding programs. A good overview is provided by the website energiefranken.ch, which lists all subsidy programs available in a given location, including the relevant agency's contact details.

The national building program (Gebäudeprogramm) is the most important government-funded initiative for improving energy efficiency. Part of the revenue from the CO2 levy is used for measures to reduce CO2 emissions from buildings in the long term. To be eligible for a federal contribution, a canton must have a program to promote the energy-efficient renovation of the building envelope and building services, as well as the replacement of existing electric or oil heating systems. The following construction measures are supported under the building program:

- Thermal insulation of the building envelope
- Replacement of fossil or electric heating systems with heating systems that use renewable energies or connection to a heating network
- Comprehensive, energy-efficient renovations or renovations in larger stages
- New buildings that meet certain Minergie standards

Applications for subsidies must always be submitted to the competent agency **before** the measurement is conducted. Applications submitted at a later date will not be considered. In most cases, the subsidy is limited to a one-off contribution to the individual measures; this also applies to smaller solar installations, whose operation and electricity production are not subsidized themselves. Rather, the funding is aimed at initial financing by covering a small investment contribution.



Switzerland



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Switzerland has signed and ratified the Paris Climate Agreement. To achieve the goals of this agreement, the Federal Council has decided to reduce CO2 emissions to net zero by 2050. In addition to the net-zero target, the law sets interim targets for 2040 and for the periods 2031-2040 and 2041-2050, and contains reference values for the buildings, transport and industry sectors. For the building sector, this means an 82% reduction by 2040 compared to 1990. By 2020, the reduction has already accumulated to -40%.

The federal government is planning measures to achieve this goal: The replacement of oil, gas and electric heating systems with climate-friendly heating systems is to be supported with CHF 2 billion. These subsidies are distributed in addition to the existing building program funding mentioned in the "Incentives for green retrofit" section. This is the core of a new federal law that the Swiss people approved in 2023. New obligations or even bans on certain heating systems are not part of this law. It will come into force in 2025.

The CO2 Act serves as a further instrument for implementing the Paris targets and is currently undergoing the parliamentary amendment process for the period after 2025. Following the Swiss people's rejection of an earlier draft of the law, it no longer contains any far-reaching obligations for the building sector. The only relevant levy is the CO2 levy, which would make fossil fuel-powered heating systems more expensive and, therefore, negatively affect their running costs. However, this levy remains unchanged at CHF 120 per ton of CO2.

With regard to the exclusions for existing buildings and heating systems, the protection of the status quo is still guaranteed by the Swiss Constitution and by law. Under the national laws mentioned in this section, no one is currently forced to change a running system. Additionally, the obligations under cantonal energy laws only apply in most cases when the heating system is replaced. The canton of Basel-Stadt is an exception because it bans even functioning fossil fuel heating systems by 2035. Further, changing the ownership of property never triggers a refurbishment obligation.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Due to the cantons' constitutional responsibility, there are different regulations in this area throughout Switzerland. The conference of cantonal energy counsels therefore adopted the 2014 model regulations of the cantons in the energy sector (MuKE n 2014), which aim to achieve the greatest possible harmonization and simplification of construction planning and the corresponding approval procedures. However, to be binding, these regulations must be implemented in the cantons' energy laws.

After the implementation process in recent years, in practically all cantons, at least 10% of the newly generated heat must come from renewable energies or be saved through improved energy efficiency. In the cantons of Basel-Stadt, Zurich and Geneva, this percentage is 100% for all buildings. However, in the Zurich cost model, it can be proven that the green substitution of heating sources leads to considerable additional costs over the life cycle and, therefore, an exemption from the full 100% would be appropriate. In the cantons of Neuchâtel and Glarus, this regulation only applies to residential buildings, while other cantons stipulate a 10% or 20% share. As an exception, there is currently no corresponding regulation in the canton of Solothurn.

In the case of new buildings, an appropriate proportion of electricity consumption must be covered by self-production. If this is not possible or desirable, a replacement levy must be paid, for which an amount of CHF 1,000 per unrealized kilowatt output is recommended.

In 2023, the drafts of the cantons' revised model regulations in the energy sector were published. The development of the MuKE n 2014 is entitled "Energy hub building." This title highlights the fact that the building is increasingly becoming the central unit for the consumption, production and storage of energy. The specifications for heat generation and in-house electricity generation will be tightened. As a result, the MuKE n 2014 will gradually be replaced by new model regulations by 2025. It will then be up to the cantons to incorporate the requirements of the new regulations into their cantonal energy laws to be mandatory.



Switzerland



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The CO₂ levy applies to fossil fuel sources that produce heat or electricity. The goal is to make fossil fuel-powered heating systems more expensive and to encourage the switch to greener alternatives. During the 2024 amendment of the respective law, an increase in the levy or an extension to other fuels, such as petrol or kerosene, was deemed not politically feasible. As a result, the levy will remain unchanged at CHF 120 per ton of CO₂ for some time to come, i.e., it will fall steadily after adjustments for inflation.

Moreover, the funding instruments in Switzerland are not so focused at the national level. For example, there are cantonal differences in the amount of deductions that can be claimed against taxable income for energy efficiency measures. There are even community-specific differences in the subsidies.

Tax advantages are particularly relevant for properties held as private assets. Green investments can be deducted from taxes over several years or, in the case of photovoltaic systems, they do not count as value-enhancing in some situations.

Finally, buildings in the canton of Geneva that meet the High Energy Performance (HPE) or Very High Energy Performance (THPE) standard can benefit from an exemption on the additional property tax for 20 years. The HPE standard is awarded to new or refurbished buildings whose thermal envelope is upgraded to produce at least 10 watts per square meter of electricity, whose roof is equipped with solar thermal collectors to provide at least 30% of the heat needed for domestic hot water, and whose main heat supply comes from non-fossil local energy sources or from a district heating network whose non-fossil local energy content is at least 50%. The THPE standard is awarded to new or refurbished buildings whose thermal envelope is upgraded to produce at least 30 watts per square meter of electricity, whose roof is upgraded with solar thermal collectors to provide at least 50% of the heat needed for domestic hot water, and whose main heat supply comes from non-fossil local energy sources or a district heating network whose non-fossil local energy content is at least 80%.



Switzerland



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Sustainable real estate projects by private and institutional players benefit from cantonal energy subsidies, partly financed by the federal government through the national building program (Gebäudeprogramm) and the proceeds of the federal CO2 tax. Employers, associations, trade unions and the Asloca (tenants' association in the French-speaking part of Switzerland) have recently reached a historic agreement on a CHF 500 million package of energy subsidies for building renovation in Geneva, which must still be approved by the legislative power of the canton of Geneva.

Green financing initiatives are promoted by nonprofit associations that align with environmental, social and governance principles (i.e., Climate Bonds Initiative, Swiss Sustainable Finance, Swiss Green Economy Symposium). Several banks offer green financing initiatives such as green bonds and mortgages. For instance, UBS' "Mortgage Green" initiative offers a reduction in interest rates for residential properties with green certification (Minergie, GEAK Class A/B or HPE/THPE).

Private foundations such as myclimate and Energy Future Switzerland offer subsidy programs for heat pumps to replace fossil fuel heating systems. The following online tool gives an overview of the existing subsidy programs in each canton:

<https://www.energiefranken.ch/de>.



Switzerland



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Through planning and zoning regimes or construction bylaws, municipalities and cantons can require mandatory connection to local district heating networks powered by renewable energies. In these cases, especially for developments in new neighborhoods, the mandatory connection is a requirement to obtain a building permit.

The planning benefit of an increased land utilization rate in the canton of Geneva is worth noting. Usually, the surface area of a building in a single-family zone may not exceed 25% of the surface area of the plot. In Geneva, this can be increased to 27.5% if the building complies with the HPE standard or to 30% if the building complies with the THPE standard. These percentages also apply to renovation projects that meet one of these standards. In addition, in areas of increased densification, as defined by a local development plan, and where this measure is compatible with the character, harmony and layout of the neighborhood, developers can also benefit from gradual increases in the utilization of their property. Some cantons have similar provisions with minimum additional utilization, but more as sort of a compensation, as a more solid building envelope is often required for energy-efficient renovations.



Switzerland



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green lease provisions are optional. While green lease provisions are not yet market standard in Switzerland, there has been a significant (and growing) uptick in respective interest from landlords (in particular, foreign ones) in recent years. They are an effective tool for landlords to encourage tenants to use the property in the most sustainable way possible, while allowing owners and developers to better manage the energy consumption of their buildings and reduce the cost of energy consumption. Without such green provisions in the lease, landlords have limited options to influence their tenants' environmentally friendly usage of the rental premises. Green lease provisions need to be specifically included in the lease to be enforceable against the tenant. Adding them to existing leases generally requires the signing of a lease amendment. If applicable, it is therefore advisable for landlords to plan ahead and to integrate green leases into their leases when new leases are signed.

Green lease provisions range from environmentally friendly cleaning procedures, to waste reduction and recycling, to requiring the use of energy-efficient appliances and lighting.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There are currently no mandatory certifications required for buildings, except for the energy identity certification mentioned under the "Energy performance certificates and minimum energy standards" section. However, there is a voluntary certification system named Yes-TR. Additionally, well-known international certifications, such as Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Methodology (BREEAM), and WELL Building Standard (WELL) are also widely recognized within the market.

Yes-TR is a local green building certification system developed by the Republic of Türkiye Ministry of Environment, Urbanization, and Climate Change ("**Ministry of Environment**"). It focuses on the certification of environmental sustainability levels in various types of buildings across different regions of Türkiye. Yes-TR evaluates and rates the sustainable features of buildings, considering factors like energy efficiency, resource conservation and overall environmental impact. This system offers a comprehensive framework for evaluating the sustainability of both new and existing structures, while also promoting eco-friendly practices within the Turkish construction sector.

The Yes-TR certificate is applicable to new and existing buildings, and can be sought for residential, office, educational, tourism, health and commercial properties in Türkiye.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Pursuant to the Energy Efficiency Law No. 5627 published in the Official Gazette dated 2 May 2007 and numbered 26510 ("**Energy Efficiency Law**"), and the Building Energy Performance Regulation published in the Official Gazette dated 5 December 2008 and numbered 27075 ("**Energy Performance Regulation**"), buildings in Türkiye have been subject to an energy identity certificate ("**Energy Identity Certificate**") requirement since 2011. The Energy Identity Certificate must be issued for the entire building and is valid for 10 years, and should be renewed at the end of each 10-year period. The Energy Identity Certificate has the characteristics of an identity document and there are no prescribed minimum standards for the issuance of the Energy Identity Certificate.

According to the Energy Performance Regulation, the Energy Identity Certificate contains the following information:

- General information on the building
- Amount of energy used for heating, cooling and water procurement
- Annual amount of the most used type of energy
- Classification of energy use between A (best class) and G (worst class)
- Amount of greenhouse gas and classification of greenhouse gas emissions between A and G
- Amount of enlightenment energy consumption
- Classification of energy and CO2 emissions
- Proportion of renewable energy use of the building



Turkey



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There are exceptions to the requirement of obtaining the Energy Identity Certificate. Accordingly, certain buildings are exempt from this requirement, including the following:

- Buildings used for industrial production
- Buildings with a planned usage period of less than two years
- Buildings with under 50 square meters in total area
- Buildings not requiring heating or cooling (e.g., warehouses, storage facilities, stables and barns)
- Buildings located outside municipal areas with a total construction area under 1,000 square meters



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The Turkish government has implemented a series of initiatives and strategies aimed at enhancing the energy efficiency of both existing and newly developed buildings. Furthermore, the enactment of the Energy Efficiency Law represents a crucial milestone in recognizing and prioritizing the significance of energy efficiency measures.

Current supports and initiatives can be summarized as follows:

1. Efficiency Enhancement Project Support

In 2011, the Republic of Türkiye's Ministry of Energy and Natural Resources ("**Ministry of Energy**") initiated a program to support projects aimed at enhancing efficiency. Under this program, the Ministry of Energy offers a grant of 30% of the project value (up to maximum of TRY 5 million excluding value added tax) to projects that qualify. These projects, known as efficiency enhancing projects (VAP), focus on reducing unnecessary energy consumption, waste, losses and leakages by utilizing energy-efficient equipment, systems, insulation, rehabilitation and process regulation. They may also include solutions such as waste energy recovery and cogeneration systems.

Industrial enterprises with an annual energy consumption of 500 tons of oil equivalent (TOE) or more, excluding entities with electricity generation licenses, are eligible to apply for VAP. As of the 31 December 2021, since the launch of the program, the Ministry of Energy approved 346 VAP projects, providing a total of TRY 47.3 million in support (equivalent to approximately USD 1.5 million based on the March 2024 foreign exchange rate). The applications for VAP should be made through the official online system of the Ministry of Energy, in accordance with the announcement on the website of the Ministry of Energy.

2. The Energy Efficiency in Public Buildings ("**KABEV Project**")

The Ministry of Environment launched a project for energy efficiency in buildings in collaboration with the World Bank. The KABEV Project, launched in 2022, is scheduled for completion by the end of 2025, and aims to enhance the energy efficiency of 500-700 public buildings. The budget of the KABEV Project is up to USD 200 million. The applications for the KABEV Project were closed at the end of 2022.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The primary goal of the KABEV Project is to address climate change by achieving energy savings, improving comfort and reducing greenhouse gas emissions. Investments within the project are targeted towards public buildings with high energy consumption and quick returns on investment. Activities include conducting energy assessments of public buildings such as schools, hospitals, administrative offices and university campuses in Türkiye, developing energy identity documents, determining energy efficiency and potential savings, and presenting investment costs. Additionally, architectural and technical modifications will be made to enhance energy efficiency in these buildings.

3. Climate Change Reduction Strategy and Action Plan (2024-2030):

The Directorate of Climate Change, a suborganization of the Ministry of Environment, published the Climate Change Reduction Strategy and Action Plan ("**Plan**") for the years between 2024 and 2030 on 21 March 2024. Pursuant to the Plan, the first strategy is enhancing the energy efficiency of the existing buildings. In this respect, obtaining the energy identity certificate for all of the existing buildings is an important policy for the building energy inventory to be calculated clearly and correctly. Considering that one-third of the ultimate energy is consumed by the buildings, energy efficiency and renewable energy usage will be enhanced based on the Energy Identity Certificates. As per the Plan, the following has taken place:

- Support programs and incentives have been established to encourage energy efficiency improvements in existing buildings in compliance with the Energy Efficiency Law.
- Recent amendments to the Energy Efficiency Law have expanded project support to include the building sector, such as offering low-interest heat insulation loans.
- Efforts have been made to raise awareness and promote energy efficiency in buildings, emphasizing the importance of maintaining efficiency levels.
- Moving forward, ongoing awareness-raising activities will be conducted as part of the energy efficiency strategic communication plan, focusing specifically on buildings within the designated area.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Within the framework of the National Energy Efficiency Action Plan declared by the Ministry of Energy, ("**First Plan**") for 2017-2023, there were 12 defined actions aimed at improving energy efficiency in the buildings and services sector to meet strategic targets. These actions involved: (i) enhancing the efficiency of new and existing buildings, (ii) optimizing energy usage in the public sector, (iii) increasing onsite production and renewable energy utilization, (iv) conducting a comprehensive building inventory study, and (v) organizing awareness campaigns across all sectors. The actions outlined in the First Plan were aligned with previous strategic initiatives and provide a roadmap for achieving set targets.

Throughout the implementation of the First Plan, a total investment of USD 8.47 billion was made in energy efficiency, resulting in cumulative energy savings of 24.6 millions of tons of oil equivalent, a reduction of 68.62 million tons of CO2-equivalent emissions, and the creation of 44,880 green jobs. These achievements demonstrate the successful realization of the goals set in the initial National Energy Efficiency Action Plan. To continue progress towards Türkiye's net zero emission target, ensure energy supply security, and build on the momentum of energy efficiency efforts, the Energy Efficiency 2030 Strategy and the upcoming 2nd National Energy Efficiency Action Plan ("**Second Plan**") for 2024-2030 have been developed and shared with the public.

As part of the Second Plan, efforts will be made to include information on Energy Identity Certificates in real estate advertisements, in collaboration with non-governmental organizations in the real estate sector. Additionally, initiatives will be taken to promote the National Green Building-Settlement Certificate within buildings and communities, conduct awareness-raising campaigns, and integrate energy efficiency into the curricula of engineering and architecture faculties.

The Ministry of Energy has announced plans to invest USD 700 million to achieve a 30% energy savings target in public buildings by 2030. Furthermore, Türkiye is expected to invest over USD 3 billion by 2030 to enhance energy efficiency in existing and new residential constructions, as well as in urban transformation areas. These investments are projected to bring significant benefits to the economy, with energy efficiency projects in the industry offering a payback period of around two years and total savings exceeding TRY 5 billion.



Turkey



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There is no such a general requirement. However, in accordance with the Energy Performance Regulation, it is mandatory for buildings to be classified as nearly zero energy buildings to achieve an energy performance class of B or higher on the energy identity certificate. Additionally, a minimum of 10% of these building's primary energy requirements must be sourced from renewable energy (this rate is applied as 5% between 1 January 2023 and 1 January 2025).

Furthermore, buildings with a total construction area exceeding 2000 square meters (the total building construction area specified herein is applied as "5000 square meters" from 1 January 2023 until 1 January 2025) are obligated to be constructed as nearly zero energy buildings. The submission of a "Pre-Calculation Result Form" demonstrating compliance with the regulation through an energy performance software is required alongside architectural, mechanical and lighting project plans for the issuance of a building license.



Turkey



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are currently no regulatory measures in place to promote increased energy efficiency in buildings.



Turkey



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The adoption of the European Green Deal in 2019 and Türkiye's accession to the Paris Agreement in 2021 mark the speeding up of public initiatives for green financing in Türkiye. These public initiatives come in the form of draft regulations and soft law instruments such as good practice guidelines published by regulatory authorities and Türkiye itself. One of the most prominent public initiatives for green financing is the Draft Communiqué on Green Asset Ratio ("**Draft Communiqué**") presented by the Banking Regulatory and Supervisory Authority (BRSA) in September 2023. The Draft Communiqué deals with the procedures and principles regarding the calculation and reporting of the green asset ratio and other key performance indicators determined for the calculation of banks' contribution to the financing of environmentally sustainable economic activities. According to the Draft Communiqué, the green asset ratio is calculated by dividing the compliant assets in banks' unconsolidated balance sheets by the eligible assets, and banks will be obliged to report their green asset ratio to the BRSA at certain intervals. In this sense, the Draft Communiqué is significant as it plans to introduce a mandatory measurement of banks' contribution to the financing of environmentally sustainable economic activities and requires long-term structural reforms for banks. In relation to real estate financing, consumer loans for improvement and renovation of energy-efficient housing and commercial loans for the construction and acquisition of green buildings are listed among the compliant assets for the calculation of the green asset ratio within the scope of the Draft Communiqué.



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The BRSA also published the Good Practice Guidelines on Loan Allocation and Monitoring Processes ("**BRSA Guidelines**") complementing the Regulation on Internal Systems and Internal Capital Adequacy Assessment Process of Banks in June 2021. The BRSA Guidelines contain a separate section on environmentally sustainable loans and practices that banks should follow when allocating and monitoring environmentally sustainable loans, including preparation of environmentally sustainable loan policies and procedures. These policies and procedures should provide the criteria by which the bank assesses the eligibility of such projects and activities for environmentally sustainable lending, or references to relevant existing standards for environmentally sustainable lending that define the types of loans that are to be considered environmentally sustainable. In connection with this, banks should position their environmentally sustainable lending policies and procedures in the context of their overarching objectives, strategies and policies on sustainable finance. In particular, banks should establish qualitative and, where relevant, quantitative targets to support the integrity and development of environmentally sustainable lending activities, and assess the extent to which this development is aligned with or contributes to overall climate-related and environmentally sustainable objectives. The BRSA Guidelines are important in terms of providing guidance to banks in their sustainable finance considerations, including sustainable real estate finance.

Finally, in February 2023, the BRSA published the Decision on the Loan-to-Value Ratio and Maximum Loan Amount to be applied in Housing Loans and Housing Collateralized Loans, which determines loan-to-value ratio for energy performance class A houses with energy performance certificates and for energy performance class B houses, based on their market values. This regulation facilitates consumers' access to loans for energy-efficient housing, contributing to the green financing of housing needs.

The Capital Markets Board of Türkiye (CMB) published the Guidelines on Green Debt Instruments, Sustainable Debt Instruments, Green Loan Certificates, Sustainable Loan Certificates ("**CMB Guidelines**") on 24 February 2022. The CMB Guidelines regulate the principles and issuance processes of green debt instruments and green lease certificates based on the Green Bond Principles of the International Capital Markets Association, which has become the global standard in the field of green bonds. Similar to the Draft Communiqué and the BRSA Guidelines, the CMB Guidelines point to energy-efficient and green buildings among green projects eligible to attract the use of proceeds of green debt instruments and green lease certificate issuances.



Turkey



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Outside of the regulatory authorities' efforts on green financing initiatives, focusing on sovereign endeavors, Türkiye created its sovereign Sustainable Finance Framework ("**Framework**") in November 2021. The Framework regulates the standards for sustainable financing instruments (including all green, social or sustainability bonds, sukuks, loans and other debt instruments) and eligible green and/or eligible social projects. While the Framework sets the eligibility criteria for eligible green and social projects, it categorizes projects according to the United Nations Sustainable Development Goals. Similar to the draft regulations and soft law instruments of the regulatory authorities mentioned above, certain examples of eligible green projects categories under the Framework include energy-efficient buildings and green buildings. Türkiye intends to increase its activities in international finance markets by taking the steps on sustainability delineated in the Framework. Thanks to the Framework, Türkiye's transformation into sustainability has accelerated, and it has paved the way for improved access to international finance, including in the sustainable real estate sector.

Türkiye's green financing targets set out in the National Green Deal Action Plan ("**Action Plan**") published in 2021 complement the Framework goals. In this regard, Türkiye plans to revise its national incentive system by considering the incentives provided in the EU to green finance. In addition, within the Action Plan, Türkiye is developing the national energy efficiency financing mechanism and the Turkish banking sector strategy for sustainability. The Action Plan, alongside the Framework, shows Türkiye's commitment to providing financing alternatives to sustainable and green projects, among which are sustainable real estate projects.



Turkey



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

International lenders such as the International Finance Corporation, the International Bank for Reconstruction and Development (IBRD) and the European Bank for Reconstruction and Development (EBRD) are also helping Türkiye in its efforts to replace conventional methods of financing of real estate projects with greener alternatives. In this context, the IBRD's Türkiye Sustainable Cities Additional Financing Project for over USD 560.6 million was approved in May 2019, and it aims to improve the sustainability of Turkish cities by enabling interested municipalities to access financing for their priority investments. This follows the launch of the Sustainable Cities Project (versions 1 and 2), which offered USD 132.7 million and USD 91.54 million, respectively, to Turkish cities for projects related to energy efficiency, renewable energy and urban environments. In addition, to target the potential of residential energy efficiency measures, the EBRD, supported by the Clean Technology Fund and the European Union, launched the Turkish Residential Energy Efficiency Financing Facility (TuREEFF) to provide finance to residential consumers who wish to invest in energy efficiency projects in their homes. As of 2020, TuREEFF has financed over 430 projects since 2015, reaching 50,000 homes and investing over USD 350 million through four local banks.

Turkish banks have also made multilateral commitments to achieve the transformation of companies' investment decisions and the market in support of sustainable development. In this regard, eight of Türkiye's leading banks signed the United Nations Global Compact Türkiye Sustainable Finance Declaration ("**Declaration**") in 2017, and the Declaration is reviewed and regularly updated every year. Under the Declaration, the signatory banks undertake, among other things, to consider the environmental and social principles set out in the Declaration in project finance, and to prioritize and promote resource efficiency, renewable energy investments and any investment to protect or improve environmental conditions for all new investments over USD 10 million. This means that the financing of sustainable real estate projects over USD 10 million will be prioritized and promoted by the signatory banks. The same signatory banks to the Declaration also sponsored the 9th Annual Sustainable Finance Forum ("**Forum**") organized by the Business and Sustainable Development Council on 22 November 2023. The Forum brought internationally recognized practitioners and thought leaders in the field of sustainable finance together, and the themes of the Forum were "Meeting the Financing Needs of Earthquake Affected Regions with Long-Term and Sustainable Resources" and "Financing Green and Earthquake Resistant Cities with Alternative Sustainable Resources." Energy-efficient and green buildings were top points of discussion under both themes. The Forum, alongside the Declaration, proves the Turkish market's genuine efforts to prioritize and promote green and sustainable finance in Türkiye.



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In Türkiye, the legal framework for urban planning, zoning, and environmental regulations is primarily established by national laws and regulations, with local governments responsible for enforcement within their jurisdictions.

The Zoning Law No. 3194, published in the Official Gazette dated 9 May 1985 and numbered 18749 ("**Zoning Law**"), serves as the main legal framework for urban planning and zoning regulations nationwide. The Zoning Law sets out the processes for zoning plans, including land use designations, building regulations, and infrastructure requirements. While the Zoning Law primarily governs land-use planning at the national level, it also allows for flexibility to address local needs and conditions through the development of detailed zoning plans by local authorities. For instance, municipalities are authorized to develop environmental projects such as zero-waste projects and waste-recovery projects in line with the needs of the areas they are authorized to govern. Additionally, municipalities organize training for the contractors on this matter such as green building training. In addition, Article 8/h of the Zoning Law states that the Ministry of Environment has the authority to create energy-efficient, climate-sensitive and ecological plans and projects for the settlements covered by the Zoning Law, and may construct such buildings or provide long-term loans to support them.

Furthermore, according to the Planned Areas Zoning Regulation published in the Official Gazette dated 3 July 2017 and numbered 30113, local authorities have the ability to designate non-residential urban working areas for specific purposes. These areas may be used for the construction of manufacturing factories, warehouses that do not store hazardous materials, wholesale trade facilities, accommodation establishments, restaurants, outdoor sports facilities (such as fields and tennis courts), and event venues that do not pose a risk to environmental health. This authority may also be used for green initiatives.



Turkey



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Türkiye, green lease or green lease provisions are not mandatory and are generally optional. In certain large-scale projects, such as business centers, shopping malls, or residential developments, green lease provisions may be utilized to enhance environmental sustainability and energy efficiency efforts. These practices are particularly common in projects where these factors are of heightened importance.

It can be observed that the adoption of green lease practices in Türkiye is not yet widespread. However, as environmental awareness and energy efficiency initiatives continue to gain momentum, it is anticipated that green leasing practices will become more prevalent in the future.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Certification of buildings in Ukraine is gradually gaining importance. Currently, there are a number of initiatives aimed at promoting the sustainable development and energy efficiency of buildings in Ukraine.

Nonetheless, green building certification in Ukraine is not mandatory. Certification under the international standards is voluntary. However, due to an increasing level of corporate social responsibility, Ukrainian construction companies are continually devoting more attention to environmental issues and the efficient use of resources.

The Ukrainian office real estate market has recently seen a surge in certifications. Most of these occurred in 2020-2021 and were secured under internationally acknowledged certification schemes, such as Leadership in Energy and Environmental Design (LEED) and Building Research Establishment Environmental Assessment Methodology (BREEAM). A recent example of LEED certification is the office premises of business center Mag.Nett located in Kyiv, which fulfilled the requirements of the LEED Gold level in 2021. Another one is the office premises developed as part of the Unit.City construction project in Kyiv. There are several examples of BREEAM certification, such as business centers ASTARTA Organic Business Centre, Grand and Horizon Park in Kyiv, and business park Optima Plaza in Lviv.

With regard to energy performance certification, some local authorities have joined a system of voluntary energy certification of buildings, including multiapartment residential buildings, schools, health centers, etc. This voluntary energy certification is supported by the European voluntary energy certification system "Display Campaign," which was developed in 2003 by energy experts from European towns and cities.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

According to the Law of Ukraine "On Energy Efficiency of Buildings," energy efficiency certification is mandatory for the following newly constructed, reconstructed or subject-to-capital-repairs objects:

- Buildings and structures that are regarded as objects of medium (so-called "CC2") and significant ("CC3") consequences
- State and municipally owned buildings that have over 250 square meters of heating area hosting state and municipal authorities or that are regularly attended by citizens
- Buildings and structures that receive state support for enhancing energy efficiency

This is except for cases when the types of buildings or works are explicitly exempted from mandatory energy efficiency certification by the Cabinet of Ministers of Ukraine. Owners of these exempted properties may still apply for voluntary energy efficiency certification.

Energy efficiency certification leads to the issuance of an energy certificate by a respective energy auditor. This certificate is issued electronically (via the Unified State Electronic System in the Sphere of Construction) and is valid for 10 years as of the day the relevant registration number is assigned (unless this certificate is substituted with a new one). This certificate contains, among other things, information on the building's class of energy efficiency, volumes of energy consumption, pollution volumes, a description of the building and recommendations on increasing its energy efficiency.

The Ministry for Development and Communities and Territories of Ukraine establishes the minimum standards of energy efficiency (which are subject to review every five years) in accordance with the State Construction Standards. There are six energy efficiency ratings for buildings. The buildings with the best qualities are rated "A" class, whereas ones with the worst characteristics are rated "F" class. If the energy audit reveals that a building is a "D" or an "F" class, the building's energy efficiency must be improved to reach the "C" class.



Ukraine



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Under the Law of Ukraine "On Town Planning," the design documentation for buildings of the CC2 and CC3 classes of consequences is subject to a mandatory state energy-saving expert review. Failure to comply with this requirement may result in an administrative fine and may affect the commissioning of the building. For all other buildings, the state energy-saving expert review is voluntary.

With regard to voluntary energy performance certification, some local authorities have joined a system of voluntary energy certification of buildings, including multi-apartment residential buildings, schools, health centers, etc. This voluntary energy certification is supported by the European voluntary energy certification system "Display Campaign," which was developed in 2003 by energy experts from European towns and cities.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

There is a state energy efficiency loan financing program providing support for the energy efficiency of buildings (so-called "warm" loans). Under the program, the government reimburses individuals and multiapartment building associations for certain amounts spent on energy efficiency improvements.

On 17 October 2011, the Cabinet of Ministers of Ukraine approved the Procedure for Use of Funds Provided in the State Budget for the Implementation of Energy Efficiency and Energy-Saving Measures ("**Procedure**"), which is still effective. Under the Procedure, the loans taken out by individuals, housing associations and multiapartment building co-owners associations for acquiring energy-efficient equipment and facilities can be partly reimbursed. The general procedure is as follows:

- The multi-apartment building co-owners association/individual ("**Applicant**") applies to certain (most often, state-owned) banks for a loan to improve the energy efficiency of the building.
- The bank grants the loan and the Applicant performs energy efficiency measures.
- Upon completing the improvements, the Applicant submits receipts and other documents to the bank as confirmation of the performed measures. There is an established list of energy-efficient equipment and materials whose cost can be reimbursed.
- The bank submits these documents to the authorized state agency, which then reimburses a part of the costs of acquiring energy-efficient equipment and materials.
- The bank reimburses the Applicant for part of the money spent on acquiring energy-efficient equipment and materials.

As of November 2021, approximately 117,000 Ukrainian families had participated in this energy efficiency crediting program.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

In Ukraine, buildings consume more than 30% of the total energy consumption.

In 2016, Ukraine ratified the Paris Agreement, which is aimed at, among other things, reducing greenhouse gas emissions. In line with the Paris Agreement, certain binding legislative acts have been implemented, aiming to reduce the emission of CO2 into the atmosphere.

Under the Law of Ukraine "On Protection of the Atmosphere," legal entities are obliged to take different measures to reduce CO2 emissions. Moreover, legal entities should obtain a permit for polluting emissions.

On 30 July 2021, Ukraine adopted the updated nationally determined contribution of Ukraine to the Paris Agreement, aiming to achieve a 30% reduction (compared to 1991) in greenhouse gas emissions by 2030.

The minimum standards of energy performance are provided in the State Building Standards of Ukraine. These standards are mandatory for all individuals and legal entities in Ukraine. State agencies have adopted a number of methodological recommendations providing for solutions to improve buildings to reduce the CO2 they emit.

New buildings in Ukraine will not be granted a building permit without a positive conclusion of an energy efficiency expert review.

Furthermore, there are a number of targets aimed at reducing energy use and promoting energy efficiency in buildings (please refer to our discussion in the sections on "Incentives for green retrofit," "Regulation," and "Financing").

The Law of Ukraine "On Amendments to State Budget," which became effective on 6 May 2023, provides for establishing the State Fund for Decarbonization and Energy Efficiency Transformation ("**Decarbonization Fund**"). The Decarbonization Fund is expected to be funded by, among others, environmental taxes, which are levied from operators of stationary sources of CO2 pollution. Funds from the Decarbonization Fund will be used to finance state programs aiming to reduce CO2 pollution and enhance energy efficiency.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

There are a number of laws and regulations aimed at promoting the use of renewable energy sources (RES). Nonetheless, there is no regulation requiring a percentage of energy consumption to come from RES.

Ukraine undertook an obligation to implement Directive 2009/28/EC of the European Parliament and of the Council. According to the available statistics, in 2021, energy produced from RES reached 8.1% of the total energy produced. In the same year, Ukraine was ranked 36th in Climatescope's global power ranking. However, due to the Russian-Ukrainian war, it has significantly deteriorated and is now ranked 74th.

The main ways of encouraging the use of RES are (i) a green tariff for electricity produced from RES and (ii) tax and customs relief and exemptions.

Green tariff

To stimulate the operation and development of RES in Ukraine, a green tariff was introduced in 2009. The National Energy and Utilities Regulatory Commission of Ukraine (NERC), which is the regulatory authority in Ukraine, establishes green tariffs for each company that generates electricity from RES and for each type of RES. Green tariffs are established until 1 January 2030, and are reviewed by the NERC on a monthly basis. Green tariffs are applied to new construction projects and existing renewable energy plants.

A green tariff is also granted for electricity produced by private households using solar panels and wind power facilities of a capacity not exceeding 30 kilowatts.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Tax and customs relief

To encourage the use of RES, the Tax Code of Ukraine and the Customs Code of Ukraine establish that imports of certain energy-efficient materials and equipment are free from import duties and VAT, including the following:

- Equipment that operates on renewable energy, and fuel and energy metering equipment
- Equipment and materials for producing alternative fuels or energy from RES
- Raw materials, equipment and components for producing energy-saving equipment and products that ensure efficient use of fuel and energy resources

The Cabinet of Ministers of Ukraine has promulgated a list of equipment and material imports that are free from import duties and VAT.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are a number of measures to encourage the efficient use of energy in buildings. The main ones are as follows:

- Loan financing program

The government of Ukraine created a mechanism to reimburse a part of the loans taken out by individuals, housing associations and multiapartment building co-owners associations for the acquisition of energy-efficient equipment and facilities (please refer to our discussion under "Incentives for green retrofit").

- Decision-making in multiapartment buildings

In 2015, the Law of Ukraine "On Peculiarities of Exercising Ownership Rights in Multi-Apartment Building" was adopted. The law is aimed at, among other things, (i) improving the effectiveness of multiapartment building management and (ii) allowing the co-owners of the building to make decisions on all building management issues, including energy efficiency measures.

- Green tariff, tax and customs relief

National regulatory measures include certain tax and customs relief and green tariffs established for certain enterprises and private households (please refer to our discussion under "Renewable energy").

On 30 June 2023, the Ukrainian Parliament adopted the Law of Ukraine "On Amendments to Certain Laws of Ukraine concerning Renewal of "Green" Transformation of Energy Systems of Ukraine," which introduced (i) a mechanism of guaranteeing the origin of electricity to ensure that its carbon footprint is reduced, (ii) options for green energy producers to use a feed-in premium scheme and (iii) an extension of the term of construction for wind energy plants with the benefits of green tariffs.



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

We are not aware of any public or private "green" financing initiatives specifically for sustainable real estate projects. Nonetheless, there are a number of programs for energy efficiency of buildings. The main ones are as follows:

- State programs and government projects

The government of Ukraine created a mechanism to reimburse part of the loans taken out by individuals, housing associations and multi-apartment building co-owners associations for acquiring energy-efficient equipment and facilities (please refer to our discussion under "Incentives for green retrofit").

- Local projects

A number of Ukrainian cities have launched programs to improve the energy efficiency of buildings. These programs are funded by local budgets and supported by local and international investors. The programs mainly provide for reimbursing the cost of energy-efficient equipment and materials.

For example, in Vinnytsia, the local authorities adopted the Program for Encouragement of Energy Efficiency Improvements in Buildings with a Multi-apartment Building's Co-owners Association for 2012-2020. According to this program, purchasing energy-efficient equipment and materials is funded by the members of a multiapartment building's co-owners association together with a local budget. Similar programs have been launched in Kamianets-Podilskyi, Lviv, Khmelnytskyi and other cities of Ukraine.

There are many private initiatives and organizations that promote sustainable real estate projects by organizing seminars and training.



Ukraine



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

- International support

There are a number of loan programs and technical assistance programs in the field of energy efficiency. Below are some examples of programs aimed at sustainable energy development in buildings.

The International Finance Corporation Ukraine Residential Energy Efficiency Project is designed to create an effective legal and institutional platform to support multiapartment building co-owners associations and housing management companies in obtaining financing for the energy-efficient modernization of multiapartment buildings through granting preferential credits.

There are also projects supported by Deutsche Gesellschaft für Internationale Zusammenarbeit, the European Bank for Reconstruction and Development, and others.



Ukraine



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Construction of buildings in cities and villages must be performed according to State Construction Standard Б.2.2-12:2019 "Planning and development of territories." This standard is mandatory for all individuals and legal entities in Ukraine. The standard contains provisions stating that energy supply in cities and villages must also come from alternative energy sources.

The Master Plan of Kyiv provides that efficient use of resources, sustainable development and preservation of the environment are some of the main goals in construction development. These goals are expected to be achieved because of the introduction of new technologies and use of energy-efficient materials and equipment. To promote energy efficiency in residential buildings, it is contemplated that the reconstruction and improvement of old five-, nine- and 16-floor buildings be arranged.



Ukraine



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Ukraine, parties to lease agreements are not obliged to include green provisions. Compared to the past, green lease provisions are now more frequently included in lease agreements. This take-up, however, is yet to be significant. The lease agreement usually provides for the tenant's duty to generally comply with laws, including environmental laws, and specific duties regarding the use or storage of hazardous materials, waste disposal, etc.

The parties are free to agree on any provisions of a lease agreement that do not contradict legal requirements. If the parties agree to include green lease provisions in a lease agreement, these provisions become mandatory for both the landlord and the tenant. It is common for a lease agreement to provide for liability in the case of noncompliance with the green lease provisions.

The parties typically include provisions regarding the following in a green lease agreement:

- Charging for the costs of utilities based on consumption
- The tenant's obligation to install utilities' metering devices
- Maintenance of the building in a manner consistent with established environmental requirements
- Use of proper materials for any alterations and repair works, etc.



United Kingdom



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The primary certification model in the UK is the Building Research Establishment Environmental Assessment Methodology (BREEAM), a non-domestic design-stage methodology based on building type models. BREEAM was developed in the UK. It is a voluntary system, but it is widely adopted and understood by the construction industry. BREEAM considers 10 areas of sustainability and environmental performance, including energy, water and waste, as well as human health and wellbeing, and transport. There are variations for new construction, in-use, and refurbishment and fit-out projects. BREEAM assesses a wide range of asset types, including offices, retail and industrial buildings, and houses, apartments, hospitality and residential institutions.

For the assessment of performance in civil engineering and public realm projects, BREEAM Infrastructure (formerly CEEQUAL) has become the industry-accepted scheme.

BREEAM maintains its status as the preferred sustainability standard for new and existing commercial real estate. According to research undertaken by JLL,^[1] capital values for London office premises are on average 20.6% higher for properties with a BREEAM certification and show an average increase in rents of 11.6%.

^[1] <https://www.jll.co.uk/en/newsroom/environmentally-sustainable-real-estate-attracts-higher-prices>



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The Energy Performance of Buildings Directive was given legal force in the UK via a number of pieces of implementing legislation, including the Buildings Regulations 2010 and the Energy Performance of Buildings Regulations 2012. These include requirements to produce Energy Performance Certificates (EPCs) and recommendations for energy performance improvements whenever a building is constructed, sold or rented, and, in some circumstances, refurbished.

The Minimum Energy Efficiency Standard (MEES) regime was put in place by Part 3 of the Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015 (SI 2015/962), following the Energy Act 2011. This regime is intended to improve the energy efficiency of both commercial and residential privately-rented property, though this section of the guide focuses only on commercial rented property.

Under the current MEES regime, any new or renewal lease, or lease extension, granted in relation to commercial properties in England and Wales, must (subject to certain exemptions) have a valid energy performance certificate (EPC) showing an energy efficiency rating for the property between 'A' and 'E' (with 'A' being the best). Ratings of 'F' and 'G' denote the property as sub-standard in terms of energy efficiency.

Since 1 April 2023, this MEES standard has extended to all existing commercial leases, even where there is no change in tenancy arrangements.

There is no formal requirement to improve the energy efficiency of a sub-standard property before a sale (although an EPC will be necessary as part of the sale process). However, MEES must be considered where a sub-standard investment property is being purchased, as the property owner or landlord will not be able to grant new leases without raising the property's energy efficiency to an acceptable level. A new landlord will also need to consider whether that cost could be shared with tenants, review any existing exemptions and consider any potential exemptions from the MEES regulations. A buyer of sub-standard property will not inherit any exemption from MEES compliance that has been previously obtained by the seller and will need to either raise the energy efficiency standard of the property to the permitted level, or satisfy the criteria, and apply for a new MEES exemption.



United Kingdom



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

The required standards for energy efficiency are in flux. The UK government's 2020 Energy White Paper, "Powering our net zero future," revealed its intention for all rented commercial buildings to achieve an EPC rating of 'C' by 2027, and an EPC 'B' rating by 2030. However, the UK government seems to have relaxed that trajectory, though as at the date of publication of this guide, there has been no clarification of what the revised targets for non-domestic buildings might be.



United Kingdom



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Since the first edition of this guide was published, various UK government subsidy schemes for improving the energy efficiency of homes have closed.

In December 2023, the UK government allocated GBP 6 billion to launch various funding schemes to reduce energy use in residential properties, support a move from gas boilers to electric heat pumps, and improve insulation. For commercial properties, grants of up to GBP 7,500 are available to fund the cost of a heat pump.



United Kingdom



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The UK Climate Change Act 2008 implemented the world's first legally binding climate change target. It aimed to reduce greenhouse gas emissions by 80% from the 1990 baseline by 2050, with an interim target of 34% by 2020. In June 2019, this commitment was strengthened to net zero by 2050.

The UK has also set targets to reduce carbon emissions by 68% by 2030, and 77% by 2035.

In 2022, buildings accounted for approximately 17% of the UK's greenhouse gas emissions. The Climate Change Committee's 2023 Progress Report stated that progress in the buildings sector had stalled, with little reduction in emissions since 2010.

The UK government has adopted a suite of policies to reach net zero, set out in two strategy publications, the [Net Zero Strategy](#) (2021) and [Powering Up Britain: The Net Zero Growth Plan](#) (2023). In particular, the latter was published following the High Court judgment in *Friends of the Earth and others v. Secretary of State for Business, Energy and Industrial Strategy* [2022] EWHC 1841 (Admin), which required the government to set out more detail on its plans to achieve net zero in accordance with its 2050 target.



United Kingdom



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In 2022, 40% of the UK's electricity came from renewables. After gas, wind was the second largest source of electricity ([26.8%](#)), solar represented 4.4%, biomass 5.2% and hydro 1.8%.

Targets for renewable energy have not been enshrined in regulation and are instead set out in government strategy documents.

The [Net Zero Strategy](#) (2021) includes the target for the UK to be powered entirely by 'clean electricity' (which includes from nuclear power as well as renewables), subject to security of supply, by 2035.

The [British Energy Security Strategy](#) (2022) includes a target for up to 50 gigawatts of offshore wind by 2030.

The UK government has incentivized the development of renewable energy projects with schemes such as Contracts for Difference (CfD). A CfD is a private contract between a low-carbon electricity generator and the Low Carbon Contracts Company, a company owned by the UK government. A CfD reduces the exposure of electricity generators to volatile wholesale prices and is intended to compensate the generator for the potentially high cost of investing in low-carbon technology. However, offshore wind developers did not place any bids in the fifth auction round (March 2023). The government's Climate Change Committee considered that this was because the pricing offered to offshore wind generators had not been adjusted to reflect significant increases in supply chain and development costs.

For small-scale generators of renewable electricity, the [Smart Export Guarantee](#) (SEG) tariff pays for any power they export to the national grid. It applies to solar, onshore wind, anaerobic digestion and hydro installations of up to 5 megawatts, and micro-CHP (combined heat and power) that can produce electricity of up to 50 kilowatts.

In the domestic heating sector, the Boiler Upgrade Scheme (BUS) provides grants to eligible households in England and Wales to cover part of the cost of replacing a gas, oil or electric heating system with a heat pump or biomass boiler. In this area, the government had a [Domestic Renewable Heat Incentive \(RHI\)](#), but this closed to new applicants in March 2022.



United Kingdom



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

The government published its first [Hydrogen Strategy](#) in 2022, which sets out ambitions for increasing the use of low-carbon hydrogen ([not all hydrogen is low-carbon](#)) across different economic sectors, including delivering a 5-gigawatt production ambition by 2030.

There is concern that limitations in the UK's electricity grid infrastructure, and increasing competition for grid connections, are likely to slow down the deployment of new projects in the coming years. Battery storage is likely to be an important component to renewable energy projects, especially where generators do not wish to export electricity to the grid.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In the UK, there are legal requirements for quoted companies, large unquoted companies and large limited liability partnerships to report on greenhouse gas emissions, energy consumption and energy efficiency action for financial years beginning on or after 1 April 2019, under the Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018 (SI 2018/1155). This is known as the SECR regime (streamlined energy and carbon reporting). This includes energy emissions from owned and leased buildings, and therefore may incentivize more efficient use.

The government's Department for Energy Security and Net Zero is conducting a post-implementation review of the SECR regime and is due to report on this by April 2024.

An enhanced capital allowances scheme is in place, which allows companies to write off the entire capital cost of investing in qualifying energy-saving plants and machinery against taxable profits made in the year of purchase (this is against the standard regime for qualifying expenditure, which allows partial write-offs over successive tax years). Qualifying technologies include heating, ventilation and air-conditioning (HVAC), and new energy-efficient boilers.

Through updates to the building regulations (which came into force in 2022 and relate to buildings in England), the UK government has introduced net zero-focused changes, including a new performance metric to measure energy efficiency, and changes to how onsite electricity generation systems are regulated. They also include a requirement for a 27% reduction in emissions from new, non-residential buildings.

The UK government is currently consulting on implementation of a "Future Homes Standard" and a "Future Buildings Standard" to address operational emissions from new domestic and non-domestic buildings. These standards will be more stringent than the current building regulations and are intended to be the final step in meeting net-zero targets for new buildings, provided that the electricity grid decarbonizes as planned. They include high fabric standards and mandate low-carbon heating. The consultation also considers standards for domestic residences created through material change of use.



United Kingdom



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

The UK government has also announced its intention to consult on its approach to measuring and reducing embodied carbon in new buildings in due course. The government has also launched a Plan for Water, which aims to review water efficiency options in planning, building regulations, and voluntary schemes in non-domestic buildings, such as offices and hotels.



United Kingdom



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The private lending sector is paying greater attention to financing sustainable real estate projects globally. This is due to a combination of customer demand and internal impetus from the lenders themselves. The Loan Market Association has published a set of Green Loan Principles. In 2020, it published two sets of guidance on the application of the Green Loan Principles in the real estate finance investment lending and lending context, for green buildings and retrofit projects. In 2022, it further published guidance on the application of the Sustainability-Linked Loan Principles in real estate finance and real estate development finance. Green loans and sustainability-linked loans are different, with a green loan requiring a firm link to new or existing green projects. Conversely, a sustainability-linked loan is designed to incentivize specific sustainability performance objectives of the borrower.

In the UK, there are no other specific private green financing initiatives for sustainable real estate projects.

As for public green financing initiatives, the government established the UK Green Investment Bank in May 2012, as a government-owned public limited company with GBP 3.8 billion of taxpayer funding to be invested in sustainable projects on a commercial basis in partnership with the private sector. It was required to deploy at least 80% of its capital in three priority sectors, namely offshore wind farms, recycling and energy from waste, and non-domestic energy efficiency. However, in 2017, the UK Green Investment Bank was privatized, and is now the Green Investment Group (GIG), a specialist green investor within Macquarie Asset Management. The GIG has five "green purposes," to which every investment must contribute. These are protected by independent shareholder, the Green Purposes Company (GPC). The green purposes cannot be altered without the approval of the GPC.



United Kingdom



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

In March 2012, the UK government significantly overhauled its national planning policy guidance. The publication of the National Planning Policy Framework required local planning authorities to amend their local planning decision policies to place sustainability at the heart of their development plans and to ensure that sustainability is a material consideration in the assessment of applications for the development of land.

Updated planning policies now encourage both regional and local planners considering new developments to use information about predicted climate change in ways that minimize vulnerability and build in resilience to those anticipated changes.

Developers are increasingly being required by local planning authorities, on an application and site-by-site basis, to incorporate and fund energy-efficiency and other green elements into their designs, and ensure green development in the area around the project. It is often a condition that the scheme include district heating systems and sustainable urban drainage systems as part of the design.

As noted above under the "Regulation" section, updates to the building regulations (which came into force in 2022 and relate to buildings in England), have introduced net zero-focused changes, including a new performance metric to measure energy efficiency, and changes to how onsite electricity generation systems are regulated. They also include a requirement for a 27% reduction in emissions from new, non-residential buildings.

Since January 2024, developers in England have been required to deliver a 10% "Biodiversity Net Gain" when constructing new housing, industrial or commercial projects, via, for example, new habitats and green spaces. Biodiversity Net Gain for small sites will be applicable from April 2024, and implementation for Nationally Significant Infrastructure Projects is planned for 2025.

The government has appointed 48 responsible authorities in England to lead in preparing a local nature recovery strategy for their area. Responsible authorities will work with other organizations and partners to agree on what should be included in their local nature recovery strategies. The Levelling Up and Regeneration Act 2023 introduces the requirement for plan-makers, at all tiers of planning, to take into account of consider relevant local nature recovery strategies with specific reference to the objectives and provisions outlined in the Environment Act 2021.



United Kingdom



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

New developments and the environment will also benefit from a reduced risk of flooding and pollution thanks to a new approach to drainage. The government has committed to requiring sustainable drainage systems in new developments, with implementation expected in 2024.

London is leading the way in developing the Smart City initiative in the UK. Smart cities have the potential for businesses to plan efficient routes to transport goods, allow local authorities to create effective public health services and provide the public with real-time data access.



United Kingdom



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases per se are in increasingly common usage in the United Kingdom, though with certain types of green clauses being more frequently being incorporated into lease contracts. Significantly, acceptance by tenants of these provisions are becoming the market norm and such provisions, (e.g., those requiring the tenant to contribute to carbon-reduction commitment costs related to the service charge provision) are being accepted without material amendment (see section entitled "Regulation" above.).

The private sector is taking the lead, mostly through large private sector institutional landlords. Nonetheless, both those landlords and tenants that have adopted environmental and sustainability considerations into their corporate strategies tend to be much more receptive and, in certain cases, are trailblazing the green lease agenda.

It continues to be extremely uncommon for green lease provisions to be retrofitted into existing leases. In its place, there are many notable examples of landlords agreeing with their tenants to set out aspirational, and largely non-binding, objectives in a separate memorandum of understanding (MoU).

As yet, there is no mandatory requirement to include green clauses in leases either within the private or the public sectors in the UK, and we don't see this changing in the foreseeable future, particularly in relation to the private sector, where legislative interference with open-market negotiations is always unwelcome.

In the UK, the debate on green lease clauses is being championed by a number of sector organizations. These include RICS and the Better Buildings Partnership (BBP).

On 29 January 2024, the BBP launched a radically updated [Green Lease Toolkit](#) ("**Toolkit**"), for use in the UK. It is an invaluable resource to inform and normalize green lease thinking between landlords and tenants, and to facilitate a more seamless incorporation of sustainability-focused provisions within commercial leases.

The [Toolkit](#) was originally launched in 2008, and last updated in 2013. Notwithstanding, it has been one of the BBP's most prolifically used publications, as owners, investors, tenants and agents recognize the increasing urgency of, and market desire to pursue, increased sustainability measures.



United Kingdom



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

The [2024 update](#) is significant. It provides stakeholders and advisers with a more robust legal framework to guide conversation, agreement and drafting. It contains suggested legal clauses (and detailed explanatory notes) at levels ranging from "light" to "dark" green, depending upon the level of commitment that the parties agree to in a number of environmental action areas.

Core, but not-exhaustive, areas for green drafting are set out in the [Toolkit's Green Lease Essentials](#), and focus on matters such as co-operation, building management, sustainable use, data sharing and metering, energy performance certificates, waste and renewable energy, and others.

Alongside the Toolkit's [drafting options](#) are user-friendly statements of intent and guidance, to aid understanding between the parties and to drive discussions as to how to make a meaningful, workable environmental plan that stretches, and delivers on, industry ambitions to reduce emissions.

North America



North America



Click the relevant flag below for guidance on each location:



Canada



Mexico



United States of America

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Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There are no nationally adopted or mandated green building certifications in Canada; however, federal, provincial and municipal governments encourage a number of certifications. Below are examples of private and non-profit green building certification programs in Canada, as well as examples of other standards and policies promoting green buildings.

Private and non-profit green building certification programs

The most commonly used rating and certification systems are as follows:

1. The rating system of the Canada Green Building Council (CaGBC) is based on the Leadership in Energy and Environmental Design (LEED) system established by the United States Green Building Council. Projects pursuing LEED certification may qualify for four possible levels of LEED rating levels (i.e., certified, silver, gold and platinum). In addition to levels, the LEED rating system is further classified into the following categories:
 - Building design and construction
 - Interior design and construction
 - Operations and maintenance
 - Recertification
 - Homes
 - Cities and communities
 - Neighborhood development



Canada



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In October 2022, the CaGBC announced that Canada ranked third globally on the annual list of "Top 10 Countries and Regions for LEED in 2022." The CaGBC further revealed that Canada certified 248 projects in 2022, representing more than 5.3 million gross square meters (57 million square feet) of LEED space.

2. The Building Owners and Managers Association of Canada ("**BOMA Canada**") manages the Building Environment Standards or BOMA BEST Building Certification Programs, which are voluntary national programs to assess environmental performance and management of existing commercial buildings across Canada. There are five levels of certification: baseline, bronze, silver, gold and platinum. BOMA Canada offers two programs that are both certifications and building management tools: the BOMA BEST Sustainable and BOMA BEST Smart. The BOMA BEST Sustainable program focuses on six areas of environmental performance, sustainability and management, namely the following:

- Energy and carbon
- Water
- Custodial and waste
- Accessibility and wellness
- Indoor air quality and hazards
- Resilience and site

The BOMA BEST Smart program is focused on smart features in buildings, such as security, operations, monitoring and tracking, and considers security and safety, operations and management, network and integration, end-user experience, and reporting and analysis. To date, BOMA Canada reports that there are over 3,100 members in the industry, representing over 2.1 billion square feet of certified BOMA office space in Canada.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

3. Green Globes is an online green building rating and certification tool licensed for use by BOMA Canada. It provides modules for the following:

- New constructions
- Sustainable interiors
- Existing buildings
- Core and shell

Depending on the module, the program assesses up to six areas of environmental performance, including the following:

- Energy
- Water efficiency
- Materials
- Project management
- Site
- Indoor environment

Green Globes has its own rating system that ranges from one to four "Green Globes."

4. Natural Resources Canada ("**NRCan**") does not have a green building certification program, but it supports ENERGY STAR®, which addresses the energy aspects of green commercial and institutional buildings, including among others, hospitals, hotels, retail stores, offices, museums and libraries.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In 1982, the Government of Canada implemented "R-2000" to promote improved energy standards in new home construction. R-2000 particularly aims to increase energy efficiency and promote sustainability of homes. It employs the EnerGuide rating service, an official mark of the Government of Canada, which is associated with labeling and rating the energy consumption or energy efficiency of specific products. The service is available across Canada and allows parties to measure and rate their homes' performance. Regional initiatives include ENERGY STAR® for New Homes, Built Green Canada, Novoclimat, Green Home, Power Smart New Home and GreenHouse.

5. Some municipalities have adopted voluntary green building standards. For example, the City of Toronto's Better Buildings Partnership (BBP) encourages energy conservation in new buildings. The BBP has adopted the Toronto Green Standard, which focuses on sustainable site and building design for new private and public development in the City of Toronto. To be eligible for incentives from BBP, a project must meet the Toronto Green Standard.
6. The Heating, Refrigeration and Air Conditioning Institute of Canada is a non-profit national trade association that represents more than 1,150 member companies in the heating, ventilation, air-conditioning and refrigeration industries and manages several programs relating to energy conservation and environmental practices. Among these programs are the following:
 - The Refrigerant Management Canada Program for the collection, transportation and disposal of ozone-depleting refrigerants
 - The Thermostat Recovery Program, focused on recovering and recycling thermostats that are no longer in use



Canada



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There is no mandatory form of energy performance certification in Canada. However, certain provinces and territories have adopted codes and/or regulations in response to each jurisdiction's local needs. For example, the National Energy Code of Canada for Buildings 2020 (NECB 2020) sets out technical requirements for the energy-efficient design and construction of new buildings and additions. In particular, NECB 2020 discusses compliance requirements, acceptable solutions for areas such as lighting, heating and water systems, and the legal and practical implementation of NECB 2020. NECB 2020 only comes into force when provinces and territories elect to write, enact and enforce laws and regulations related to NECB 2020. To date, NECB 2020 has been adopted by the provinces of Alberta, Manitoba, Saskatchewan and Ontario.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

A number of programs for improving the energy efficiency of existing buildings have been funded or sponsored by the federal, provincial and municipal governments. Examples include the following:

1. NRCan: CanmetENERGY

NRCan's CanmetENERGY is a research and technology organization in the field of clean energy. The CanmetENERGY location based in Ottawa, Ontario conducts R&D on a wide array of clean energy technologies and focuses on building energy systems, pathways to carbon-neutral housing and buildings, and low-carbon community energy systems. CanmetENERGY's Varennes, Quebec location leads innovative scientific research and activities for the industry, buildings and renewable energy sectors to help identify and develop suitable pathways to reduce the Canadian commercial and institutional buildings sector's energy consumption and greenhouse gas emissions.

2. City of Toronto: Energy Retrofit Loans

The Energy Retrofit Loans program offers financing to invest in low-carbon, energy-efficient capital improvements. It is open to all buildings located in Toronto, including among others, commercial buildings, schools, social housing and hospitals. Loans can cover up to 100% of project costs at a rate equal to the City of Toronto's borrowing cost, with a potential repayment term of up to 30 years for qualifying projects.

3. Province of British Columbia: BC Hydro Business Energy Saving Incentives

The BC Hydro Business Energy Savings Incentives program helps businesses located in the province of British Columbia reduce their operating costs through the implementation of energy efficiency projects, including lighting, heating, ventilation, air-conditioning and refrigeration, by offering incentives that can help cover up to 25% of the cost of the project.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

4. Arctic Energy Alliance (AEA): Business Improvements Program

The AEA provides rebates of up to CAD 50,000 for certain energy upgrades for commercial and institutional businesses looking to reduce their consumption of electricity, heating, fuel and water. This could include projects, such as upgrades to lighting, improvements to ventilations systems, upgrades to hot-water systems, etc. The eligible rebate amount will be the lower of 50% of the total eligible costs of the project, and a calculation based on the amount of money and greenhouse gases that the project will save.

Canadian Industry Program for Energy Conservation

The Canadian Industry Program for Energy Conservation (CIPEC) is an industry-government partnership, sponsored by NRCan, that promotes and encourages energy efficiency improvements and reductions in greenhouse gas emissions through voluntary action across Canada's industrial sectors. CIPEC is made up of 21 sector task forces that involve more than 50 trade associations.

Energy Innovation Program

The Energy Innovation Program, sponsored by NRCan, advances clean energy technologies that will help Canada meet its climate change targets, while supporting the transition to a low-carbon economy. It funds research, development and demonstration projects, and other related scientific activities.

Provincial, municipal and utility incentives

There are also several provincial, municipal and utility incentive programs to promote green buildings and energy efficiency.

1. The City of Toronto's Better Buildings Partnership (**BBP**) was developed in 1996 to help building owners, managers and developers to achieve energy efficiency goals in Toronto. The Home Energy Loan Program is one of several BBP programs, which helps Toronto homeowners get a low-interest loan of up to CAD 125,000 to cover the cost of a broad range of home energy improvements. The BBP also provides financing options to support conservation and demand management projects in the City of Toronto.



Canada



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

2. The Ontario Power Authority's Electrical Retrofit Incentive Program offers incentives for owners and managers of commercial buildings, institutional buildings, industrial facilities, agribusinesses and multiresidential buildings. Incentives are available for replacing inefficient equipment with high-efficiency equipment.
3. Enbridge Gas Distribution, Canada's largest gas distribution utility, offers retrofit incentive programs for owners of commercial properties. Homeowners that implement approved energy-saving measures are eligible for a one-time rebate of CAD 0.25 per cubic meter for natural gas saved up to 50% of project upgrade costs. The maximum rebate per project is CAD 100,000.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

To avert the worst impacts of climate change, the Government of Canada is committed to achieving net zero emissions by 2050. The Net-Zero Act, which became law on 29 June 2021, enshrines in legislation Canada's commitment to achieving net zero emissions by 2050.

In addition, the NECB 2020 contains multiple new changes over its 2017 predecessor, including, among others, reducing the maximum allowable thermal transmittance for windows, doors and above-grade opaque assemblies, and reducing the maximum allowable lighting power densities for interior and exterior lighting. The NECB 2020 is an important step toward Canada's goal of achieving net zero energy ready buildings by 2030.

For the first time, the NECB 2020 includes progressive performance tiers to maximize energy efficiency in new construction. This new approach sets the direction for industry and enables provinces and territories to incrementally adopt higher levels of performance within one code. The NECB 2020 has four tiers of performance improvement, with the last tier yielding at least a 60% reduction in energy consumption over the baseline tier 1.

Lastly, and building on the actions in the Pan-Canadian Framework (2016) and Canada's strengthened climate plan (2020), the 2030 Emissions Reduction Plan (2022) reflects input from provinces, territories, Indigenous Peoples, the Net-Zero Advisory Body and interested Canadians on what is needed to reach Canada's more ambitious climate target of 40%-45% emissions reductions by 2030.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

As mentioned in the "CO2 and energy reductions" section, the Net-Zero Act, which became law on 29 June 2021, enshrines in legislation Canada's commitment to achieving net-zero emissions by 2050. In Canada, 84% of electricity comes from sources, such as hydroelectricity, solar, wind and nuclear, which are far less polluting than electricity generated from coal, oil and natural gas. As Canada aims to achieve a net-zero emissions economy by 2050, its electricity supply will need to at least double by then, according to recent studies. To meet this surging demand, and to avoid an increase in greenhouse gas emissions from the electricity sector, the Government of Canada has developed the Clean Electricity Regulations (CER), which are expected to come into force by 2025.

The draft CER were developed around the following core principles:

- Maximize greenhouse gas reductions to achieve net-zero emissions from the electricity grid by 2035
- Maintain electricity affordability for Canadians and businesses
- Maintain grid reliability to support a strong economy and meet Canada's growing energy needs

The CER are an integral part of Canada's 2030 Emissions Reduction Plan to help the country reach its emissions reduction target of 40%-45% below 2005 levels by 2030 and net-zero emissions by 2050.



Canada



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In 2019, every province in Canada began taxing carbon pollution as a means to reduce greenhouse gas emissions. Every province and territory has designed its own carbon pricing system based on local needs, or has chosen to adopt the federal carbon pricing system in Canada. The federal government sets minimum national stringency standards that all systems must meet to ensure that they are comparable and contribute their fair share to reducing greenhouse gas emissions. If a province decides not to price pollution, or proposes a system that does not meet federal standards, the federal carbon pricing system is adopted accordingly. The federal government published strengthened standards surrounding carbon pricing in August 2021 for the 2023 to 2030 period.

Under the Greenhouse Act, as adopted on 21 June 2018, the federal pricing system is comprised of the following parts:

- A regulatory charge on fossil fuels like gasoline and natural gas, known as the fuel charge
- A performance-based system for industries, known as the Output-Based Pricing System

The fuel charge applies in the provinces of Ontario, Manitoba, Yukon, Alberta, Saskatchewan, Nunavut, Nova Scotia, New Brunswick, Newfoundland and Labrador, and Prince Edward Island. The Output-Based Pricing System applies in the provinces of Manitoba, Prince Edward Island, Yukon, Nunavut and partially in Saskatchewan. All other provinces and territories are implementing their own pricing systems.



Canada



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

In Canada, there are no public "green" financing initiatives for sustainable real estate projects; however, there exists a limited number of private financing initiatives. For example, the Global Real Estate Sustainability Benchmark (GRESB) is a framework that is commonly used to make investment decisions for certain real estate projects. GRESB is an organization that collects, validates, scores and benchmarks environmental, social and governance (ESG) data, mainly for investors and asset managers. Commercial real estate projects with demonstrated commitments to ESG principles are best positioned to capitalize on relatively new financing mechanisms, including green bonds, green loans and sustainability bonds. In 2023, the Canadian Imperial Bank of Commerce partnered with Export Development Canada to create the Sustainable Finance Guarantee program, which provides financing to businesses that are working to transition to a low-carbon economy.



Canada



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

There are no national or local government mandates for green initiatives via planning or zoning regimes. In general, green initiatives have been implemented by municipal governments through incentives rather than through changes to zoning bylaws. However, the Planning Act gives regard to, among other matters, matters of provincial interest, such as mitigating greenhouse gas emissions and adapting to a changing climate. Likewise, the Greenbelt Act provides permanent protection for an area of green space, farmland, communities, forests, wetlands and watersheds from urban development.



Canada



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green lease provisions are not mandatory in Canada. However, leases drafted by larger commercial landlords frequently include provisions requiring the tenant to comply with the landlord's policies to promote energy efficiency and/or reduce the environmental impact of the building. Given the increasing importance of LEED and related certifications in the Canadian marketplace, this is a trend that is likely to accelerate. Global companies with strong corporate social responsibility policies are also requesting the inclusion of green lease provisions, which may include the right to receive annual compliance reports from the landlord. There remains tension between landlords and tenants as to how the cost of complying with green lease provisions should be apportioned. While most leases in Canada would not be described as green, green lease provisions are becoming more common.

In 2008, the Real Property Association of Canada drafted Canada's first National Standard "Green" Office Lease for Single Building Projects, which was last updated in 2021.



Mexico



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Even though Mexico has some platforms and programs that promote environmental awareness, there is still a lot more to be done. The national legislation could introduce additional requirements that would benefit both the environment and the population.

Cooperation is an important factor in this matter. Organizations like Building Research Establishment Environmental Assessment Methodology (BREEAM), Leadership in Energy and Environmental Design (LEED) and the World Green Building Council, among others, are working side by side with many countries to promote environmental awareness and the benefits that often follow.

According to the US Green Building Council, Mexico ranks 10th in the world on its annual list of "Top 10 Countries and Regions for LEED in 2023" with 86 certified new projects, and a total of around 729 registered projects under LEED across the country. Of this figure, six projects in Mexico City are certified under the International Living Future Institute's Living Building Challenge, and 12 projects are certified under the Certification Program for Sustainable Buildings in Mexico City, also known as Programa de Certificación de Edificaciones Sustentables (PCES). All of these programs are voluntary and nonmandatory.

In Mexico, legislative activity has played an important role in promoting environmental measures through the issuance of the General Law of Climate Change (Ley General de Cambio Climático), the Environmental Liability Law (Ley de Responsabilidad Ambiental) and the Energy Transition Law, published on 24 December 2015 in the Official Journal of the Federation (Ley de Transición Energética). The Energy Transition Law abrogated the Law for Sustainable Use of Energy (Ley para Aprovechamiento Sustentable de la Energía) and the Law for the Use of Renewable Energy and Financing of Energy Transition (Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética). Among its other objectives, the General Law of Climate Change promotes the practice of energy efficiency, the development and use of renewable energy, and the development of technology for low-carbon emissions. The Environmental Liability Law regulates liability borne out of harm to the environment and stipulates repair and compensation. The Energy Transition Law aims to regulate (i) the sustainable use of energy, (ii) the obligations of clean energy, (iii) the reduction of pollutant emissions from the electricity industry, thereby maintaining the competitiveness of the productive sectors, and (iv) some nonmandatory frameworks to promote sustainability for buildings.



Mexico



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Most of the environmental and energy transition regulations that deal with sustainability issues in Mexico are called the Mexican Official Standards (Normas Oficiales Mexicanas). As these standards continue to be created and applied at a national level, regularization is gradually growing, and more people within the private and public sectors are realizing their importance.

In 2008, the government of Mexico City created a program known as the Certification Program for Sustainable Buildings (Programa de Certificación de Edificaciones Sustentables). Its goal is to promote eco-friendly building construction, refurbishments, and remodeling by establishing a standard by which commercial and residential buildings can be graded according to their sustainability level. It offers several tax incentives, such as discounts on water supply, payroll tax, property taxes and construction licenses, financing at preferable rates, and expediting of government paperwork.

Twelve buildings have been certified under this program, and 49 buildings are in the process of being certified — an indication of the certification's growing popularity.

Mexican authorities constantly update the Mexican Official Standard that regularizes and categorizes the requirements for sustainable buildings, and the technical specifications for equipment and products to be used in such buildings.^[1] In particular, the standard for sustainable buildings, which today is called NMX-AA-164-SCFI-2013 "Sustainable Building – Criteria and Minimal Environmental Requirements" (NMX), was created in 2013. It is to be applied voluntarily at a national level to all new and refurbished buildings within Mexican territory, whether public or private.

^[1] NOM-003-ENER-2011 Thermal efficiency of water heaters for domestic and commercial use; NOM-007-ENER-2014 Energy efficiency for lighting systems in non-residential buildings; NOM-008-ENER-2001 Energy efficiency for non-residential building envelope; NOM-009-ENER-2014 Energy efficiency in industrial thermal insulation systems; NOM-011-ENER-2006 Energy efficiency in air conditioners central operation type; NOM-017-ENER/SCFI-2012 Energy efficiency and security requirements for ballasted compact fluorescent lamps; NOM-018-ENER-2011 Thermal insulation for buildings; NOM-020-ENER-2011 Energy efficiency for envelope in residential use buildings; NOM-021-ENER/SCFI-2008 Energy efficiency and safety requirements for air conditioners room type; NOM-023-ENER-2010 Energy efficiency in air conditioners split type; NOM-024-ENER-2012 Thermal and optical characteristics for glass and glazing systems for buildings; NOM-030-ENER-2012 Energy efficiency for light emitting diodes (LED), residential and non-residential use; NOM-031-ENER-2012 Energy efficiency for LED for roads and public outdoors areas; NOM-032-ENER-2013 Energy efficiency in standby power products.



Mexico



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

It applies to various phases of development, such as design, construction, operation, maintenance, and demolition, including remodeling and renovation projects.

This NMX has been operative for more than a year. Due to its voluntary nature, it remains to be seen how many buildings will comply and how much of an effect it will have across the country in the near future.



Mexico



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There are no mandatory forms of energy performance certification in Mexico. However, the NMX contemplates the issuance of a certificate for buildings that comply with its technical specifications.

A party has the option to request a verification unit (in terms prescribed by the Federal Law of Metrology and Standardization) to verify the building's level of compliance with the standards. The verification unit performs the evaluation in accordance with the requirements and criteria stated by the NMX.

With the aim of further promoting energy efficiency and renewable energy, the Energy Transition Law was developed. This law also regulates the use of renewable energy sources and establishes a national strategy to apply this type of regulation to each Mexican state. In addition, it indicates the instruments that can be used to finance the energy transition (prior to the publication of this law, this regulation was mandated through the Law for the Use of Renewable Energy and Financing of Energy Transition).

However, the Energy Transition Law does not require a specific mandatory process with which buildings or any other type of dwelling must comply, even when it (i) promotes and structures procedures to regulate energy transition and renewable energy and (ii) includes a program called "Recognition for Excellence in Energy Efficiency." This program is a voluntary certification and recognition process to identify and promote products, equipment and buildings designed and equipped to promote the sustainable use of energy through a voluntary labeling scheme for products and buildings to identify the highest standards of energy efficiency in Mexico. Hence, the Energy Transition Law is more of a matter of promoting and planning improvements in energy performance rather than being forcefully applicable.



Mexico



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The government of Mexico City created a program that offers incentives to those who build, transform or adapt existing and/or future buildings to sustainable and energy-efficiency schemes.

Sustainable energy use in Mexico is also promoted through legal standards that focus on energy efficiency, and by the implementation of energy transition programs that finance efficient technology.

There are programs that focus on improving energy efficiency in Mexico and, although they do not necessarily target buildings, the Ministry of Energy (Secretaría de Energía) in Mexico has taken its first step in this issue by sponsoring the following two programs:

- The National Project for Energy Efficiency in Municipal Public Lighting (Proyecto Nacional de Eficiencia Energética en Alumbrado Público Municipal), which is operated by the National Commission for the Efficient Use of Energy (Comisión Nacional para el Uso Eficiente de la Energía), targets the public sector in municipalities and is mostly urban-oriented.
- The Program for Funds and Company Energy Efficiency, also known as Company Eco-Credit (Programa de Ahorro y Eficiencia Energética Empresarial), is operated by the Trust Fund for Electric Energy Savings (Fideicomiso para el Ahorro de Energía Eléctrica) with resources coming from the Fund for Energy Transition and the Sustainable Use of Energy (Fondo para la Transición Energética y el Aprovechamiento Sustentable de la Energía). This program provides financing to consumers that have rates of two and three (commercial rates of low energy consumption) and that are small and medium companies with between one to 199 employees. This financing is focused on substituting inefficient electric equipment for energy-efficient equipment, such as commercial refrigeration, electric motors, air-conditioning, efficient lighting, and electrical substations.

The Mexican government is also involved in other programs that help promote energy efficiency. Among these is the program called "This is your home" (Esta es tu casa) in which the government financially aids people with a low income to buy, build or remodel homes on the condition that their residences are equipped with eco-technologies.



Mexico



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Recently, the federal government also approved two "special programs" in terms of the Planning Law (Ley de Planeación). These are (i) the National Program for Sustainable Use of Energy (Programa Nacional para el Aprovechamiento Sustentable de Energía) and (ii) the Special Program for the Development of Renewable Energy (Programa Especial para el Aprovechamiento de Energías Renovables), which is in accordance with the regime prior to the energy reform. These special programs are still mandatory for the federal government. Under the Energy Transition Law, these special programs have the same mandatory treatment and must be coordinated with a new planning document called the Transition Strategy to Promote the Use of Technologies and Cleaner Fuels.

These programs consist of targets, strategies and action lines that allow optimum use of energy in all processes and activities for its exploitation, production, transformation, distribution, and consumption. These programs also address important topics that promote and encourage energy efficiency, renewable energy, and energy transition in the country, such as the following:

- Energy-efficiency programs
- Regulation of energy efficiency
- Cooperation mechanisms
- Institutional capacitation
- Culture in energy savings
- Investigation and technological research
- National targets for renewable energy, energy transition and energy efficiency
- Clean technologies to satisfy the power consumption requirements



Mexico



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Although the promotion of energy efficiency, renewable energy and energy transition is beginning to make waves throughout Mexico, an implementation strategy is still needed. For instance, the Certification Program for Sustainable Buildings in Mexico City was created to motivate and encourage people to build or refurbish, but professionals and entrepreneurs have complained that (i) only entities established by the program may advise during each stage of the construction process and (ii) the cost of implementation is high. As a result, potential investors have steered clear of using the program for their construction projects.



Mexico



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Concerning specific energy use, a building's compliance with the NMX, as referred to in previous sections, requires that heating be reduced by at least 10% with respect to the entire building. The reduction must be calculated by methods established by other applicable Mexican Official Standards, which mainly address energy for residential and nonresidential building cooling systems.

As of today, the only Mexican Official Standard that regulates CO2 reduction and energy efficiency is targeted at automotive vehicle companies as an aggregated value in the weighted value for CO2 reduction and energy performance goals in vehicle sales each year.

There are also other laws and regulations that deal with CO2 more generally, although they are not targeted specifically at buildings. They include the General Law of Ecologic Equilibrium and Environmental Protection (Ley General de Equilibrio Ecológico y la Protección al Ambiente) and the Regulation in Prevention and Atmosphere Pollution Control Matters (Reglamento en Materia de Prevención y Control de la Contaminación Atmosférica). In addition, the Energy Transition Law gives specific power to the Ministry of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales) to regulate the power industry's CO2 emissions through several mechanisms.

On 13 July 2018, the General Law of Climate Change was amended to reflect Mexico's most recent international commitments under the Paris Agreement. One of the most significant results stemming from these amendments was the establishment of the country's first legal grounds for a carbon credit market. According to the General Law of Climate Change, the Federal Ministry of Environment and Natural Resources, the Climate Change Commission (Comisión Intersecretarial de Cambio Climático) and the Climate Change Board (Consejo de Cambio Climático) must establish the Emissions Trading System (ETS) to develop, at the lowest cost and on a measurable and reportable basis, the carbon credit market, following competitiveness principles of the participating sectors vis-à-vis international markets. An accord establishing the pilot program for the ETS was published on 1 October 2019, and said program was successfully implemented between 1 January 2020 and 31 December 2022. It is expected that the definitive guidelines for Mexico's carbon credit market will be released in the near future, through the issuance of new regulations and/or an amendment to the existing General Law of Climate Change.



Mexico



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Mexico has no regulations requiring a percentage of energy consumption to come from renewable resources in buildings. However, the NMX requires every sustainable building to satisfy at least 10% of its total building energy demand with renewable sources, whether it is generated inside or outside the building.

Even though there are currently no regulations that mandate a percentage of energy to come from renewable resources, there are several other Mexican Official Standards that apply nationally and establish requirements and guidelines for efficient energy use for various appliances and buildings. These include energy efficiency for lamps of general use, energy efficiency for residential buildings and energy efficiency for domestic electric refrigerators and coolers.

According to the energy reform implementation process, the Energy Transition Law, which the legislative chambers recently approved, aims to abrogate the Law for the Use of Renewable Energy and the Financing for Energy Transition and the Law for the Sustainable Use of Energy. This new law, which was published in the Official Journal of the Federation on 24 December 2015, establishes a national strategy for finding and implementing different approaches to an improved use of clean energy, sustainable use of energy and energy transition. Among its mandatory targets, this new law sets the following percentages for clean energy in the power generation national portfolio: 25% in 2018 and 35% in 2024 requiring energy from clean sources.

There are currently several NMX projects regarding energy efficiency that are waiting to be reviewed and are expected to come out in the next few years.



Mexico



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

As of today, the government of Mexico City, through its Certification Program for Sustainable Buildings, is the only administration in the country that offers tax incentives. They include discounts on property taxes and construction licenses, financing at preferable rates, and expediting the execution of government paperwork.

If complied with, the Official Mexican Standard (NOM) (which applies at a national level but is not mandatory) offers benefits regarding energy use, such as energy-saving measures and the use and production of clean energy from the same building, all of which are further detailed along with other requirements with which they must also comply.

As both the private and public sectors are beginning to implement the measures, it remains to be seen how many other jurisdictions across the country will follow and how the legislation might implement more incentives.



Mexico



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

In 2007, the Institute of the National Fund for Workers' Housing (Instituto del Fondo Nacional de la Vivienda para los Trabajadores, commonly known as INFONAVIT), the country's largest mortgage lender, created a program called "Hipoteca Verde" (Green Mortgage) in which consumers could get an additional credit of up to MXN 38,000 (about USD 2,800) and minimum monthly savings of up to MXN 400 (about USD 30).

The program offered credits for housing that is bought, built, extended, or remodeled and equipped with energy-saving accessories for water, gas and electricity, such as faucets, light bulbs, and solar heaters.

INFONAVIT credit is also offered to those who want to build on their own property, and an additional amount of credit is granted specifically to cover the costs that installations generate to comply with the minimum energy, water and gas saving standards stated by the program. The installations must be purchased by suppliers authorized by the program. Loan amounts will form part of the mortgage owed to INFONAVIT, which, in turn, will pay the suppliers.

Private sector companies have also participated in "green" financing initiatives, exemplified by the alliance between the International Finance Corporation and Santander that commenced in May 2023. This collaboration aims to support and provide financing to sustainable construction projects in Mexico. Others, like CEMEX, have embarked on significant investments to reduce CO2 emissions in processes associated with construction products, such as cement.



Mexico



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

At present, the Mexican government has yet to mandate any sort of green initiatives. Nevertheless, it has developed certain environmental requirements by imposing restrictions on actions involving the transportation, use, handling or disposal of hazardous waste and by implementing requirements that local and national governments must consider when making decisions that involve policies relating to the environment.

The government has taken the first step in implementing other initiatives and programs to protect the environment. There is a form of voluntary application for sustainable buildings. As more standards and laws are gradually created, there will be significant changes that will help achieve green goals.



Mexico



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

The term "green lease" is relatively new in Mexico. Rather than green leases, contracts include green clauses. They are most common in regard to buildings that require every office or residency to comply with specific regulations.



United States of America



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There are no nationally adopted or mandated building certifications in the US. Any such certifications are typically handled at a municipal level. Below are examples of private and nonprofit green building certification programs that exist in the marketplace, as well as examples of other standards and policies promoting green buildings.

Two of the most commonly used rating systems in the US are as follows:

1. [The US Green Building Council's Leadership in Energy and Environmental Design \(LEED\) certification program](#). This certification program recognizes best-in-class building strategies and practices. Building projects must satisfy prerequisites and earn points to achieve different levels of LEED certification. Prerequisites and credits differ for each rating system, and teams select the targeted rating system based on the unique needs of the building and the project type. The six rating systems applicable to specific project types are (i) building design and construction, (ii) interior design and construction, (iii) building operations and maintenance, (iv) neighborhood development, (v) homes, and (vi) cities.

The LEED certificates are being updated with respect to projects registered after 1 March 2024. These updates raise thresholds for energy performance and emission reductions. Further, a new greenhouse gas emissions metric has been added.

2. The Green Building Initiative's [Green Globes Certification](#). This is a web-based program for green building guidance and certification, which includes an on-site assessment by a third party. It is a three-in-one certification that evaluates the environmental sustainability, health and wellness, and resilience of all types of commercial real estate. The program aims to advance the overall environmental performance and sustainability of commercial buildings, with modules supporting new construction, existing buildings, existing healthcare buildings and their interiors. They work to (i) reduce operating costs, (ii) qualify for tax incentives, (iii) meet government regulations, (iv) attract and retain employees and (v) increase a property's marketability. Green Globes criteria is built around and incorporated hundreds of other consensus documents such as those from the American Society of Heating, Refrigeration and Air Conditioning (ASHRAE), International Code Council (ICC), and International Association of Plumbing and Mechanical Officials (IAPMO).



United States of America



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

While the US Environmental Protection Agency (EPA) does not have a green building certification program, the EPA and US Department of Energy's [ENERGY STAR](#)® addresses the energy aspects of green buildings, qualifying new and renovated buildings as energy efficient and then awarding them with the ENERGY STAR® label. It is a voluntary program that helps businesses and individuals save money and protect the environment through superior energy efficiency. The program aims to promote cost-effective, relevant, and high-quality energy efficiency solutions, with emphasis on testing, third-party reviews, and compliance screening. Certifications are available for products, homes, commercial buildings, and industrial plants, each with a specific set of requirements and qualification procedures.

The EPA references the two rating systems referenced above, together with the International Green Construction Code, the Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings, the National Green Building Standard and the Living Building Challenge. See [Green Building Standards | US EPA](#) for a comparison of these standards.

Further, the EPA promotes greener products and services with its [sustainable marketplace](#).

The ASHRAE also develops [standards and guidelines](#) related to (i) refrigeration processes and (ii) the design and maintenance of indoor environments. ASHRAE writes standards for the purpose of establishing a consensus for (i) methods of testing for use in commerce and (ii) performance criteria for use as facilitators to guide the industry. Consensus standards are developed and published to define minimum values or acceptable performance.

The US General Services Administration (GSA) promotes government-wide efforts to combat the climate crisis and spur the creation of good jobs and stimulates clean energy industries by revitalizing federal sustainability. The GSA has issued the [Leasing Desk Guide](#), which outlines leasing policies and procedures.

Other areas of focus identified by the GSA for [Climate Action and Sustainability](#) are net-zero design, green roofs, the Green Proving Ground program, the Sustainable Facilities Tool and sustainable building initiatives.



United States of America



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

There is no mandatory form of energy performance certification in the US. However, federal and state governments are taking steps to implement standards for this purpose. Some of these steps are as follows:

- The US has adopted the Energy Policy Act of 2005, which establishes a voluntary program to "identify and promote energy-efficient products and buildings in order to reduce energy consumption, improve energy security, and reduce pollution through voluntary labeling of or other forms of communication about products and buildings that meet the higher energy efficiency standards."

While this program is not mandatory at the national level, it creates a mechanism where green products can be promoted. Certain municipalities have set their own qualifications that might incorporate similar or higher standards.

- The Energy Policy Act of 2005 and the [Energy Independence and Security Act of 2007](#) (EISA) include energy efficiency and sustainable design requirements for both federal and commercial buildings (as further described under the "Green certification" section). In addition, a series of executive orders (issued by the president of the US) and agency-specific rules promoting green buildings have been established. The federal government has also instituted sustainable practices in many of its own buildings. The EPA has issued a [Summary of the Energy Independence and Security Act](#).
- The US federal government has adopted new standards for all federal buildings. The [release](#) from the US Department of Energy (DOE) announcing these standards highlights that, beginning in April 2023, all new buildings and major retrofits must comply with the 2021 International Energy Conservation Code.
- Many state and local governments also have green building laws that apply mainly to public buildings, but an increasing number of these are becoming applicable to private buildings as well.



United States of America



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

A number of schemes to improve existing buildings' energy efficiency have been funded or sponsored by the US federal, state and local governments. Examples of these schemes include the following:

- The [Property Assessed Clean Energy \(PACE\)](#) initiative is a widely adopted and innovative means of financing energy efficiency and renewable energy upgrades to buildings. Interested property owners voluntarily evaluate measures that achieve energy savings and financing for the up-front cost of energy or other eligible improvements on a property. This financing is then repaid as a property tax assessment over a period of up to 20 years. The loan obligation is attached to the property rather than the individual who made the loan, and the PACE financing mechanism provides strong credit without the need for government subsidies, which is attractive to private sector investors. The PACE program is structured to overcome challenges that have traditionally hindered the adoption of energy efficiency and related projects in buildings by (i) eliminating up-front costs, (ii) providing low-cost long-term financing, and (iii) making it easy for building owners to transfer repayment obligations to a new owner. The program is available for both residential and commercial buildings. PACE programs add value and have gained bipartisan support nationwide at federal, state, and local levels. To date, 37 states and the District of Columbia have adopted (or already had) legislation that enables local governments to offer PACE benefits to building owners.
- The [DOE's Building America Program](#) is a cost-shared industry partnership research program that works with national laboratories and science research teams to accelerate the development and adoption of advanced building energy technologies and practices in new and existing homes. This work advances building technologies and practices to decarbonize homes, while centering on equity and benefits to communities.

Additionally, the US Department of Housing and Urban Development provides [Energy Performance Contracts](#). This is a financing technique that uses energy and/or water cost savings from reduced energy and/or water consumption to repay the costs of installing Energy Conservation Measures.



United States of America



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Inflation Reduction Act of 2022 (IRA) provided the Federal Highway Administration and the GSA with funding to select materials and products with substantially lower levels of embodied greenhouse gas emissions, as determined by the EPA. The EPA issued a summary of the IRA [programs](#) to fight climate change.

Further, the IRA is being seen as pro-growth climate policy for the following reasons: (i) mitigating greenhouse gases, (ii) adapting to climate change, (iii) reducing local pollution, (iv) spurring innovation and spillovers, and (v) reducing economic vulnerability to international price volatility. While many jurisdictions have seen and developed these benefits for years, the Biden administration has embraced this in a way that previous administrations have not. The US Department of the Treasury has published a [post](#) highlighting the pro-growth climate policy of the IRA.

States and regions have adopted a wide range of policies aimed at reducing greenhouse gas emissions, developing clean energy resources, and promoting more energy-efficient vehicles, buildings, and appliances, among others. Twenty-three states and the District of Columbia have established [greenhouse gas emissions targets](#) to be met across various timelines.

Other examples of efforts that have been undertaken in the US are as follows:

- The EISA aims to (i) move the US toward greater energy independence and security, (ii) increase the production of clean renewable fuels, (iii) increase the efficiency of products, buildings and vehicles, and (iv) promote research on and deploy greenhouse gas capture and storage options. For further details, see the previous section on "Energy performance certificates and minimum energy standards."
- The EISA established the [Net-Zero Energy Commercial Building Initiative](#), which aims to achieve marketable net-zero energy buildings by 2025 through an array of public and private partnerships to advance the development and adoption of high-performance buildings. The act also established specific goals of achieving net-zero energy use in (i) all new commercial buildings constructed by 2030, (ii) 50% of the commercial building stock by 2040, and (iii) all commercial buildings by 2050.



United States of America



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Building America program described under the section on "Incentives for green retrofit" is another program adopted by the US Department of Energy that aims to reduce energy use in new and existing homes.

Additionally, the [Greenhouse Gas Reporting Program](#) requires reporting of greenhouse gas data and other relevant information from large greenhouse gas emission sources, fuel and industrial gas suppliers, and CO2 injection sites in the US. Approximately 8,000 facilities are required to report their emissions annually, and the reported data is made available to the public in October of each year.

President Biden's Executive Order 14057 established the [Federal Sustainability Plan](#), with an ambitious plan to achieve a net-zero emissions buildings goal by 2045. Among other things, this plan will (i) implement the Federal Building Performance Standards to drive emission reductions in existing buildings, (ii) achieve higher levels of sustainability in owned and leased buildings, (iii) leverage private sector investment, and (iv) increase energy and water efficiency.



United States of America



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

One of the most significant drivers of renewable energy growth in the US has been the state renewable portfolio standards (RPS) — also known as renewable electricity standards. An RPS is a regulatory mandate to increase the production of energy from renewable sources, such as wind, solar, biomass and other alternatives, as opposed to fossil and nuclear electric generation. The policies require or encourage electricity producers within a given jurisdiction to supply a certain minimum share of their electricity from these designated resources. For further details, see the detailed [explanation](#) from the US Energy Information Administration.

There is now a distinction between RPS policies and Clean Energy Standards (CES). The difference being how the state in question defines what is renewable and what is clean. Some clean sources may not be deemed renewable. In most cases, a CES policy will include RPS as part of the policy. As of 2022, 30 states, the District of Columbia, and two territories have active renewable or clean energy requirements, while an additional three states and one territory have set voluntary renewable energy goals. Interestingly, some states are expanding their RPS goals, while others are moving to eliminate them. For further details, see [State Renewable Portfolio Standards and Goals](#).



United States of America



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are a number of energy efficiency policies and programs across the country (including the ENERGY STAR® program referenced in the section on "Green certification"). The [DOE's Energy Efficiency Policies and Programs](#) outline a number of these programs.

There are a growing number of policies and incentives provided by both federal and state governments. These policies and incentives are monitored by several institutions, including North Carolina State University (as of writing this, it has 153 listed on the [Database of State Incentives for Renewables and Efficiency](#).)

The Internal Revenue Service provides certain deductions for energy-efficient commercial buildings or energy-efficient commercial building retrofit properties. This deduction was expanded under the IRA. The IRS has issued [guidance](#) on these deductions.



United States of America



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are several public and private initiatives in the US related to green financing for sustainable real estate projects. Examples of these initiatives are as follows:

- The DOE's [Office of Energy Efficiency and Renewable Energy](#) works with businesses, industries, universities and other organizations to increase the use of renewable energy and energy efficiency technologies by [offering financial assistance](#).
- THE PACE financing is another initiative, as outlined in the section on "Incentives for green retrofit."
- A variety of financing initiatives are also available at the state level. State Energy Revolving Loan Funds (RLFs) enable State and Territory Energy Offices and their partners to use an initial capital fund to offer long-term, low-interest financing for a variety of uses, ranging from residential and commercial building retrofits to job creation and industrial efficiency. RLFs also provide states with a flexible tool through which they can introduce the market to a variety of clean energy financing approaches, such as energy savings performance contracts, on-bill repayment mechanisms and public-private partnerships. According to the National Association of State Energy Officials, (NASEO) nearly every State Energy Office is involved in clean energy financing. For a more detailed description of these financing programs, see the [State Energy Loan Fund Map](#) prepared by NASEO.
- Private and nonprofit green financing initiatives also exist. The Enterprise Green Communities [provide grants, financing, tax-credit equity and technical assistance](#) to developers that meet the criteria for affordable housing that promotes health, conserves energy and natural resources, and provides easy access to jobs, schools and services.
- Additionally, national and regional banks have even implemented financing programs for various green projects, such as retrofitting existing buildings with products that increase energy efficiency.



United States of America



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

While the US government is able to mandate green initiatives, to date, these initiatives have primarily been implemented through state and local governments. Examples include the following:

- The New York City Department of City Planning launched [Zone Green](#) — a set of amendments to zoning regulations, accompanied by supporting city and state legislation, that is intended to remove impediments to the construction and retrofitting of green buildings.
- In 2022, the city of Chicago unveiled its updated [Climate Action Plan \(CAP\)](#), which sets a course to reduce the city's carbon emissions by 62% by 2040. The CAP focuses on economic inclusion and savings, pollution burden reduction and equitable access to critical infrastructure, and community health and resilience.
- San Francisco has launched the [Green Connections](#) project, which aims to make the city healthier and more sustainable and livable through features such as (i) pedestrian and bicycle infrastructure, (ii) street trees and other landscaping, (iii) storm water management, (iv) opportunities for beautification and public art and (v) community stewardship.



United States of America



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

There are no mandatory requirements with respect to green lease provisions in the US, and adoption of green leasing has not been particularly widespread so far. Nonetheless, a number of public and private initiatives have made substantial efforts to promote green leasing and create innovative solutions to the "split-incentive" problem (discussed in the second bullet point below) and other challenges facing green leasing. Some of these efforts are as follows:

- As described under the section on "Green certification," the US GSA has issued the Leasing Desk Guide, incorporating, among other items, modified and additional green language for all leases.
- The New York City Mayor's Office of Long-Term Planning and Sustainability has developed model lease language that aims to solve the "split-incentive" problem in modified gross commercial leases — the most common type of commercial lease in New York City. This model language, known as the [Energy Aligned Clause](#), creates a pass-through structure where both sides share the costs and benefits of energy retrofits by agreeing on a predicted amount of annual savings and having the tenant pay the owner recovery costs based on the predicted savings.

Additionally, there are a number of nongovernmental resources that address green leasing, such as the [Green Building Alliance](#), the [Better Buildings Partnership](#) and the [Chancery Lane Project](#).

Green leasing has also been seen as a collaborative effort between landlords and tenants to incorporate sustainable building practices and environmental initiatives into the construction and operation of commercial buildings. Historically, US commercial leases and construction agreements have had limited clauses for sustainability, but green leases include specific clauses that focus on areas such as energy management, indoor air quality, waste reduction and water conservation. The most recently updated construction agreement forms developed by the American Institute of Architects (AIA) also include AIA Document E204™–2017, the [Sustainable Projects Exhibit](#)), which has been specifically developed for use on a wide variety of sustainable projects. These sustainability initiatives comprise those in which the sustainable objective includes obtaining a sustainability certification, such as LEED, or those in which the sustainable objective is based on incorporating performance-based sustainable design or construction elements. By addressing these aspects, green leasing and sustainable construction help develop more robust legal mechanisms for creating a sustainable environment.

Latin America



Latin America



Click the relevant flag below for guidance on each location:



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Argentina



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

No, there is no nationally adopted and recognized form of certification for buildings. However, there is a national institute (Instituto Argentino de Normalización y Certificación, referred to locally as IRAM) in charge of establishing engineering certification rules and standards in different sectors and industries, including infrastructure and construction.

In this sense, there are different IRAM rules applicable to construction (e.g., IRAM standards 11604 and 11900 related to heating efficiency and 11659-2 related to efficiency in building refrigeration).

Although, in principle, IRAM rules are not mandatory under Argentine law, these standards have been included in the following local regulations: (i) Law 13059/03 (regulated by Decree No. 1030/2010) of the Province of Buenos Aires; (ii) Law 4458/2012 of the Autonomous City of Buenos Aires (partially vetoed and not regulated); and (iii) Building Code of the City of Rosario, Province of Santa Fe, which requires compliance with certain IRAM standards.



Argentina



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Not at the national level. As mentioned in the section on "Green certification," there are certain local regulations that include particular IRAM rules as the applicable standard.



Argentina



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Yes, but only for the national public sector, pursuant to Decree No. 31/2023, which establishes a Sustainable Public Buildings Program (SPBP). Under the SPBP, the Secretary of Environment prepared an implementation guide for the program comprised of five phases, each of which establishes its execution modality and good practices to be adopted. These will be applied progressively — with maximum terms of two and six years — and cover the efficient management of the eight axes listed in Decree 31/2023: (i) electric power; (ii) water; (iii) natural gas; (iv) waste; (v) public procurement; (vi) accessibility; (vii) sustainable mobility; and (viii) surfaces and green spaces.

The SPBP mentions that the Secretary of Environment would award the distinctions of "Public Agency Committed to Sustainability" and "Sustainable Public Agency" to recognize the agencies' commitment according to their progress in the SPBP. In addition, the Secretary of Environment may assist agencies by providing them with technical assistance and/or training, delivering goods and/or equipment, or providing financing and/or transferring resources to implement this public policy.



Argentina



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

There are no national targets for CO2 reduction or energy use reduction related to buildings. However, on July 7, 2023, by Resolution 517/2023, Argentina approved the National Energy Transition Plan to 2030 (NETP2030) and the Guidelines and Scenarios for the Energy Transition to 2050. The NETP2030 establishes actions and measures to comply with the commitments under the United Nations Framework Convention on Climate Change.

To meet these commitments, the NETP2030 sets the following targets for 2030:

- Not to exceed the net emission of 349 million tons of CO2 equivalent for the whole economy
- Reduce energy demand by at least 8% through energy efficiency and responsible energy use
- Exceed 50% renewables in electricity generation
- Achieve electric car penetration of 2% of the vehicle fleet
- Reach 1000 MW of renewable distributed generation
- Increase the high-voltage electricity transmission grid by 5,000 km of new lines



Argentina



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Not in real estate. However, major users (grandes usuarios) of the wholesale electricity market (mercado eléctrico mayorista) and major demands that are clients of the public distribution service providers or distribution agents, with power demands equal to or greater than 300 kilowatts must comply with the requirements under Law No. 27191, which sets forth that, by 31 December 2025, a minimum of 20% of their own total electricity consumption must come from renewable resources.



Argentina



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

There are no regulations in this regard.



Argentina



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

There are currently no public financing initiatives for sustainable real estate projects. However, from a private perspective, under the Argentine National Securities Commission's General Resolution 788/2019 and 963/2023, as amended, Argentina has a "green" financing mechanism commonly known as green bonds (bonos verdes) for green projects categories, such as energy efficiency (e.g., new and refurbished buildings, energy storage, district heating, smart grids, devices and products), as defined and accepted by the Green Bond Principles created by the International Capital Markets Association.

In this sense, the Argentine National Securities Commission has developed best practices guidelines for issuing social, green and sustainable negotiable securities in Argentina.



Argentina



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Municipal governments (city councils) are able to mandate green initiatives via the planning/zoning regime (for example, as in the City of Rosario mentioned in the section on "Green certification").



Argentina



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases are not a developed practice in Argentina.



Brazil



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Brazil, the development of the sustainable construction market has been promoted by financing from the Federal Development Bank (Banco Nacional de Desenvolvimento Econômico e Social or BNDES), tax incentives in municipal laws and recent changes to the Public Procurement Law, which includes environmental measures as a criterion for bid proposals. Mostly, though, sustainable construction has been prompted by realization in the market that adoption of green construction principles offers economic advantages.

The economic advantages are mainly flowing to those that look for sustainable construction for their homes or those that add value to their brands.

Internationally known certifications, such as the Leadership in Energy and Environmental Design (LEED) from the Green Building Council (GBC), are broadly adopted in Brazil. The accreditation is conducted by GBC Brazil and follows international principles. By 2023, Brazil had at least 3,500 buildings certified with a green certification or in the process of being certified.

Another broadly recognized certification in Brazil is Alta Qualidade Ambiental (AQUA), which is derived from the French Haute Qualité Environnementale (HQE) sustainability assessment, and consists of a methodology for certifying environmental management systems and the environmental quality of buildings.

The Federal Savings Bank (Caixa Econômica Federal) also has created a certification named "Selo Casa Azul," intended to support and promote sustainable housing. Eletrobras, a government-owned company in the electric power sector, created the National Program for Energy Efficiency in Buildings ("**PROCEL Edifica**"), a certificate that measures energy performance in buildings.

From the same founders of the AQUA-HQE certification, the most recent certification in Brazil is the AQUA SOCIAL, created by the Vanzolini Foundation in 2018 to certify housing and economic developments of social interest eligible for the Minha Casa, Minha Vida Program, the federal government program that makes it easier for low-income families to buy their own homes. Certifications are voluntary in Brazil, but there is a plan for the PROCEL Edifica to become mandatory for all future construction.



Brazil



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

In Brazil, PROCEL Edifica was established in 2003 by Eletrobras, a government-owned company responsible for the generation, transmission and distribution of electric power in Brazil. It acts together with the Ministry of Mining and Energy, the Ministry of the Cities, universities and research centers to develop and promote the energy efficiency of buildings, especially in relation to water consumption, power, and improvement of ventilation systems.

Obtaining the PROCEL Edifica certificate is still voluntary, but it is expected to become mandatory for new buildings in the future.

Holders of the PROCEL Edifica have access to specific lines of credit granted by the BNDES. The most relevant line of credit and benefits relate to the construction of hotels and tourism facilities, which have access to extended deadlines for repayment of the debt.

The debate on the energy efficiency of buildings increased significantly in 2015. A recent study prepared by the GBC, the Ministry of Environment and United Nations Program for the Environment (PNUMA) Brazil focused specifically on energy efficiency and water consumption. The study contains several propositions to improve buildings and promote a transition to green energy. Propositions range from the creation of tax incentives to obliging efficiency measures.

The Energy Efficiency Law (10.295/2.001), regulated by Decree No. 9.864/2019, establishes minimum energy efficiency indexes for equipment sold in Brazil and in buildings, to be implemented through specific regulations. These minimum energy efficiency levels should be defined by the Energy Efficiency Indicators Steering Committee (CGIEE), coordinated by the MME and made up of representatives from government institutions and civil society.

The only mandatory certification is applied to public buildings. SLTI Normative Instruction No. 02/2014/MPOG makes the National Energy Conservation Label (ENCE) for energy efficiency (level A) mandatory for new federal public buildings and those renovated with federal funds to carry out administrative activities or provide public services.



Brazil



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

In Brazil, incentives mainly relate to specific lines of credit granted by the BNDES, which apply to both building renovations and new constructions. The Environmental Line of Credit focuses on the promotion of environmental efficiency principles in projects, and the Energy Efficiency Line of Credit focuses on projects that intend to reduce a project's environmental impact through the reduction of power consumption.

The BNDES is a state-owned financial institution that acts as an auxiliary agency in implementing the federal government's credit and development policy. Furthermore, the National Energy Plan 2050 stipulates that the promotion of new public policy mechanisms in Brazil should be implemented in the area of energy efficiency, especially in buildings, through the agenda of minimum energy efficiency indexes, encompassing equipment, building envelopes and operational performance indices.

In relation to public procurement, Federal Decree No. 7,762/2012 created the Inter-ministerial Commission of Sustainability in the Public Sector (CISAP) and established the inclusion of sustainable parameters in bids promoted by governmental authorities and government-owned companies. When hiring building construction contractors, invitations to bid may impose the adoption of: (i) parameters of power efficiency; (ii) reduction of water consumption; (iii) preference for local raw materials; and (iv) obligation to use materials with certificates of regular origin, especially in relation to wood. The certifications may also be used as technical criteria when awarding contracts.

In addition, the Brasil Mais Produtivo (More Productive Brazil) program was created, bringing innovation to micro and small companies with the support of a local innovation agent, who applies an agile methodology to solve problems and optimize processes. The companies assisted will embark on a digital transformation journey that includes optimizing production processes and increasing energy efficiency, culminating in low-interest loans or non-refundable resources for adopting technologies linked to industry 4.0 (whose mode of production is based on work automation, robotics, artificial intelligence, data intelligence, among other innovations) and smart factories.



Brazil



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Additionally, Law 14.300, enacted in 2022, established a legal framework for micro and mini generation of energy. These modalities allow consumers to produce their own energy from renewable sources. This decentralized form of energy production is still being regulated and implemented in Brazil.



Brazil



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

As a non-Annex I country, Brazil's participation in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol focuses on the Clean Development Mechanism (CDM). Among other opportunities, the CDM stipulates that developing countries may obtain foreign investments to implement clean energy, emission reductions and carbon sink projects in exchange for emission credits granted to the developed countries making the investments. There is also an opportunity for developing countries to implement "unilateral CDM projects" without the participation of developed nations.

Law No. 12,187/2009 sets forth the National Policy on Climate Change (Política Nacional sobre Mudança do Clima or PNMC) and its voluntary commitment to reduce greenhouse gas emissions by 2020 at a range between 36.1% and 38.9%. The plan defines actions and measures to mitigate the effect of climate change. It has specific objectives, which are as follows: (i) promoting energy efficiency in the economic sectors by constantly searching for better practices; (ii) keeping the high share of renewable energy in the electricity matrix; (iii) encouraging a sustainable increase in the share of biofuels in the national transport matrix and working towards the structuring of an international market of sustainable biofuels; (iv) seeking a sustained reduction of deforestation rates in all Brazilian biomes to reach zero illegal deforestation; and (v) encouraging reforestation and forestation activities under the CDM. The law states that plans for reduction per sector, including the construction sector, may be established by regulation.

Federal Decree No. 7,390 of 9 December 2010 stipulates that public policies and governmental programs must always ensure that applicable policies are compatible with the PNMC. To achieve the target set for 2020 regarding the reduction of greenhouse gas emissions, the decree considers, among other projects, the expansion of hydroelectric and other renewable energy supply, as well as the reduction in the annual rating of deforestation in the Amazon by 80% and in the Cerrado biome by 35%.

Brazilian states and municipalities are following the lead of the federal government by enacting regulations related to climate change. Fifteen states have enacted laws defining mechanisms to mitigate greenhouse gases and adapt to their negative effects. Some of them, such as Paraíba, São Paulo and Rio de Janeiro, have adopted voluntary targets. In the municipality of São Paulo, Municipal Law No. 14,933/2009 established a target of 30% reduction of greenhouse gas emissions in relation to the 2005 measurements. The construction sector was mentioned as one of the sectors that should focus on reaching that target.



Brazil



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

To provide other examples, the municipality of Belo Horizonte contemplated sustainable buildings in its plan to reduce greenhouse gas emissions, while in 2007, the municipality of Rio de Janeiro created a certification called "Selo Verde," aimed at certifying buildings considered extraordinary in terms of sustainability.

More recently, the Brazilian Nationally Determined Contribution (NDC) , updated in 2023, established that Brazil must reduce its emissions by 48% by 2025 and 53% by 2030, compared to 2005 emissions.



Brazil



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In Brazil, most initiatives on the adoption of sustainable buildings correspond to incentives for companies that desire to pursue such path.

There is no regulation requiring a certain percentage of energy consumption to come from renewable sources, but in Brazil, power production derives mainly from hydroelectric plants. Only one-third of the energy derives from thermoelectric plants.

There are some incentives, and state and municipal laws, intending to promote the adoption of solar heating in the construction sector, but none of them imposes an obligation to adopt renewable sources. As an example, Rio de Janeiro State Law No. 5,184/2008 requires at least 40% of water heating systems in public buildings to run on solar power. In São Paulo, State Decree No. 45,765/2001 created the program for the reduction and rational use of power in the state. The decree requires that, in case of public tenders, the invitations to bid for new construction or renovations must use rational systems for power. At the municipal level, Law No. 14.459/2007 of the municipality of São Paulo requires that new buildings destined for residential and non-residential use must contain solar heating systems.



Brazil



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Some municipalities have enacted laws to grant tax incentives on sustainable construction. In most cases, the benefits represent a reduction in the Tax on Urban Properties (IPTU), but the parameters adopted vary significantly. In the case of the municipality of São Carlos in the state of São Paulo (Municipal Law No. 13,692/2005), a reduction on the tax rate is granted if the building has trees in front or has permeable areas. In other cases, several measures lead to different reduction percentages. These measures include: (i) adoption of systems to capture rainwater; (ii) use of recycled water; (iii) implementation of solar power units; and (iv) construction with sustainable materials. These are implemented in the municipality of Seropédica in the state of Rio de Janeiro (Municipal Law No. 526/2014).

In other cases, obtaining an environmental efficiency certificate can result in a preferential evaluation during a municipality's new building construction licensing procedure. This is the case in the cities of Rio de Janeiro under "Qualiverde" (Municipal Decree No. 35,745/2012) and of Campinas in the state of São Paulo (Municipal Supplementary Law No. 49/2013 and Municipal Decree No. 18.306/2014), where the holder of the "Selo S" will also be entitled to receive licensing fee discounts.

At the federal level, Law 12,536/2013 recently amended the Cities Ordinance Law (Law No. 10,257/2001) to promote the use of environmentally friendly operational systems, construction standards and technologies in urban buildings. The new law also allows municipalities to create incentives for the adoption of sustainable practices in the construction or renovation of buildings within their territories. Federal Law No. 10,257/01 (City's Ordinance Law), the basic policy on the use of urban land, is a guideline for municipalities when enacting master plans.

Still at the federal level, Law No. 14.300/22, which establishes the Legal Framework for Micro and Mini-Generation of Energy, provides direct advantages for generators of energy from renewable and decentralized sources.



Brazil



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Brazil's BNDES has special lines of financing for the construction of new buildings or the renovation of existing buildings, targeting development that is environmentally sustainable and efficient.

In addition, based on the Equator Principles, the Federation of Banks in 2009, executed the so-called Green Protocol with the Ministry of Environment, which included environmental efficiency as a criterion for banks to observe when financing projects. Most recently, Resolution No. 4.327/2014 issued by the Central Bank of Brazil obliged all banks operating in the country to create and implement a Policy of Social Environmental Responsibility. This is likely to have an impact on financing decisions.

Additionally, Banco Itaú BBA recently created green real estate credit, which can be offered by banks or financial institutions, and can be used to finance projects for the construction of new buildings, renovation of existing buildings or the purchase of properties already built that meet sustainability criteria. In this sense, Itaú works with the green entrepreneur plan, which offers differentiated financing conditions for commercial or residential projects certified with Excellence in Design for Greater Efficiencies (EDGE) from the International Finance Corporation (IFC) of the World Bank Group.



Brazil



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Brazilian Environmental National Policy (Federal Law No. 9.638/1981) was first established in 1981, with the enforcement of Federal Law No. 6,938/81. The law instituted environmental zoning as one mechanism to implement the environmental national policy.

For this purpose, Federal Decree No. 4,297/02 created the Ecological-Economical Zoning (ZEE). The ZEE is an instrument used to rationalize the occupation of areas and redirection of activities. It creates subvention to elaborate and execute regional plans aiming for sustainable development. It also establishes measures and standards for environmental protection aiming to ensure the environmental quality of water and soil resources, the conservation of biodiversity, and the improvement of living conditions. Therefore, the ZEE establishes guidelines for the geographical distribution of economic activities while considering the importance of the environment, as well as the limitations and fragility of the ecosystems. It also establishes prohibitions, restrictions and alternatives for the exploration of the territory.

In addition, the City's Ordinance Law refers to the basic policy on the use of urban land. This subject was first regulated by the Federal Constitution (articles 182 and 183), which determines that the policy of urban development, executed by the local public authority, aims to command the entire development of the city's social functions and to guarantee the inhabitants' welfare.

The urban property fulfills its social function when it observes the demands of the city's ordinance expressed on the Master Plan (Plano Diretor) approved by a municipal law, ensuring that sufficient attention is given to the needs of the citizens regarding the quality of life, social justice and development of economic activities. The Master Plan is the basic instrument of development and urban expansion policy.

Some state and municipal laws aim to promote certain sustainable measures that are to be adopted by buildings constructed in the referred location. As an example, in the state of Rio de Janeiro, buildings with offices of more than 50 square meters of constructed area or residential buildings for more than 50 families must be constructed with rainwater collectors (Law No. 4,393/2004). Other municipalities have enacted rules obliging the installation of individual systems of measurement of water consumption in new buildings (traditionally, the water measurement is made for the entire building and split into equal portions by the residing families).



Brazil



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

A bill of law (PL 272/2015) in the municipality of São Paulo, the largest city in Brazil, aims to oblige new buildings and retrofits that result in an increase of the constructed area of at least 5% to observe a minimum environmental quota, which will assess the real estate's draining capacity, vegetation coverage and other social environmental aspects to be defined by the executive.

Solid wastes resulting from construction are also broadly treated in Brazilian legislation. The regulations mainly deal with solid waste disposal and reuse and recycling terms. In the state of Rio de Janeiro, State Law No. 4.829/2006 created a plan for recycling slag.

Several laws at state and municipal levels also restrict or control the use of certain construction materials. Special attention has particularly been granted to wood. Several states and municipalities have enacted policies to control and prohibit the use of wood from sources that have not been certified.



Brazil



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Brazil, green leases are not yet commonly used, although certain types of green clauses have already been incorporated into industrial or commercial lease agreements. However, instead of imposing sustainable practices and providing benefits for sustainable behaviors, the clauses deal mainly with the environmental responsibility of landlords. In residential leases, green clauses are still rare.

Nonetheless, the trend is to include sustainable practices in tenders promoted by governmental authorities and government-owned companies. In entering into contracts with the private sector, public authorities may require, among other things, the adoption of parameters of power efficiency and reduction of water consumption from bidders.

However, as there is not yet any mandatory requirement to include clauses regarding the environmental sustainability of the building in leases, we do not see this scenario changing in the near future.



Chile



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

No. From a legal perspective, there are no nationally adopted or mandated green building certifications in Chile. Commercially, there are some certifications that have become common, especially Leadership in Energy and Environmental Design (LEED). However, these certifications are only related to marketing strategies and not to legal requirements. In addition, these apply mostly to offices rather than residential buildings.



Chile



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

No. There is no mandatory form of energy performance certification in Chile.



Chile



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

No. There are no government-funded or sponsored schemes aimed at improving the energy efficiency of existing buildings, but many NGOs are pushing to develop policies for this purpose. Some of them have even been working with the Ministry of Housing.



Chile



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Chile's Climate Change Framework Law aims to reduce CO2 emissions by up to 45% by 2030 from 2016 levels, and reach carbon neutrality before 2050. To help achieve these targets, Chile introduced green taxes, including a carbon tax of USD 5 per ton of CO2 emissions.



Chile



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

Chile's energy strategy (PEN) aims for 80% of its energy to come from renewables by 2030, and 100% in 2050. Chile aims to phase out coal-fired plants by 2030.



Chile



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Chile has no measures that encourage more efficient use of energy in buildings. However, certain regulations regarding building licenses allow the authority to request that constructions be made with materials and technical specifications that ensure certain thermal insulation to minimize costs and energy consumption for housing. These regulations were issued by the Ministry of Housing.

In addition, decontamination plans that are being developed must also consider the implementation of heating systems, improvements in thermal insulation and the development of subsidies for this kind of project.



Chile



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

In May 2019, Chile developed a Green Bond Framework. The framework encourages investments in energy efficiency improvements in buildings and public spaces, among others. Issuing a green bond in June 2019, it became the first country in South America to issue a sovereign green bond.



Chile



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes. Zoning rules can regulate green initiatives. In addition, zoning plans must be consistent with the environmental regulations provided in the Environmental Act.



Chile



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Chile, green leases or green lease provisions are optional rather than mandatory.



Colombia



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

Currently, there is no nationally adopted or recognized form of certification for buildings. Nevertheless, the Ministry of Environment and Sustainable Development, together with the Colombian Technical Regulations Institute (ICONTEC), the Colombian Sustainable Construction Council, and other entities and guilds, are working together for the issuance of the voluntary Colombian Environmental Seal for Sustainable Buildings ("**SAC-ES**"). The SAC-ES seal (certification) shall be granted to buildings built with integral sustainable criteria, including aspects such as localization, efficient use of energy, water, materials and waste, among others.

The SAC-ES seeks the following:

- To create an informative and commercial tool to differentiate products with better environmental performance than others
- To encourage the trading growth of environmentally friendly products and services
- To encourage the growth of these types of products and services' consumption within the market
- To promote a change towards environmentally friendly products in the purchasing preferences of consumers
- To facilitate the access to the market and improve the images of products with better environmental performance
- To promote the use and development of clean and sustainable processes, techniques and technologies

In November 2014, the SAC-ES conditions and requirements were unanimously defined, except for guidelines regarding materials, which is still being evaluated.

Nevertheless, buildings in Colombia are being certified by other foreign certifying bodies such as Leadership in Energy and Environmental Design (LEED), being the most widely accepted and used in Colombia, and the Building Research Establishment Environmental Assessment Methodology (BREEAM).

As of 2023, there are 250 buildings certified by LEED and more than 500 projects registered in the official directory of LEED in Colombia.



Colombia



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

No, there is no mandatory energy performance certification. Nevertheless, entities can be certified with ICONTEC NTC 50001 for their efficient use of energy.

The purpose of this international standard (ICONTEC NTC 50001) is to enable organizations and different entities to establish the systems and processes necessary to improve energy performance, including energy efficiency, and the use and consumption of non-conventional energy.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

The government has issued different regulations (public policies, laws, decrees, recommendations, etc.) establishing incentives, guidelines and rules for improving the efficient use of energy. However, there are no government-funded or -sponsored schemes for improving the energy efficiency of existing buildings.

Nevertheless, Decree 3683 of 2003 established and ordered the following incentives for the rational and efficient use of energy:

- The Administrative Department of Science, Technology and Innovation ("**COLCIENCIAS**") will be promoting lines of research in the rational and efficient use of energy.
- The Colombian Institute of Student Loans and Technical Studies Abroad (ICETEX) will be granting loans to people interested in degrees or postgraduate degrees in rational- and efficient-energy-related studies.
- The national government will be granting public awards to recognize those who excel in the rational and efficient use of energy and non-conventional sources. Such awards will be granted to: (i) corporations using energy efficiently; (ii) corporations and/or individuals conducting research in the efficient use of energy field; (iii) educational institutions teaching on the efficient use of energy.

Other (tax) incentives are further described in the "Regulation" section.



Colombia



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

The Ministry of Environment, the Ministry of Housing, and the Ministry of Mining and Energy, among other entities, are leading a program for the establishment of a net zero carbon buildings industry. This program takes a full life-cycle approach and proposes major operational and embedded carbon reduction targets staggered between 2030 and 2040, with the aim of achieving net zero carbon buildings by 2050.

Colombia has agreed to reduce its greenhouse gas emissions by 20% by the year 2030, on a "business as usual" basis. Subject to international finance and technological aid, Colombia may increase the goal up to 30%.

Colombia was the first South American country to express this commitment. This commitment includes undertaking mitigation measures requiring investments under USD 30 per CO2-reduced ton.



Colombia



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

No, there are no regulations requiring a percentage of energy consumption to come from renewable sources. Nevertheless, the Indicative Action Plan 2010-2015 (IAP) of the Rational and Efficient Use of the Energy and Other Non-Conventional Energy Program (PROURE) established certain goals for the use of non-conventional energy.

The IAP stipulates that in terms of installed capacity of the Interconnected National System for 2015, non-conventional energy should represent 3.5% of the total energy used, and this percentage should have increased by up to 6.5% for 2020. According to information as of December 2014, the non-conventional energy percentage share in the Interconnected National System was 2.71%.

Likewise, the IAP established goals for the use of non-conventional energy within the non-interconnected zones, in 20% and 30% of the installed generation capacities, for years 2015 and 2020, respectively. These goals were to be accomplished by, among others, adopting the following measures: (i) implementing a wind measurement and registration program in places identified with a high potential of wind energy to make an estimate of the usable energy; (ii) promoting the research in universities and research centers; (iii) investigating the vulnerability of water resources due to climate change.



Colombia



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Colombia has implemented the following tax reliefs on energy-saving measures, which will encourage more efficient use of energy in buildings:

- According to Article 424 and 428 of the Tax Code, further developed by Decree 2532 of 2001, equipment destined for projects seeking a reduction of energy consumption are excluded from VAT.
- According to Article 158-2 of the Tax Code, legal entities investing in control and improvement of the environment may deduct from their income tax returns the value of such investments, without exceeding 20% of the net income.
- According to Article 207-2 of the Tax Code, the sale by energy-generating companies of energy coming from wind resources, for the maximum term of 15 years, is considered exempted income, provided that such companies comply with the requirements established in this article.
- Finally, congress recently enacted Law 1715 of 2014, whereby tax benefits (income tax deduction, exemption from custom duties and exclusion of VAT) are granted to those persons who promote energy efficiency by making investments related to the use of non-conventional energy sources.



Colombia



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Colombia has been particularly looking for financing schemes mainly related to the efficient use of energy in general, not only in real estate projects. For example, Colombia received a total of USD 150 million from the Inter-American Development Bank, the World Bank and the International Finance Corporation for these purposes.

The Mining and Energy Planning Unit (UPME) is also promoting the implementation of different schemes for energy efficiency.

Particularly in the building sector, the Territorial Development Financial Entity ("**FINDETER**") is developing the "Sustainable and Competitive Program," together with certain international organizations, such as the Inter-American Development Bank, as well as the national government. This program has, among others, the purpose of financing sustainable investment projects guaranteeing the infrastructure demanded by sustainable cities.

Finally, a bill that intends to create the "green financial mechanisms" for the construction of sustainable buildings is currently being examined in congress. This program will consist of granting loans through public financial entities to people interested in acquiring or refurbishing houses, provided they relate to sustainable criteria.



Colombia



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, it is possible for the national or local government to mandate green initiatives via the planning/zoning regime. All municipalities, through the Territorial Arrangement Planning (POT), establish the standards to guide and manage the physical development of the relevant territory and its authorized land use. The POT must consider, among other aspects, the conservation and protection of the environment and natural resources.

The general public policies contemplated within the POT are specified by the issuance of a partial plan, which, among other purposes, seeks to precisely define the urbanistic directives and objectives in aspects such as efficient property use, public space extensions and environmental quality.

Therefore, it is possible through the POT and the partial plan to mandate green initiatives, which ultimately will be materialized in granting the relevant urbanistic licenses for any real estate project. However, Colombia has not yet entered into a mandatory sustainable building policy, but after the sustainable construction rule enters into force (from July 2016), sustainable construction standards will begin to be mandatory in certain aspects.



Colombia



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

Green leases are not mandatory in Colombia and do not constitute a common practice.



Peru



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

There are no nationally adopted or mandated green building certifications in Peru; however, municipal governments encourage a number of certifications. Below are examples of private and nonprofit green building certification programs that are used in Peru, as well as examples of other standards and policies promoting green buildings: (i) [Leadership in Energy and Environmental Design \(LEED\)](#); (ii) [EDGE Green Building Certification \(EDGE\)](#); and (iii) the [Building Research Establishment Environmental Assessment Methodology \(BREEAM\) certification](#).

At the government level, we have some municipal ordinances, Municipal Ordinance No. 610-MSB and Municipal Ordinance No. 496-MSB. Both aim to promote commercial green buildings to minimize the environmental impact of construction. The regulation consists of granting height bonuses, which can be between one and four additional stories within the urban parameters, in exchange for the developer's commitment to make the building green. To this end, it is mandatory to provide wooded areas, rooftop gardens ("green roofs") and segregated containers for recycling, and, most importantly, to obtain an international sustainable building certification such as LEED, EDGE or BREEAM.



Peru



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

All new constructions must comply with the technical guidelines established in the National Building Regulation. In addition, for granting the construction license, the respective district municipality determines, through its technical team, whether the project has power outlets and other technical aspects necessary for the viability of the project purpose.



Peru



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

In Peru, there are no government-funded and sponsored schemes aimed at improving the energy efficiency of existing buildings. In 2000, the government enacted Law No. 27345 to promote the efficient use of energy. In alignment with this law, the Peruvian government actively encouraged energy-saving initiatives within the public sector. These efforts included replacing less efficient incandescent lamps with compact fluorescent lamps and procuring equipment bearing energy efficiency labels.

Subsequently, in September 2009, the Ministry of Energy and Mines (MEM) released the Referential Plan for the Efficient Use of Energy spanning from 2009 to 2018. This plan serves as the primary tool to realize the country's energy efficiency objectives, outlining specific action plans tailored to each sector. It features an in-depth analysis of Peru's energy efficiency landscape, pinpointing sector-specific programs essential for meeting the set targets. In November 2010, the National Energy Policy for 2010-2040 was published. Its main objective is to implement an energy system that meets the national energy demand in a reliable, regular, continuous and efficient manner. It promotes sustainable development and is based on planning and continuous technological research and innovation, subject to various policy guidelines.



Peru



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Peru has set national targets for CO2 reduction and energy use reduction from buildings as part of its climate change commitments. Peru's nationally determined contributions (NDCs) aim to reduce greenhouse gas emissions by 30% by 2030, with the potential to increase this reduction to 40% with international support. These targets are aligned with the country's vision of decarbonization in the long term, aiming to neutralize greenhouse gas emissions and adapt to climate change by 2050. The NDCs prioritize adaptation efforts in sectors like water resources, agriculture, fishery, forestry and health to address the adverse effects of climate change. Peru's NDCs also emphasize the importance of developing a national adaptation plan and a low-carbon development strategy to achieve these ambitious goals.

In January 2022, the Peruvian government officially recognized a national climate emergency by issuing Supreme Decree No. 003-2022 – MINAM. The Ministry of Environment of Peru stated that the updated climate change strategy would be finalized by October 2022. However, as of August 2022, Peru has not yet presented a long-term strategy to the United Nations Framework Convention on Climate Change.



Peru



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

In Peru, there are no regulations mandating that a certain percentage of energy consumption in buildings must come from renewable sources. Legislative Decree No. 1002 stipulates that renewable energy resources (RER) should contribute at least 5% to the total energy consumption in the energy matrix. This percentage, set in 2008, may be increased by the MEM every five years. In 2022, the Ministry of Environment has set a more ambitious target of 20% RER contribution by 2030.



Peru



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

Peru has no laws on environmental taxes. In fact, it has little fiscal incentive measures for environmental protection and/or sustainable buildings. There is no income tax reduction or value added tax (Imposta Valore Aggiunto or IVA) exemption as in other countries in the region. Although Law No. 31313 establishes that taxes are a form of finance instrument, the only tax identified is the selective consumption tax based on the approved harmful indexes.



Peru



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

The Peruvian government has worked to mobilize public and private investments in infrastructure projects, with [ProInversion](#) fostering private investment through public-private partnerships to address the country's infrastructure gap. These initiatives highlight the growing focus on sustainable finance and infrastructure development in Peru, aiming to attract investments for green projects and assets beyond traditional sectors like wind and solar energy.



Peru



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Currently, there are no official requirements at the national or local level mandating green initiatives through planning or zoning regulations. Typically, municipal governments have introduced green initiatives using incentives rather than altering zoning laws.



Peru



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Peru, green leases or green lease provisions are optional rather than mandatory. These green lease clauses focus on aspects like waste management, energy efficiency and data sharing, aiming to promote sustainability in real estate projects.



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

In Venezuela, there is currently no nationally adopted and recognized form of certification for buildings. However, there are:

- Some regional initiatives that promote the certification of buildings based on their energy efficiency and environmental sustainability
- A number of private companies that offer certification services for buildings

The lack of a national certification system for buildings in Venezuela is a challenge that hinders the development of a sustainable construction sector.

Despite these challenges, there are a number of efforts underway to promote the certification of buildings in Venezuela. These efforts include the following:

- The development of a national standard for green buildings by the Venezuelan Chamber of Construction
- The launch of a pilot program to certify buildings in the city of Caracas
- Increasing awareness of the importance of sustainable construction among architects, engineers and developers

It is important to develop a national building certification system in Venezuela, as this system would help to do the following:

- Improve the energy efficiency and environmental sustainability of buildings
- Promote the use of sustainable construction materials and practices
- Create a market for green buildings
- Raise awareness of the importance of sustainable construction



Green Certification

Is there a nationally adopted and recognized form of certification for buildings? What is it and is it mandatory for all new buildings and refurbished buildings?

The Draft Law for the Promotion of the Construction of Ecological Public and Private Buildings is currently pending consultation by the National Assembly. This law seeks to do the following:

- Reduce the consumption of energy and resources in both the construction and operation phases of new buildings
- Promote the use of local materials such as adobe, bamboo and wood, among others
- Take into account the climatic conditions of the areas where the buildings are built
- Encourage the use of environmentally friendly design, construction and operation techniques, such as maximizing the use of natural lighting and ventilation to reduce energy consumption, or collecting and treating rainwater

This draft law is a significant step toward promoting sustainable and environmentally friendly building practices in the country.



Energy Performance Certificates and Minimum Energy Standards

Is there a mandatory form of energy performance certification? When does it apply and are there any prescribed minimum standards?

Yes, there is a mandatory form of energy performance certification in Venezuela. Resolution No. 77, published in Official Gazette No. 39.694 of 25 July 2012, establishes Venezuelan COVENIN Standard 3692:2012 as a reference for certifying energy efficiency in buildings.

It applies to the following:

- New public and private buildings with an area greater than 1,000 square meters (expanded to 500 square meters in 2016)
- Existing public buildings with an area greater than 5,000 square meters (expanded to 2,500 square meters in 2016)

The minimum standards prescribed are as follows:

- COVENIN Standard 3692:2012 establishes calculation methods and reference values for the energy efficiency of buildings.
- Aspects considered include energy consumption, energy demand, lighting, ventilation, air-conditioning systems, thermal envelope, and building materials.
- Compliance with minimum standards is mandatory to obtain energy efficiency certification.

Here are some additional information on the certification:

- The Ministry of People's Power for Electric Energy is responsible for applying and monitoring the standard.
- There are certifying companies accredited by National Integrated Customs and Tax Administration Service (SENIAT) that can evaluate and certify the energy efficiency of buildings.
- The certification is valid for five years.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

Yes, there are some government-funded or sponsored programs to improve the energy efficiency of existing buildings in Venezuela. Here is a summary of the most relevant programs:

National Fund for Energy Saving (FONAC)

- Objective: This program aims to finance energy efficiency projects in the public, private and residential sectors.
- Funding: It is funded by nonreimbursable grants, soft loans and other modalities.
- Requirements: Projects must meet the technical and financial criteria established by FONAC.

Energy Labeling Program

- Objective: This program aims to inform consumers about the energy efficiency of appliances and equipment.
- Operation: Appliances are assigned a label according to their energy consumption, from A (most efficient) to G (least efficient).

Incandescent Bulb Replacement Program with LED

- Objective: This program aims to replace incandescent bulbs with energy-efficient LED bulbs in Venezuelan households.
- Operation: The government distributes LED bulbs at a low cost or for free through different social programs.



Incentives for Green Retrofit

Are there any government-funded or sponsored schemes for improving the energy efficiency of existing buildings and, broadly, how do they work?

In general, government-funded or sponsored programs for improving the energy efficiency of existing buildings work as follows:

- Building owners or administrators can submit a funding request to the corresponding program.
- The request must include information about the energy efficiency project, such as the type of measures to be implemented, the cost of the project and the expected energy savings.
- The program evaluates the request and, if approved, the funding is disbursed.
- Building owners or administrators must execute the energy efficiency project according to what is described in the application.
- The program monitors the project to verify that the energy-saving goals are met.

Government-funded or sponsored programs for improving the energy efficiency of existing buildings may have different requirements, conditions and benefits.

In addition to government-funded or sponsored programs, there are other initiatives that can help improve the energy efficiency of existing buildings in Venezuela:

- Technical assistance: There are companies and organizations that offer technical assistance for identifying and implementing energy efficiency measures in buildings.
- Tax incentives: Some Venezuelan laws and regulations offer tax incentives for companies that implement energy efficiency measures.
- Training programs: Training programs are offered for technicians and professionals in the area of energy efficiency.



Venezuela



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Yes, there are national targets for CO2 reduction and energy use reduction in buildings in Venezuela.

CO2 reduction

- Nationally Determined Contribution (NDC): Venezuela has committed to reducing its greenhouse gas (GHG) emissions by 20% by 2030 compared to 2005 levels.
- Planning: The Ministry of People's Power for Ecosocialism (MINEC) is responsible for planning and implementing policies and measures to achieve the CO2 reduction target.
- Buildings: The construction and building sector is one of the major emitters of GHGs in Venezuela. It is estimated that this sector generates around 30% of the country's total CO2 emissions.
- Measures: Some measures have been implemented to reduce CO2 emissions in the construction sector, such as the following:
 - Promotion of energy efficiency in buildings: The Ministry of Electric Power has developed programs to promote energy efficiency in buildings, such as the Energy Labeling Program and the Incandescent Bulb Replacement Program with LED.
 - Construction standards: Building standards have been established that require the implementation of energy efficiency measures in new buildings.
 - Use of sustainable materials: The use of sustainable materials in construction, such as bamboo and wood, is encouraged.



CO2 and Energy Targets

Are there any national targets for CO2 reduction and/or energy use reduction from buildings? If there are, are there any exclusions?

Reduction of energy use in buildings

- The National Energy Saving Plan (2014-2019): This plan aims to reduce energy consumption in the public and private sectors by 20% by 2019.
- Measures: Some measures have been implemented to reduce energy consumption in buildings, such as the following:
 - Energy audits: Energy audits are conducted in public buildings to identify areas where energy efficiency can be improved.
 - Replacement of inefficient equipment: Inefficient equipment is replaced with more efficient equipment in public buildings.
 - Awareness programs: Awareness programs are conducted to promote the efficient use of energy in buildings.

There are some exclusions:

- Small and medium enterprises (SMEs): SMEs may be exempt from some of the measures for CO2 reduction and energy use reduction in buildings.
- Low-cost housing: Low-cost housing may be exempt from some of the measures for CO2 reduction and energy use reduction in buildings.



Renewable Energy

Are there any regulations requiring a percentage of energy consumption to come from renewable sources?

While there are currently no national regulations mandating a specific percentage of energy consumption to come from renewable sources in Venezuela, there are indications that this may change in the near future.

Here's a breakdown of the current situation and future prospects:

Current situation

- There is an absence of established regulations requiring a minimum percentage of energy generation from renewable sources.
- This hinders progress toward a more diversified energy matrix reliant on sustainable options.

Future prospects

- The recently introduced Bill on Renewable and Alternative Energies offers a promising outlook.
- This bill aims to promote and regulate renewable energies, potentially paving the way for future regulations mandating a minimum renewable energy quota.
- The specific details regarding percentages or timelines might still be under development, so staying informed about the bill's progress is crucial.



Regulation

What other national regulatory measures are there, such as taxes on energy consumption and/or tax reliefs on energy-saving measures, that can encourage more efficient use of energy in buildings?

In addition to CO2 and energy reduction targets, there are other national regulatory measures that can incentivize more efficient energy use in buildings in Venezuela:

Energy consumption taxes

- Income Tax Law: This law establishes a tax on electricity consumption for the residential, commercial and industrial sectors. The tax is calculated based on energy consumption and is used to finance energy efficiency programs.
- Organic Law of Gaseous Hydrocarbons: This law establishes a tax on natural gas consumption for the residential, commercial and industrial sectors. The tax is calculated based on gas consumption and is used to finance energy efficiency programs.

Tax exemptions for energy-saving measures

- Income Tax Law: This law establishes tax exemptions for the import of equipment and materials intended for energy efficiency in buildings.
- Law for the Promotion and Development of Electric Generation with Renewable Sources: This law establishes tax exemptions for companies that invest in renewable energy generation projects.



Financing

Are there any public or private "green" financing initiatives for sustainable real estate projects?

Yes, there are some public and private green financing initiatives for sustainable real estate projects in Venezuela:

Public initiatives

- Banco de Desarrollo Económico y Social: This initiative offers credit lines for renewable energy, energy efficiency and sustainable development projects.
- FONAC: This initiative finances energy efficiency projects in the public, private and residential sectors.
- MINEC: This initiative develops financing programs for environmental projects, including sustainable real estate projects.

Private initiatives

- Commercial banks: Some commercial banks offer credit lines for sustainable projects, such as the Banca Verde of Banco Mercantil.
- Investment funds: There are investment funds specialized in sustainable projects, such as the Fondo Verde of Vencedores Capital.
- Private companies: Some private companies offer financing programs for sustainable projects, such as Sidor's EcoCasa program.

In addition to financing, there are other important aspects to consider for the development of sustainable real estate projects, such as the selection of sustainable materials and technologies, energy efficiency, and bioclimatic design.



Planning

Is the national or local/state government able to mandate green initiatives via the planning/zoning regime (e.g., district heating systems on large developments)?

Yes, the national or local/state government in Venezuela can require ecological initiatives through the planning/zoning regime.

The following legal bases allow the government to take these measures:

- Organic Law of Municipal Public Power: This law establishes that municipalities have the competence for urban and rural planning, including the promotion of environmental sustainability.
- Partial Reform Law of the Organic Law of Urban Planning: This law establishes that urban planning arrangements must include measures for environmental protection and the promotion of energy efficiency.
- COVENIN Standards: COVENIN Standards are Venezuelan technical standards that establish requirements for the construction of buildings, including energy efficiency and environmental sustainability requirements.

Some examples of ecological initiatives that the government can require through the planning/zoning regime are as follows:

- District heating systems: The government may require large real estate developments to implement district heating systems to reduce energy consumption and CO2 emissions.
- Use of sustainable materials: The government may require that buildings be constructed with sustainable materials, such as certified wood or bamboo.
- Energy efficiency: The government may require that buildings comply with the energy efficiency requirements established in the COVENIN Standards.
- Green spaces: The government may require that real estate developments include green spaces to improve environmental quality.



Venezuela



Green Leases

Are green leases or green lease provisions mandatory or optional? If mandatory, to whom do they apply? If optional, is there significant take up?

In Venezuela, green clauses or leases are not mandatory. They are considered an optional tool that landlords and tenants can use to promote sustainability in buildings.

However, there are some initiatives that incentivize the adoption of green clauses or leases:

- **Partial Reform Law of the Organic Law of Urban Planning:** This law establishes that urban planning arrangements must include measures to promote environmental sustainability in buildings.
- **COVENIN Standards:** COVENIN Standards establish requirements for the construction of sustainable buildings, including energy efficiency and sustainable materials requirements.
- **Incentive programs:** Some local governments and nongovernmental organizations offer incentive programs for the adoption of green clauses or leases.

In general, the adoption of green clauses or leases in Venezuela is still in its early stages. However, their use is expected to increase in the future as awareness of the importance of environmental sustainability grows.

Landlords and tenants are encouraged to consider using green clauses or leases to promote sustainability in buildings.

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