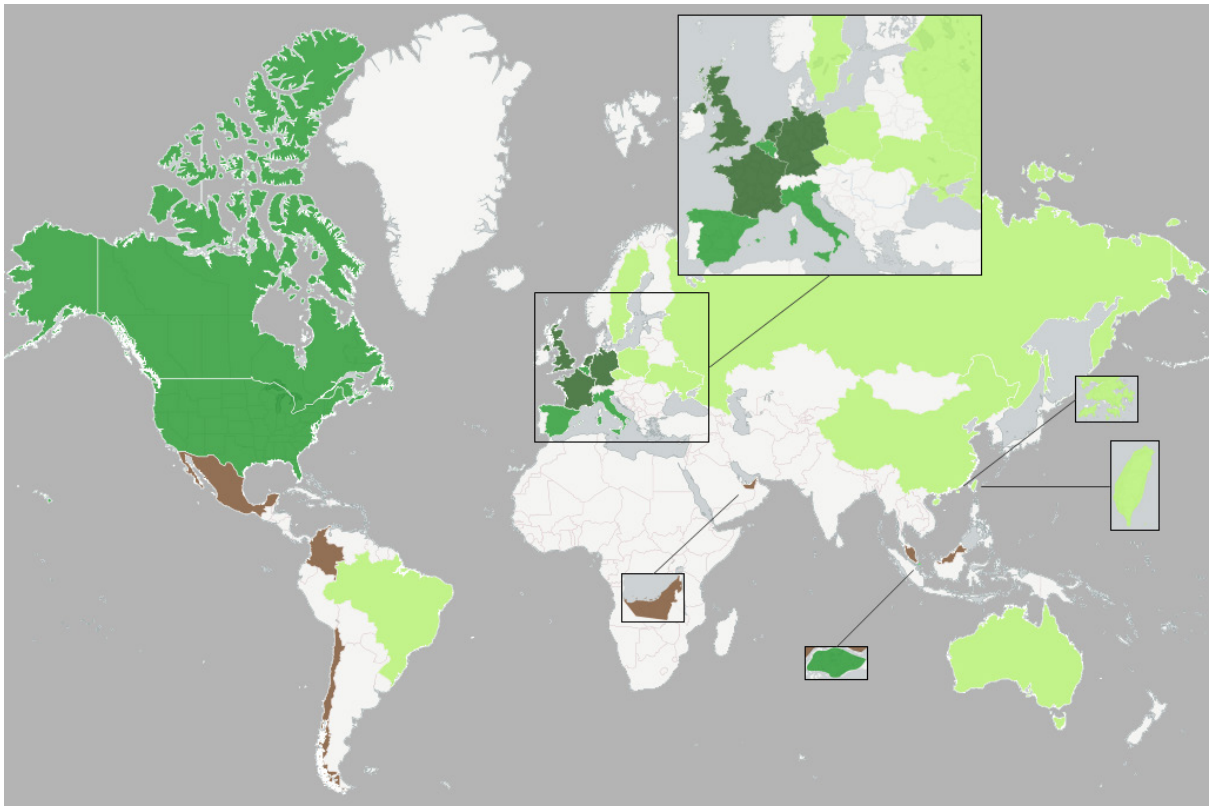
Executive Summary



Summary of Results

	Green Certification	EPC & MES	IGR	CO2 & Energy Targets	Renewable Energy	Regulation	Financing	Planning	Green Leases	Total	Rank	Band
Germany	2	1	2	1	1	1	1	1	2	12 (=)	1	Category 1
United Kingdom	2	1	3	2	1	1	1	1	1	13 (↓)	2	
Netherlands	2	1	1	1	2	2	1	2	2	14 (=)	3	
France	2	1	2	1	1	2	2	2	2	15 (↓)	4	
Italy	2	1	1	1	1	2	2	1	4	15 (↑)	4	Category 2
Belgium	2	1	1	1	3	2	2	2	2	16 (NEW)	5	
Singapore	1	1	1	2	4	3	4	1	1	18 (=)	6	
Spain	2	1	1	1	1	3	3	3	3	18 (=)	6	
Canada	2	1	3	2	1	2	3	3	1	18 (↑)	6	
United States	2	2	2	1	2	3	2	2	2	18 (=)	6	
Australia	2	3	2	3	2	3	2	2	1	20 (↑)	7	Category 3
Brazil	2	3	3	2	3	3	2	1	3	22 (↑)	8	
China	2	2	2	2	3	3	2	2	4	22 (=)	8	
Czech Republic	3	2	3	2	1	2	4	3	2	22 (↓)	8	
Sweden	2	1	4	2	1	2	3	4	3	22 (NEW)	8	
Ukraine	2	3	3	3	3	3	2	2	3	24 (NEW)	9	
Taiwan	2	3	3	3	2	3	4	1	4	25 (NEW)	10	
Hong Kong	2	1	4	2	4	4	4	3	3	27 (↑)	11	
Poland	2	2	4	3	3	4	4	2	3	27 (NEW)	11	
Russia	2	3	3	3	3	3	3	3	4	27 (NEW)	11	
Colombia	3	3	4	3	4	2	2	3	4	28 (NEW)	12	Category 4
Mexico	4	4	3	4	2	3	2	4	3	29 (↑)	13	
Malaysia	2	3	4	3	4	3	4	4	3	30 (NEW)	14	
United Arab Emirates	2	4	4	3	3	4	4	4	4	32 (=)	15	
Chile	3	4	4	4	4	4	4	4	4	35 (NEW)	16	

In this section, we evaluate the overall combined response to our survey topics from each jurisdiction. The heat map above is the result of that evaluation.

Results of our survey are also shown in tabular form below. The perfect score on this table is a total of nine points and a “dark green” aggregated result on the heat map. None of our jurisdictions achieved the consistency necessary for a perfect score so we awarded “dark green” status to those jurisdictions achieving top grade in at least four out of nine topics with no single topic being worse than “mid-green.”

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The Netherlands, France, Germany and the UK have been re-awarded “dark green” status on the heat map, although the UK has gained two points due to some notable policy downgrades during the course of the year and now lies behind Germany in the overall standings.

It is perhaps not surprising that these European jurisdictions continue to rank so closely given the influence of EU policy. These jurisdictions are also the locations of some of the most forward-thinking real estate companies and have given rise to vigorous debate and contributions among industry focus groups, such as the Green Building Council. The excellent performance from Belgium and Sweden reinforces this message.

Perhaps, then, it is surprising to see Italy and Spain within the “mid-green” tier, which is awarded to jurisdictions with a mean score of not greater than two points for each topic. We speculated last year that the global financial crisis had a greater effect within the real estate sector of those countries, holding back investment and/or the advancement of progressive green regulation because it was thought to likely hamper economic recovery. There has been a small amount of progress in Italy over the last year with a commensurate single-point drop, although this is not quite sufficient to elevate Italy up to the “dark green” category. We will continue to monitor the progress of these countries closely.

Other countries in the “mid-green” tier include Singapore and the United States. In Singapore, the debate appears to be well advanced. Its process of real estate sustainability evaluation and certification, and control over developments constitutes innovation from which “dark green” countries could learn. Singapore only misses that category because of its poor record on developing and using renewable energy, which is likely because of geographical constraints. In the United States, there are examples of innovation within most of the topics, but the US is marked down in some cases because most developments are governed at state or even city level. We might expect this to change with the historic US-China Joint Presidential Statement on Climate Change, creating some serious momentum, but this could get stalled with its change of president in 2016.

Canada is the big mover, with a one-point reduction indicating a shift from “light green” to mid-green” status, following significant policy announcements after a change of government toward the end of 2015. Canada is a great example of how a change of government can reflect the zeitgeist shift, and we hope that this will serve as an example to other countries that there is, in fact, a genuine will for change, and that politicians can benefit from re-positioning themselves with a truly green agenda. Jurisdictions with a mean score of not more than three points for each of the topics, qualify for “light green” status. Within this tier, Canada and Australia are joined by the Czech Republic, China, Brazil, and new entrants Poland, Sweden, Taiwan and Ukraine. While significant developments are taking place in most of these countries, there remains a need to scale up their sometimes admirable local efforts to build and use real estate more sustainably. The disappointing entry in this tier is Australia. While it arguably leads the way in green leasing and is a key thought leadership player, it is dragged down by the lack of ambition shown in terms of its emissions reductions targets and its vacillation around “carrot-and-stick” regulation. Successive governments have toyed with and, in some cases, repealed “green” legislation. With an economy reliant upon extraction of natural resources, this is perhaps not so surprising.

Finally, Hong Kong, Mexico, the United Arab Emirates and new entrants Malaysia, Russia, Chile and Colombia find themselves in the lowest “brown” tier. Hong Kong misses out on “light green” by only one point, as did Russia. Aside from the UAE and Chile, where the debate is only now beginning to get off the ground, Mexico, Hong Kong, Russia, Colombia and, to a lesser

extent, Malaysia have demonstrated awareness of and willingness to become more involved. Given the density of Hong Kong's built environment, it is not surprising to see that green certification and energy performance of buildings is high on the agenda, but Hong Kong is held back by the lack of geographic opportunity for renewable energy generation. In Mexico, local ideas need to be scaled up and a more coherent set of targets is required before the country can begin to rise up the tiers.

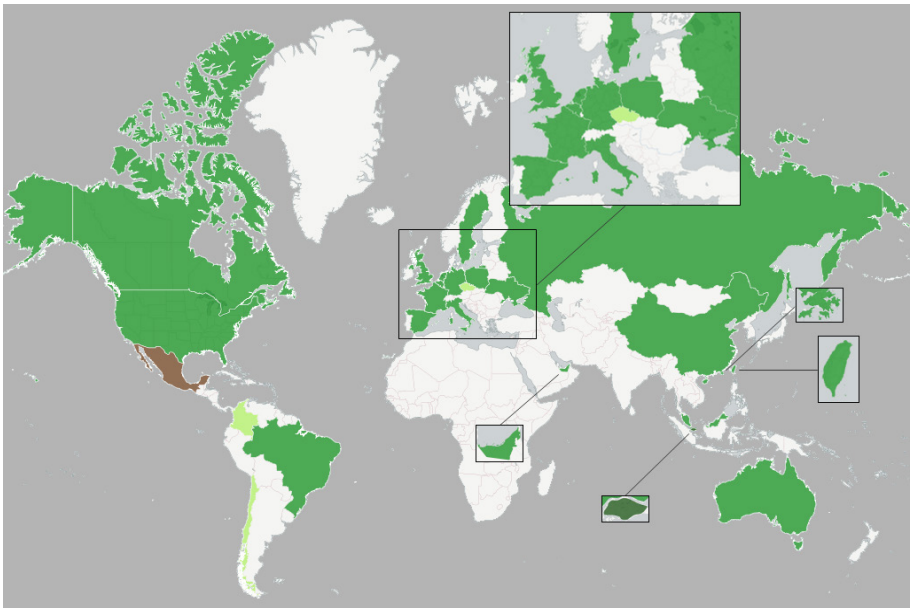
We will continue to track how these ratings change and how jurisdictions might rise and fall on our heat map in future years.

Part 1

Summaries of Survey Results

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?



1

Singapore (=)

2

Australia (=)
Belgium (NEW)
Brazil (=)
Canada (=)
China (=)
France (=)
Germany (=)
Hong Kong (=)
Italy (=)
Malaysia (NEW)
Netherlands (=)
Poland (NEW)
Russia (NEW)
Spain (=)
Sweden (=)
Taiwan (NEW)
Ukraine (NEW)
United Arab Emirates (=)
United Kingdom (=)
United States (=)

3

Chile (NEW)
Colombia (NEW)
Czech Republic (=)

4

Mexico (=)

Introduction

The drive to reduce the environmental impact of the built environment has led to a plethora of assessment systems and standards for buildings and development projects. The scope of these assessments can vary widely, depending upon the focus.

Certification generally uses selected measures of performance, set against established benchmarks, to assess the design, specification, construction and use of a building. Commonly, these award credits for optional building features that support green design, such as location and maintenance of

building site, water conservation, energy and building materials and occupant health and comfort.

Ideally, an internationally recognized and implemented rating system for a life-cycle assessment of the sustainability of buildings would incorporate the full range of cradle-to-grave processes from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling. ISO 14040 provides a recognized life-cycle assessment methodology, but buildings certification systems do not yet comprehensively incorporate this approach because it is seen as overly complex and all-consuming.

However, there are developments in numerous jurisdictions that aim to make this sort of holistic assessment approach more accessible. In this section, we examine what progress is being made in our jurisdictions and evaluate how effective adopted standards are at measuring building sustainability.

Survey

The certification of a building as “green” can give real estate investors and end users (i.e., occupiers) economic benefits and an enhanced reputation.

From an investor’s perspective, energy-efficient buildings are more attractive to tenants and, therefore, command a higher rent and capital value. Equally, occupiers can expect certified buildings to be associated with reduced energy and maintenance bills.

Moreover, green buildings allow investors and occupiers to show their commitment to sustainability, thereby enhancing their reputation in the market.

For these reasons, it is no surprise that in each country surveyed, some form of green certification regime already exists. LEED and BREEAM are the most widely used. More than two-thirds of the jurisdictions have adopted them. Most countries also employ a range of local environmental assessment methods.

The sheer range of different certification regimes inevitably leads to the question of whether a uniform global standard might be preferable. On the one hand, multinational tenants and investors are attracted by the familiarity of a global standard, which partly explains the success of methods such as LEED and BREEAM.

However, an international standard is not appropriate in all cases. Standards need to be tailored toward the particular circumstances of a country’s building stock. In Italy, for example, the Protocollo ITACA standard consists of a set of regional standards - each regional standard is designed to reflect the differences in micro-climate and various regions’ traditional building techniques. Similarly, Taiwan’s green building certification has been developed to take account of the country’s subtropical climate with high temperatures and humidity. This highlights the need for localized standards that reflect regional particularities.

It is a common misconception that green certificates are only concerned with the energy consumption of a building. While energy efficiency is certainly one factor determining a building’s “greenness,” our survey reveals that assessment methods also invariably take into account CO2 emissions, water usage, construction materials, ecology, waste management and/or the health and well-being of occupants.

Our survey also found that the vast majority of green assessment standards are formulated by non-governmental organizations in the private sector, such as national Green Building Councils. Accordingly, compliance with most certification standards is entirely voluntary. Nevertheless, certain schemes have seen an impressive take-up. For instance, the BOMA BESt standard has certified over one billion square feet of Canadian commercial real estate. In Hong Kong, Beijing, Shanghai and Shenzhen, over 13 million square meters of commercial and residential real estate had been BEAM certified as of 2013. By contrast, only 12 buildings in Mexico have been certified under the government's 2008 flagship certification program, although an additional 131 have been certified under LEED. Unsurprisingly, this suggests that developers and building owners in developing countries are less inclined, or perhaps less financially able, to comply with green standards than their counterparts in developed countries.

Although certification is generally voluntary, financial incentives have been introduced to encourage certification. For example, in China, buildings that achieve a 2- or 3-star rating under the Green Building Financial Award scheme may qualify for a subsidy of between CNY45 and CNY80 per square meter. Under a local government scheme in the Chaoyang District in Beijing, government subsidies of CNY10 per square meter are also awarded to developers of buildings with an LEED Gold certificate; the subsidy is increased to CNY20 per square meter for LEED Platinum-certified buildings.

Of all countries surveyed, Singapore stands out in terms of its ambition and policies regarding green certification. Singapore has set itself the target of having 80 percent of its building stock "Green Mark" certified by 2030. It is currently at around 25 percent. To achieve this target, basic certification has been made compulsory for certain buildings (generally those with a gross floor area of 2,000 square meters or more) undergoing construction, extension or major retrofitting. Furthermore, all state buildings mustachieve certification by 2020.

Conclusion

Our survey reveals that some form of green certification standard has been adopted by every country examined. The standards tend to be voluntary, applicable only to new buildings (or existing buildings undergoing major retrofitting) and often relevant only to commercial rather than residential real estate.

Singapore leads the pack in terms of implementing mandatory certification requirements and setting ambitious targets. Accordingly, for the purposes of our heat map, it is our view that Singapore is the only country worthy of "dark green" in this category.

At the other end of the scale is Mexico, which is assigned a brown rating on the basis that only a handful of its buildings have been voluntarily certified.

Most countries fall into the mid-green category. These are countries that have adopted a range of private sector certification schemes and have seen impressive levels of voluntary uptake by participants in the real estate sector. We have given particular credit to countries, such as China, that provide financial awards to developers that have their buildings certified.

Trends 2015 to 2016

Since the 2015 edition of our Index, we have seen an overarching trend toward the proliferation and growth in uptake of voluntary certification systems.

Voluntary uptake has been particularly noticeable in Brazil where, between the end of 2014 and end of the second quarter of 2015, the number of buildings certified by the Green Building Council of Brazil increased threefold - from 82 buildings to 252. Similarly, in Poland, the number of certified buildings increased by 60 percent between 2014 and 2015. This reflects the long-term trends found in other countries such as Singapore where the number of certified buildings has leapt from just 17 in 2005, to more than 2,500 in 2015.

We can speculate that increasing levels of corporate social responsibility and a growing recognition within the real estate market of the financial benefits of “going green” have contributed to the steep rise in the number of voluntary certifications.

Regrettably, over the past 12 months, we have not seen the introduction of mandatory certification regimes in any of our cohort. Accordingly, Singapore remains the only country to have a wide-ranging mandatory certification regime, thereby justifying its position as the only top-ranked country.

Other countries have taken positive steps falling short of widespread mandatory certification. From 2015, all new public housing projects in Hong Kong must aim to attain the performance equivalent to Beam Plus Gold or above. Similarly, China has introduced a requirement for government-invested buildings, such as government offices, schools, hospitals and museums, to meet a minimum standard under their Green Building Evaluation Standard.

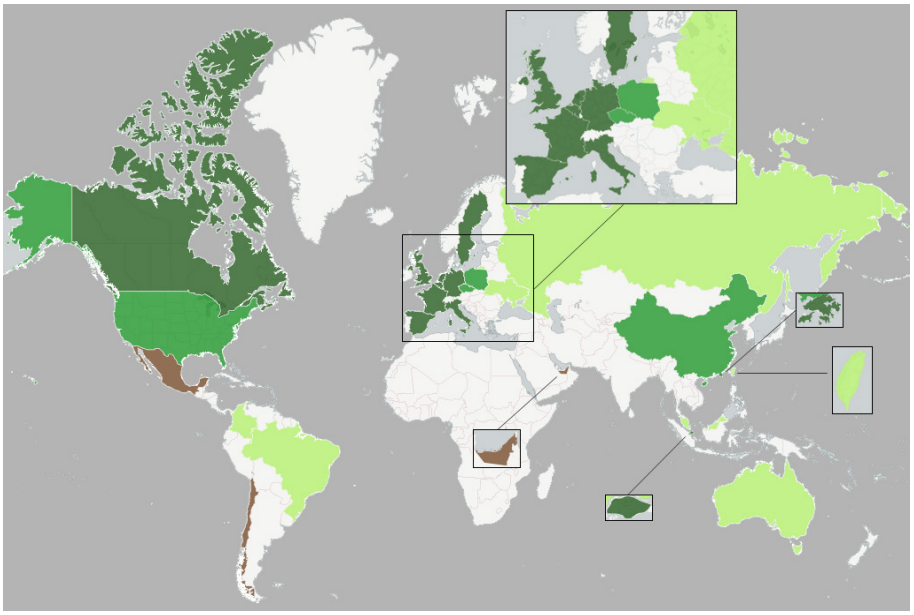
It is possible that other countries will follow Singapore’s lead and introduce mandatory frameworks, particularly with regard to commercial and public buildings. We would also expect greater voluntary actions as market participants further recognize the financial and reputational benefits of green certification.

Where certification remains optional, we may see financial incentives introduced to encourage voluntary uptake. In Malaysia, for example, developers that have their buildings certified already benefit from attractive tax breaks.

Finally, we anticipate countries will continue to develop even more granular certification standards applying to specific sectors of real estate. China has already adopted tailored green evaluation standards for factories, healthcare centers and other types of premises. Similarly, the Netherlands, which already uses four types of BREEAM certificates, is in the process of creating additional BREEAM certificates applicable to property types as specific as museums and parking garages.

Energy Performance Certificates and Minimum Energy Standards

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



1	Belgium (NEW)	Canada (=)	France (=)	Germany (=)	Hong Kong (↑)
	Italy (=)	Netherlands (=)	Singapore (=)	Spain (=)	Sweden (NEW)
	United Kingdom (=)				
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3	Australia (=)	Brazil (=)	Colombia (NEW)	Malaysia (NEW)	Russia (NEW)
	Taiwan (NEW)	Ukraine (NEW)			
4	Chile (NEW)	Mexico (=)	United Arab Emirates (=)		

Introduction

Under the Energy Performance of Buildings Directive 2002, which was amended in 2010, countries within the EU are required to have implemented green measures. This has implications for developers, occupiers, owners and managers of buildings. The broad directive mandates 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 landlord-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 inclined to invest in energy-saving measures that won’t deliver a payback up to 25 years.

While EPCs predict the energy performance of a building, they suffer from the perception of a substantial disparity between the building’s predicted and actual energy performance, which can vary considerably according to the operational characteristics of the occupant, the building’s use and its energy demands. By contrast, DECs are intended to display the actual energy usage of a building rather than the theoretical EPC rating. However, take-up of DECs is currently poor within the commercial sector.

In this section, we examine EU implementation of EPCs and DECs and their equivalents (if any) in other jurisdictions.

Survey

When deciding whether to take on a property, prospective purchasers and tenants require information on a building’s energy efficiency. EPCs, or their local equivalent, are a useful source of due diligence in this regard. They also encourage property owners to implement the recommended energy-saving measures.

In the majority of EU countries surveyed, an EPC must be produced at the time of the construction (and in some cases, major renovation), sale or letting of any property, whether residential or commercial.

Nonetheless, carve-outs from the requirement for an EPC generally exist across the EU for certain buildings including places of worship, dwellings occupied less than four months a year, listed buildings and buildings with a floor area of less than 50 square meters. Similarly, the Chinese energy performance labeling system only applies to large-scale public buildings.

In Australia, the obligation to disclose information concerning energy efficiency is much more restrictive. A Building Energy Efficiency Certificate (BEEC) need only be produced and disclosed on the sale or letting of office spaces of over 2,000 square meters.

In countries such as the USA and Mexico, certification is possible but remains entirely voluntary. In Hong Kong where EPCs are not used per se, it is possible for property owners, on a voluntary basis, to have their buildings certified as being compliant with Hong Kong’s Building Energy Codes. Additionally, compliance with the Building Energy Codes is mandatory for certain new building or newly retrofitted buildings since September 2012. In Brazil, meanwhile, in order to incentivize property owners to have their buildings certified as complying with the National Program for Energy Efficiency in Buildings, certain certificate holders, particularly owners of hotels and tourism facilities, are eligible to receive financing on favorable terms from the Brazilian Development Bank.

In contrast to Brazil's use of this "carrot," the UK is using a "stick" to encourage building owners to improve energy efficiency. From April 2018, it will be unlawful in the UK to let a residential or commercial property with an EPC rating in either of the lowest two bands of efficiency. This could impact 20 percent of non-domestic landlords who will have to make efficiency improvements before any letting can take place. Following the UK's lead, it will be interesting to see if other countries impose a prohibition on letting properties that do not meet certain levels of energy efficiency or impose punitive measures such as fines.

While a certificate does not have to be disclosed for a sale or letting in Singapore, it is necessary for all owners of commercial buildings to submit data on energy consumption to the Building & Construction Authority on an annual basis. Similarly, in Australia, mandatory annual reporting obligations are imposed on companies in control of corporate groups that emit greenhouse gases in excess of 50 ktCO2e, or consume more than 200 TJ of energy.

Some countries also require information on energy efficiency to be displayed on site at all times. Commercial property owners in Hong Kong must carry out an energy audit every 10 years and display the results at the building for public inspection. Likewise, in the Netherlands and Czech Republic, an EPC must be available for public inspection at certain buildings occupied by public authorities.

In Taiwan, there has been some progress in developing a mandatory certification and recommendations for energy performance improvements in new construction of public buildings, although the system is only voluntary in the private sector.

Significantly, our survey also reveals a diverse range of approaches to the methodology behind the certification of buildings. In summary, there is a split between those countries that calculate a building's energy performance rating on the basis of predicted energy use (i.e., Netherlands, Spain and Italy) and those that calculate the actual energy use of a building.

Aside from variations in the calculus of energy ratings, there is also no consensus in the way ratings are presented. The majority of countries use what is known as an "energy label." Energy labels incorporate a color-coded scale or a letter scale, which bears no relation to any real unit of energy. The scale used varies between countries, ranging from seven bands (i.e., 'A' to 'G' in France, the UK and the Brussels and Walloon Regions in Belgium). By contrast, EPCs in other countries (i.e., Germany, Italy and Poland) quote levels of actual or predicted energy consumption using real units of energy. The scale in Germany, for example, indicates the exact amount of kWh (m2-a) consumed by a building.

Besides EPCs, our questions also focused on minimum efficiency requirements for buildings. Our survey found that the vast majority of jurisdictions have implemented regulations prescribing minimum energy efficiency standards for the design and construction of new buildings. These include the Building Code of Australia, France's Réglementation Thermique 2012, the Czech Republic's Act on Energy Management and Canada's National Energy Code for Buildings. All prescribe minimum paths to energy efficiency by regulating aspects such as water consumption, ventilation, energy monitoring systems, building materials, airtightness, windows and other aspects of thermal regulation.

We have given particular credit where such standards are mandatory and apply to both residential and non-residential buildings (i.e., Germany's Regulation on Saving Energy in Buildings).

Conclusion

For the purposes of our heat map, EU countries requiring an EPC to be produced upon the construction, letting or sale of a building have been scored toward the higher end of the green scale. Conversely, we have marked down countries, such as the USA, where energy certification is entirely voluntary.

With regard to minimum energy standards in the construction of new buildings, again, the EU countries score well, having universally produced building codes aimed at creating energy-efficient buildings. Australia, Canada and the USA also score well in this regard. By contrast, Mexico justifies its place at the bottom of our green rankings on the basis that, none of its laws specifically promote the energy efficiency of buildings nor does it have any mandatory EPC requirements.

Of all the dark green countries, the UK scores the highest. While many countries require the production of an EPC, the UK has gone one step further by prohibiting the letting of buildings that fail to meet a minimum EPC rating. The upcoming regulations represent a fundamental shift in policy by introducing a “stick” with which to penalize landlords who fail to ensure the efficiency of their buildings. Previously, policy has predominantly relied on the “carrot” of government subsidies, renovation loans and elusive higher rental values for efficient buildings (so-called “green premiums”) to incentivize owners to carry out efficiency improvements.

Trends 2015 to 2016

Over the past 12 months, there has been limited progress in the development of EPCs and minimum energy standards across our cohort of countries.

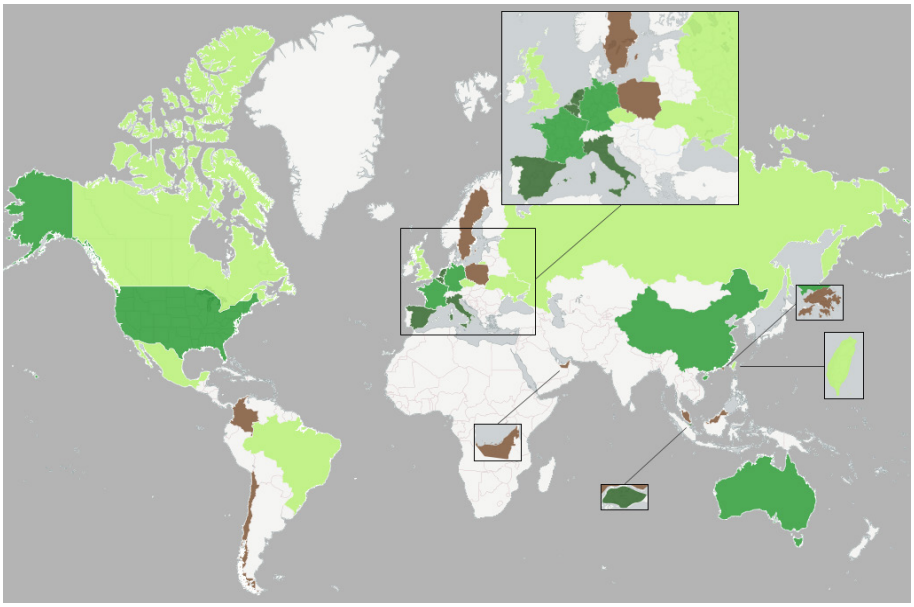
A notable exception to this general trend is Hong Kong, where all new government buildings are, as of October 2015, required to aim to outperform (by a specified percentage) the minimum standards set in Hong Kong’s Building Energy Codes.

The Czech Republic is the only country from our 2015 cohort to move rankings. Up until last year, proposals were in place to require an EPC to be produced for all buildings, both new and existing, by 2019. However, in 2015, this requirement was significantly scaled back to apply only to new buildings, major reconstructions and certain premises being sold or let. For this reason, the Czech Republic drops out of our top banding into Category 2.

Going forward, it will be interesting to see whether other countries would follow the UK’s lead and use EPCs as a marker against which to set minimum energy standards. Any countries that do so will invariably be awarded a higher ranking in next year’s Index.

Incentives for Green Retrofit

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



1	Belgium (NEW)	Italy (=)	Netherlands (=)	Singapore (=)	Spain (=)
2	Australia (↑)	China (=)	France (=)	Germany (=)	United States (=)
3	Brazil (=)	Canada (=)	Czech Republic (=)	Mexico (=)	Russia (NEW)
	Taiwan (NEW)	United Kingdom (↓)	Ukraine (NEW)		
4	Chile (NEW)	Colombia (NEW)	Hong Kong (=)	Malaysia (NEW)	Poland (NEW)
	Sweden (NEW)	United Arab Emirates (=)			

Introduction

Following closely on from the previous two sections, it is clear that many jurisdictions have measures that allow for an assessment of the sustainability of building construction and refurbishment and that enable a snap-shot assessment of a building's energy efficiency potential to be published and compared.

EPCs make specific recommendations for energy-efficient investments and predict how much a rating could improve and how much could be saved by implementing the recommendations.

However, the “split-incentive” dilemma discussed in the preceding section continues to be a significant barrier to investment in making the improvements.

In this section, we examine what measures jurisdictions are implementing to assist and encourage building owners and occupiers to make those investments and improve their energy efficiency ratings.

Survey

In addition to mandating minimum energy efficiency standards, countries are taking steps to provide property owners with assistance and finance to improve their existing buildings.

Where energy improvements are not mandated by legislation, high upfront costs and imperceptible short-term gains often discourage property owners from carrying out improvements. One solution would be to provide them with financing to reduce initial costs and spread the costs of carrying out improvements over the long term.

In this regard, numerous countries have used bank finance to incentivize energy improvements. In Germany, the state-owned KfW bank offers financing on favorable terms for the modernization of existing buildings. Likewise, the Brazilian Development Bank offers an “Environmental Line of Credit” to finance projects that promote the reduction of energy consumption.

The USA’s Property Assessed Clean Energy (PACE) initiative offers up to 100 percent financing for property owners to carry out energy-saving measures to both residential and commercial buildings. The key to this scheme is that the finance is repaid through property tax assessments over 20 years. The repayment obligation attaches to the property and not to the individual property owner. This spreads the cost of repayment over many years and allows the owner to transfer repayment obligations to a new owner upon selling the property.

The Czech Republic offers subsidies under its Green Savings Program for homeowners. The subsidies are to be used to insulate houses and install heating systems using renewable energy sources (i.e., low-emission biomass boilers). Subsidies under the program are, however, not yet available for non-residential buildings in the current round of the Program.

Subsidies are also available in Italy under the Conto Termico initiative. This provides subsidies for installing renewable heating and cooling systems as well as other energy-efficiency refurbishments. Under the initiative, EUR200 million is allocated each year for public entities with EUR700 million for private persons. As a guideline, for projects improving the efficiency of a building’s insulation, subsidies of up to 40 percent of the project costs can be granted. Similarly, the government in Taiwan provides subsidies in the private sector to cover the cost of retrofitting certain types of buildings including schools, welfare facilities and residential buildings. Under the scheme, a subsidy of 45 percent of the renovation costs up to a maximum of TWD3 million (USD100,000) may be granted.

In the Netherlands, homeowners are able to take out low-interest loans to fund energy-saving measures, such as double glazing or floor insulation. EUR400 million has also been made available for grants to landlords in the subsidized rental sector. An additional EUR300 million-fund is available to provide landlords, in both the subsidized and non-subsidized sectors, with low-interest loans to cover renovations that make major energy-efficiency improvements. Moreover, the Dutch government has committed itself to

improving the energy efficiency of 300,000 existing homes and other buildings each year.

France has also embarked on an ambitious renovation program of public owned buildings with a commitment to retrofit 400,000 existing dwellings and offices per year. An investment plan has also been devised to reduce the energy consumption of 800,000 social housing apartments.

Another subsidy comes in the form of Mexico's "This is your home" scheme under which, the government financially aids low-income homeowners in buying, building or remodeling houses on the condition that such houses are equipped with eco-technologies.

Tax breaks are also being used in various countries to encourage green investment. In Belgium, investments in the energy efficiency of existing buildings can constitute an allowable deduction for the purposes of calculating a company's or a private owner or user's taxable profits. Certain property taxes are also levied at a reduced rate where energy-efficient buildings are concerned.

In Singapore, developers that achieve a Green Mark Platinum rating for their new buildings or reconstruction projects will be awarded up to 2 percent additional gross floor area beyond the Master Plan's Gross Plot Ratio, which defines the permitted ratio of floor space to a development's total site area. This is subject to a cap of an additional 5,000 meters. Singapore also uses more traditional financial stimuli to encourage improvements such as government subsidies of up to 50 percent of the cost of carrying out energy audits.

Finally, Germany has implemented a unique scheme to overcome the landlord-tenant "split incentive" quandary. Where an apartment is let, a landlord is entitled to pass on to the tenant a proportion of the modernization costs. Currently, up to 11 percent of the costs may be passed on each year in the form of increased rent. While this gives much needed encouragement to landlords to carry out improvements, it has led to certain landlords flushing out old tenants by announcing expensive renovations only to then market the apartments at a higher rent without having made improvements.

Conclusion

Our survey reveals that many countries have taken impressive steps to incentivize building owners to improve energy efficiency.

Generally, improvements are funded either by bank financing on preferential terms or by government subsidies. Spain, Italy, Singapore and the Netherlands all justify a top ranking in our heat map in light of the impressive funds allocated to providing energy subsidies. Conversely, Hong Kong and the UAE along with six new entrants are bottom-ranked by virtue of not having any current policies or funding schemes in place to improve existing buildings.

We have given credit to those countries in the mid-green category for the scope of policies introduced to kick-start improvements and, in particular, for implementing innovative financing schemes, such as the USA's PACE which seeks to overcome the traditional problems associated with energy improvements, namely that of high upfront costs and perceived minimal short-term gains.

Meanwhile, those in the light-green category have taken steps to promote improvements, whether it be through small subsidy funds or training and

research programs. Nonetheless, the subsidy funds for such countries are relatively small and limited in application.

Trends 2015 to 2016

No overarching trend or policy direction emerges when reviewing the development of green financing initiatives among our cohort over the past 12 months.

2015 has not seen the introduction of any revolutionary retrofit policy and, as such, countries around the world continue to rely heavily on the provision of bank finance at favorable rates (i.e., Brazil, Germany) and/or government subsidies (i.e., Czech Republic, Netherlands) to encourage individuals and corporations to undertake potentially costly retrofit programs.

Having said that, we have seen the introduction of tax breaks to encourage green retrofits (Belgium) and a loosening of planning restrictions in terms of permitted floor area where developers construct or redevelop a building to meet the highest green standards (Singapore).

We can surmise from this that government policy will best encourage green improvements by adopting a combination of approaches, tackling all aspects of the real estate sector.

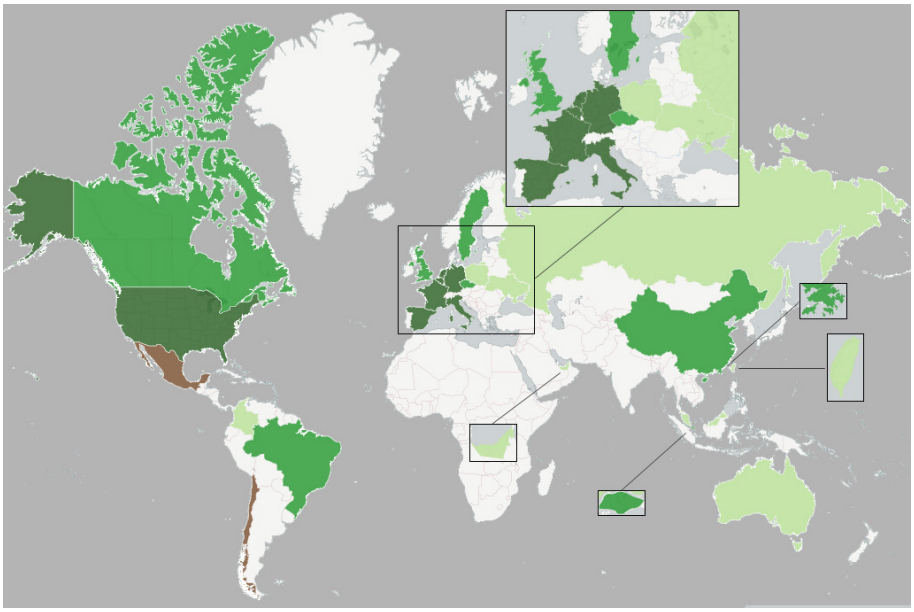
The most significant movers in our rankings are Australia and the UK. We have credited Australia for establishing its Emissions Reduction Fund (ERF). This was originally established in late 2014, with a budget of AUD2.55 billion, but in 2015, an additional AUD2.4 billion was committed to the fund. The ERF provides an incentive for a range of organizations and individuals to reduce their emissions. Participants in the scheme are credited with one “Australian Carbon Credit Unit” (ACCU) for each tonne of CO2 avoided by a project. ACCUs can then be sold to generate income, either to the government or in the secondary market through a reverse auction.

By contrast, the UK has fallen in our rankings on account of its flagship Green Deal scheme being scrapped. The Green Deal was launched in 2013, to provide householders with cheap long-term loans to fund energy-efficiency improvements such as insulation, double glazing and solar panels. The loan, including the interest, would be repaid through charges added to the owner’s utility bill - the idea being that the energy cost savings would offset the costs of the loan over time. However, uptake was slow and only GBP114 million was lent under the scheme, which was terminated in July 2015. The government has no plans to introduce a successor to the scheme.

Going forward, we expect additional resources to be allocated to the financing and subsidization of green retrofit programs. Countries that ring-fence substantial resources for these purposes will be credited with a higher ranking in the next year’s edition of our Index. We also hope to see more schemes, such as the USA’s PACE and the UK’s now defunct Green Deal, that target home improvements by providing cheap, long-term credit and thereby eliminating the high upfront costs associated with green retrofits.

CO2 and Energy Targets

Do national targets exist for CO2 reduction and/or energy use reduction from buildings?



1 Belgium (NEW) · France (=) · Germany (=) · Italy (=) · Netherlands (=) · Spain (=) · United States (=)

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3 Australia (=) · Colombia (NEW) · Malaysia (NEW) · Poland (NEW) · Russia (NEW) · Taiwan (NEW) · Ukraine (NEW) · United Arab Emirates (=)

4 Chile (NEW) · Mexico (=)

Introduction

The benefits of energy efficiency are starkly economic as well as environmental. By investing in energy efficiency, the global community can help counter and reduce the effect of energy cost volatility, as well as increase competitiveness, reduce overall energy demand and increase energy security.

The EU has committed its members to a set of binding targets to achieve the goals set out in the EU's Roadmap 2050. It calls for an overall reduction in greenhouse gas emissions to 80 percent below 1990 levels by 2050. Milestones of reductions in the order of 40 percent by 2030, and 60 percent by 2040, are

being kick-started by legislation (the “Energy Efficiency Directives”) to ensure that countries comply with the EU’s “20-20-20” targets by 2020.

These targets comprise: (i) a 20 percent reduction in greenhouse gas emissions from 1990 levels; a 20 percent increase in the share of EU energy consumption produced from renewable resources and (iii) a 20 percent improvement in the EU’s energy efficiency. Provided other major economies commit to similar measures, the EU is also offering to improve the targeted reduction in emissions to 30 percent by 2020.

With buildings accounting for about 40 percent of EU energy consumption and 20 percent of its water usage, the real estate sector has a fundamental role to play in achieving these targets. In this section, we examine how EU member states are implementing a national measure that meets their obligations and how other non-EU jurisdictions are addressing the same issues. We also compare the relative merits of these approaches and consider the impact that the Paris Agreement, which was concluded at the 2015 Paris climate change conference (COP21), may have on countries’ energy and emissions targets.

Survey

Our study reveals that the vast majority of countries have adopted some form of target for reducing greenhouse gas (GHG) emissions and/or energy consumption. To achieve these targets, a broad range of policies and regulations have been implemented.

In 2008, the UK adopted the world’s first legally binding climate change target, aiming to reduce GHG emissions by 37 percent (against 1990 levels) by 2020, rising to 80 percent by 2050. Italy and Belgium are likewise targeting an 80 percent emissions reduction by 2050. Germany, however, is the most ambitious, having set a target of reducing GHG emissions by 80-95 percent (against 1990 levels) by 2050.

Overall, the trend is toward the adoption of voluntary rather than legally binding emissions targets. This is particularly so among countries not bound by the emission reduction obligations of the Kyoto Protocol (known as “non-annex 1 countries”). Hong Kong, for example, has pledged voluntarily to reduce carbon intensity by 50-60 percent by 2030 (against 2005 levels). Over the same timescale, the Hong Kong Green Building Council has launched a campaign to cut the electricity consumption of buildings by 30 percent. Meanwhile, in November 2014, the USA pledged to achieve a 26-28 percent cut in carbon emissions by 2025. Likewise, Brazil has voluntarily committed itself to reducing CO2 emissions by 36-39 percent by 2020, although this is most likely to be achieved by reducing deforestation and expanding renewable energy sources rather than significantly improving its building stock. At a municipal level, Paraíba, São Paulo and Rio de Janeiro have followed the federal government’s lead and adopted voluntary GHG targets.

In Australia, the Carbon Pricing Mechanism had the express object of meeting Australia’s long-term target of reducing emissions by 80 percent below 2000 levels by 2050. However, since that legislation was repealed in 2014, Australia no longer has a long-term legislative target, but remains committed to achieving its pledged Kyoto target for 2020 of a 5 percent reduction below 2000 levels.

In general, it is clear that countries belonging to the EU have made the greatest progress in setting targets, implementing policies and achieving tangible results. Indeed, the EU as a whole is on track to reduce its emissions by 20 percent by 2020 in accordance with the Kyoto Protocol.

Many countries are targeting to reduced CO2 emissions by a specified percentage as against recorded levels from a particular base year. By contrast,

China has pledged to reduce its emissions 'intensity,' being the amount of CO2 produced per unit of GDP. In June 2015, China pledged to lower its carbon intensity by 60-65 percent by 2030, as against 2005 levels. Likewise, Hong Kong's aim of reducing emissions by 50-60 percent is couched in terms of carbon intensity. Furthermore, in May 2015, Hong Kong announced that it would be targeting a reduction in energy intensity (i.e., energy supply per unit of GDP) of 40 percent by 2025, (with 2005 as the base year), while Singapore is targeting a 35 percent reduction in energy intensity by 2030. Critics argue that 'intensity' targets are inherently flawed because, if GDP grows faster than how intensity declines, such targets can be met notwithstanding that emissions are increasing in real terms.

The importance of the real estate sector in tackling CO2 emissions varies between countries depending on the extent and make-up of the respective building stock. In Australia, for instance, buildings account for only 20 percent of GHG emissions. At the other end of the scale is Hong Kong, where 60 percent of emissions and 90 percent of electricity consumption are derived from buildings. Clearly, in countries such as Hong Kong, reduction of emissions will be possible only through policies aimed at improving the energy efficiency of its buildings.

In this regard, our survey reveals a number of methods being used to tackle GHGs in the real estate sector. Certain governments, for example, are exploiting planning and building certification regimes to promote the development of a green building stock. In France, every local planning regime enacted at a city level must promote energy performance and reduction of GHG emissions. In the Czech Republic, new buildings will not be granted a building permit without a statement by the State Energy Inspection confirming the fulfilment of certain energy-efficiency requirements.

It is also apparent from our survey that most real estate energy policies apply only to newly constructed or refurbished buildings. In Italy and Spain, a 'zero carbon' standard will apply to all new buildings beginning 2021. In Italy, the standard will be applied earlier to all new buildings occupied by public entities, such as schools and hospitals, beginning 2019. Germany is also committed to ensuring that its housing stock is zero carbon by 2050. The USA, on the other hand, has established a goal of achieving net zero energy use in all commercial buildings by 2050. This target is notable as it applies to existing as well as newly constructed commercial buildings.

Improving the efficiency of existing buildings invariably requires either large government subsidies or burdensome obligations on property owners. Developers of new buildings are arguably better placed to comply with energy regulations. That might explain why the focus to date has primarily been on the energy-efficiency of new builds. However, given that new builds make up only a small proportion of the world's building stock, more needs to be done to overcome the difficulties of regulating and improving the efficiency of existing buildings.

Conclusion

For the purposes of our heat map, we have given credit to countries, such as Germany, Italy and the UK, that have adopted the most ambitious and legally binding emissions targets. We also have credited various EU countries, including France and the Netherlands, for achievements already made in reducing emissions.

Those countries in the mid-green category are there largely by virtue of having implemented some form of emissions target, although, such targets are generally not legally binding.

In assessing a country's "greenness," we have also given credit where regulations aimed at reducing emissions apply to both new and existing

buildings and both residential and commercial properties.

Finally, Australia is ranked toward the lower end of our scale by virtue of its repeal of the Carbon Pricing Mechanism and its goal of reducing emissions by just 5 percent below 2000 levels by 2020. The bottom-ranked countries, namely Mexico, Chile, Russia and Ukraine, score poorly on the basis of not having adopted any mandatory or voluntary emissions or energy-consumption targets.

Trends 2015 to 2016

Since the last edition of our Index, various countries have made good progress toward meeting existing carbon and energy consumption targets. In November 2015, the Hong Kong government reported that carbon intensity had dropped 19 percent (as against 2005 levels) and that it expects to reach a reduction of around 50 percent by 2020. Similarly, Spain reported that it is on course to cut energy consumption by 26.4 percent in 2020, well above the 20 percent target set for the EU as a whole. China also announced that its carbon intensity in 2014, was 33.8 percent lower than 2005 levels.

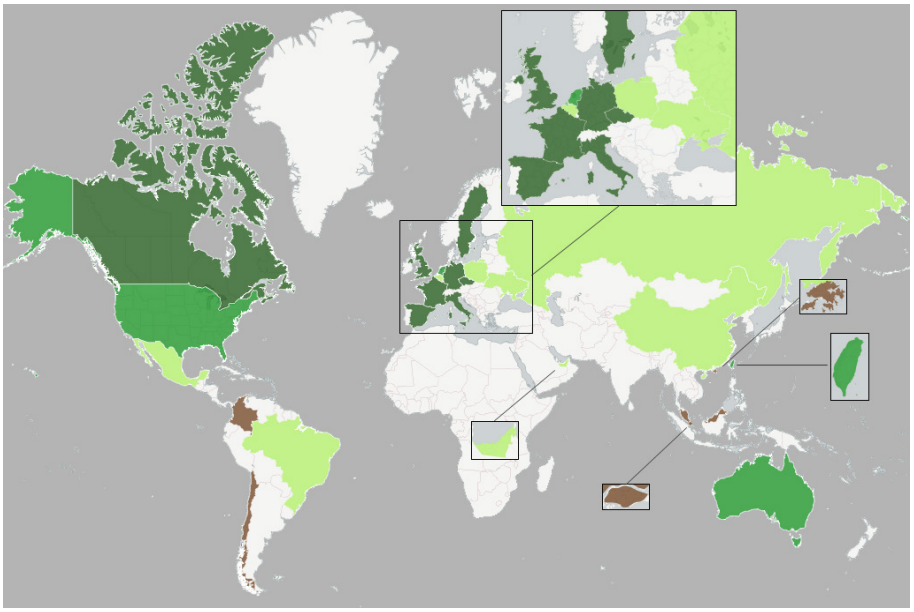
While no notable progress was made in certain countries, particularly in Chile and the UAE where there is a total absence of any form of CO2 or energy-consumption target, the only country that has taken a backward step in terms of policy is the UK. In July 2015, after a decade in the planning, the UK government announced that it was axing ‘zero carbon’ standards for new builds, which were due to apply from 2019, in an attempt to reduce red tape for developers. It is not clear where this leaves the UK in fulfilling its requirements under the Energy Efficiency Directives to move toward nearly zero energy buildings by 2020.

By contrast, France has been the most ambitious country in terms of setting new energy targets. In August 2015, France introduced new targets to cut greenhouse gas emissions by 40 percent by 2030, (against 1990 levels) and total energy consumption by 50 percent by 2050 (against 2012 levels).

We expect to see an acceleration of the green agenda over the next 12 months as the ramifications of the 2015 Paris climate change conference (COP21) become clear. At COP21, the Paris Agreement was concluded, which aims to set a goal of limiting global warming to “well below” 2 degrees Celsius above pre-industrial levels. The agreement is not yet fully legally binding and will only become so if ratified by at least 55 countries, which, together, produce at least 55 percent of global greenhouse emissions. Each country that ratifies the agreement will be required to set a target for emission reduction. Although countries will be free to set the level of their own targets, it is hoped that the Paris Agreement will provide the stimulus and framework for a number of our surveyed countries to adopt new targets or ratchet up the ambition of their existing targets.

Renewable Energy

Are there regulations that require a percentage of energy consumption to come from renewable sources?



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Chile (NEW) Colombia (NEW) Hong Kong (=) Malaysia (NEW) Singapore (=)

Introduction

By exploiting renewable energy, nations can become less reliant on each other and less susceptible to volatility in the global energy market. Renewable energies also provide opportunities for investment in new industries and technologies.

The EU has estimated that meeting a 20 percent renewable energy target by 2020, could create 417,000 more jobs in the sustainability sector. To help create this economic opportunity, the EU's Renewable Energy Directive has set targets for member states to raise the share of renewable energy in their energy

consumption by 2020. Individual targets will reflect the nations' different starting points and potential for renewables production.

Geography and climate impact each country's potential for exploiting traditional forms of renewable energy such as wind, solar and water. However, as technologies continue to improve other forms of renewable power generation (e.g., biomass boilers, air source and ground source heat pumps, biogas heat and micro-generation), it will be interesting to investigate how countries, both inside and outside the EU, propose to develop these new and more traditional technologies to meet the renewable energy targets.

Survey

The results of our study reveal that more than three-quarters of the jurisdictions surveyed have implemented some form of mandatory or advisory target for renewable energies.

The UK, for example, has set itself the target of having 15 percent of energy consumption derive from renewable sources by 2020. The Czech Republic and the Netherlands (both 14 percent), China (15 percent), Italy (17 percent), Spain (20.8 percent) and France (23 percent) have set comparable targets. Others, on the other hand, have adopted much more modest targets for 2020, such as Abu Dhabi, which is targeting 7 percent; Columbia, 6.5 percent and Russia, 4.5 percent.

Notably, Sweden had set a goal of having 50 percent of its total energy consumption be derived from renewable energies by 2020. However, this target was achieved in 2012, eight years ahead of schedule.

Germany appears to have set the most ambitious target with the aim of having 40-45 percent of its energy consumption be derived from renewable sources by 2025, even increasing it to 55-60 percent by 2035 and 80 percent by 2050. Most notably, the German state of Hesse has set an even more ambitious goal of having 100 percent of its energy consumption derive from renewable sources by 2050. Mexico has also shown an impressive level of ambition by adopting mandatory targets for renewable energy of 25 percent by 2018, 30 percent by 2021 and 35 percent by 2024.

While most countries have set percentage-based targets, Australia has set an absolute target to increase renewable energy consumption from 9,000 GWh annually in 2009, to 33,850 GWh by 2020, about 20 percent of its electricity production.

Other countries, including Brazil, Hong Kong and Singapore, have no targets or regulations at a national level requiring energy consumption to come from renewable sources.

In the case of Hong Kong and Singapore, geographical factors limit potential exploitation of renewable opportunities. As such, the energy needs of these countries are met predominantly by fossil fuels and natural gas imports.

Nonetheless, the absence of a target is by no means indicative of a country lacking green initiatives. Brazil, for example, has no energy target, yet the majority of its power is derived from hydroelectric plants, a source of energy generally accepted as being "green." Moreover, one-third of its energy is produced by thermoelectric plants. However, significantly for the purposes of our heat map, there are no laws imposing an obligation to adopt renewable sources. We have taken the view that countries with no targets for renewable energy should be categorized toward the lower end of the "green" scale.

Our survey also reveals a split between countries adopting targets and policies at a national level and those at a more localized level. While most of the European countries surveyed have set national targets for 2020, the USA favors state-based targets known as Renewable Portfolio Standards (RPS). These

regulations require or encourage electricity producers within a given jurisdiction to supply a specific minimum share of their electricity from renewable sources. For example, the RPS requires California's electricity suppliers to derive 33 percent of their retail sales from eligible renewable energy resources by 2020. To date, RPS policies have not been applied in a uniform manner and exist in only around 30 US states. Similarly, Canada uses province-based RPSs rather than national targets.

For the purposes of our heat map, we have assigned colors based not only on the existence (and indeed ambitiousness) of a country's target for renewables, but also on the extent to which regulations will achieve the target.

Such policies include the introduction of feed-in tariffs for producers of energy from renewable sources in Germany, Canada, the Czech Republic and the UK. Other countries require certain buildings to satisfy a minimum level of their energy demand from renewable sources, although such regulations generally only apply to newly constructed or refurbished buildings. A number of the countries surveyed, including Germany and Brazil, have implemented policies regulating the energy use of state buildings in order to serve as an example for private building owners. However, given the comparatively small proportion of state buildings to private buildings, it is debatable how effective such policies will be.

Furthermore, the results of our survey highlight the difficulty in evaluating the relative "greenness" of a country based solely on its target (if any) for renewable energy.

First, when comparing targets, it is often not possible to compare like with like. As mentioned, certain countries have no energy targets, while in others, targets are set at a state rather than national level.

Furthermore, in assessing a country's green credentials, targets give no indication of historic levels of energy consumption. While a 20 percent target might appear ambitious, in reality this depends on the existing level of a country's renewable energy consumption. As such, in categorizing the "greenness" of a country for our heat map, we have attempted to take into account the existing level of renewable energy use.

Similarly, meeting an energy target is not necessarily indicative of a reduction in energy consumption. Conceivably, a country could meet percentage targets while at the same time increasing its consumption of non-renewables. This would be the case where the consumption of non-renewables increases, albeit at a slower rate than the consumption of renewable energies.

Finally, our survey reveals a range of policies being used to promote the use of renewable energy in the building sector. In a number of countries, including the UK, Sweden, Canada and the Czech Republic, feed-in tariffs and/or tax breaks are available to incentivize the small-scale production of electricity from renewable sources such as biomass boilers, wind and solar power.

In Belgium, building permit requests for new buildings over a specified floor area (generally 1,000 m^2) must be accompanied by a technical and economic feasibility study concerning the use of high-efficiency alternative energy systems. Similarly, in the Czech Republic, an energy assessment must be prepared to determine the feasibility of using renewable energy systems when a building with a consumption level of over 200 kW is constructed or undergoes major reconstruction.

Conclusion

In light of the above analytical difficulties, this summary of renewable energy targets is intended to promote and evoke discussion on the issues rather than present a definitive scientific analysis of the survey data. It highlights the need to critically analyze environmental targets and shift focus on to the extent and stringency of regulations implemented to boost the adoption of renewable energies.

The conclusion is that setting targets might show a country's recognition of the importance of green issues and indicate its intention to improve its environmental credentials. However, it is only by implementing appropriate policies that such targets can be met.

Trends 2015 to 2016

Certain countries have made significant strides toward increasing their use of renewable energies over the past 12 months.

Canada is the standout country this year in terms of progress. In April 2015, Ontario became the first jurisdiction in North America to fully eliminate coal-fire power generation, while approximately 90 percent of Quebec's electricity needs are now met by renewable hydroelectric power. When one also considers that investments in clean power generation reached CAD10.7 billion in 2014, (an 88 percent increase from 2013), it is clear that Canada justifies its promotion to Category 1 in our rankings.

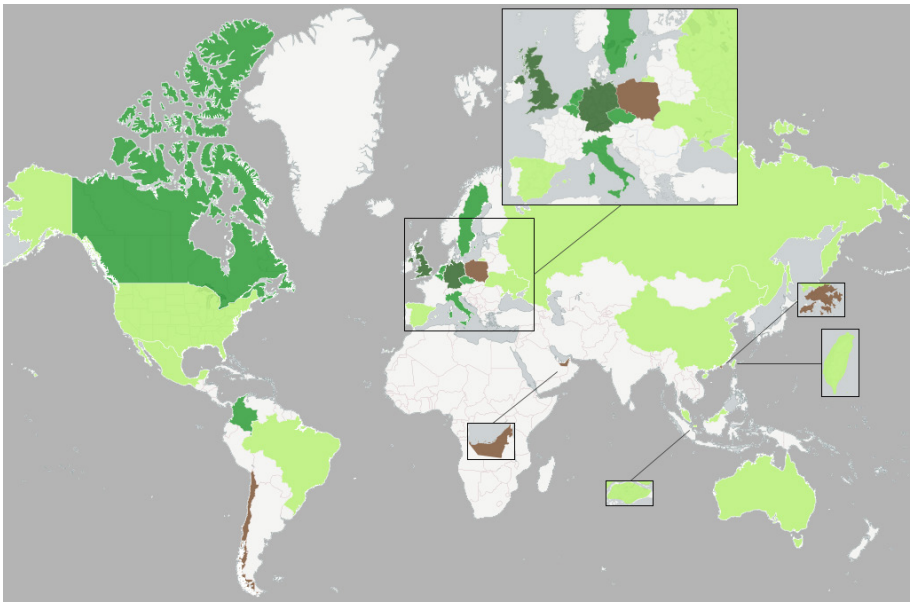
The only other country to gain a promotion in this year's Index is Mexico. This is on the basis that the Mexican government recently approved the "Energy Transition Law," which sets a mandatory target of achieving 25 percent of power generation from clean sources by 2018, 30 percent by 2021 and then 35 percent by 2024. This represents a significant step for a country that previously had no target for renewables.

France has also strengthened its commitment to renewables. In August 2015, France adopted a new target to produce 40 percent of all electricity from renewables by 2030. It is also aiming to have 32 percent of all final energy consumption be derived from renewable sources by 2030.

Conversely, Australia is the only country to suffer a demotion. In the previous 12 months, Australia scaled back its renewable energy target for 2020 from 45,000 GWh per year to just 33,850 GWh. In a year that has seen countries ratchet up the scale of their ambitions for renewables, we consider this a noticeable retreat for a country that achieved a top ranking in last year's Index.

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?



1	Germany (=)	United Kingdom (=)			
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Introduction

If national and local governments are to achieve the very ambitious CO2 reduction targets that have been set - or they themselves have set - then it is clear that policymakers must be prepared to become part of the solution even if, in many cases, it will be more unpopular.

This means that we can expect to see green regulations proliferating over the next few years as governments strive to find the right balance of carrot-(e.g., tax relief 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 as well as occupation and use of real

estate. As buildings account for around 40 percent of the EU's energy usage, it seems that the real estate sector is likely to bear the brunt of new regulations.

In this section, we examine how policymakers in our chosen jurisdictions are tackling the issue. We also try to analyze whether there is any cross-border consensus on an effective regulatory framework.

Survey

The EU Emissions Trading Scheme ("EU ETS") is 10 years old and has been met with mixed results. Its relevance to real estate is its connection to large installations with a net heat supply in excess of 20MW, which includes power stations, refineries and large manufacturing plants within the EU. The EU ETS is mandatory for member states, but similar schemes have not been successfully replicated in any other jurisdictions within our survey and, therefore, the EU jurisdictions are given credit for this in our survey.

Australia's efforts to initiate a similar system have been hampered by frequent government changes since 2007. Policies in the US and Canada, such as the Regional Greenhouse Gas Initiative, have to date been local and state-based. Nonetheless, changes in provincial and federal governments in Canada in 2015, have promised significant enhancements, including: (i) an anticipated doubling of the price of carbon emissions in Alberta; (ii) a promised new cap and trade for carbon in Ontario from 2017, and (iii) further pledges from the new national government in relation to carbon pricing and emissions reductions. It will be interesting to keep an eye on whether these policy commitments are followed through.

In the Czech Republic, up to 100 percent of the earnings from state auctions under the EU ETS can be re-invested in green innovations (previously in 2014, this figure was capped at 50 percent), subject, generally speaking, to a cap of CZK12 billion per year).

Under the "Effort Sharing Decision" (ESD), all EU member states have assumed binding annual targets to reduce emissions from outside of the EU ETS sectors, such as large private- and public-sector organizations. Through its Carbon Reduction Commitment Energy Efficiency Scheme (CRC), the UK has a standout policy linked directly to the sectors targeted by the ESD, namely shopping centers, office buildings, hospitals and universities. Not without its detractors, it is essentially a carbon tax on energy consumption for the businesses concerned.

Less complex "carbon taxes" on consumption are found in France, Spain and Sweden. In Sweden, in particular, CO2 emissions are directly taxed. In Germany, the "Renewable Energy Contribution" imposes a surcharge on the consumption of energy from non-renewable sources to finance feed-in tariffs for the generation of energy from renewable resources.

Broadly speaking, the majority of jurisdictions, including new entrants to the Index such as Russia, have sought either to: (i) subsidize investments in green or energy-saving technologies and equipment or (ii) allow the actual cost of investments to be deductible against income or corporate taxes.

In the Netherlands, for example, subsidies of about 10 percent of the investment are available under schemes that include investments in approved assets, energy research and energy-related advice. In the UK, enhanced allowances against taxable profits are made for capital investments in qualifying expenditures, including energy-efficient boilers and air-conditioning. The deductible amount varies considerably between jurisdictions as do the types of allowable expenditures. For instance, in Italy, up to 65 percent was deductible for costs incurred before 31 December 2015, but this was reduced to 36 percent from 1 January 2016. In France, only 30 percent is deductible and only improvements to residential premises qualify as allowable expenditures. Tax

credits have also come and gone in certain US states while in other jurisdictions, such as the UAE, no equivalent measures exist.

Certain tax breaks not directly correlated with the value of the green investments are available in some jurisdictions. Within our survey, only France has introduced a reduced VAT rate of 5.5 percent for qualifying renovation works in residential property, and both Ukraine and Columbia treat qualifying energy reduction equipment as VAT exempt. Conversely, Belgium has taken the opposite approach and in 2015, annulated the reduced VAT rate of 6% on energy supplied to households, consequentially raising the rate again to 6%. This public budget measure might also serve as a hard stimulus for energy efficiency improvements.

In some jurisdictions, the tax break is connected with locally collected business rates. In Brazil, there are municipality-based tax reliefs for certain low-tech green investments, while in Mexico, local property tax discounts are given for qualifying investments. In Colombia, an income tax relief of up to 20 percent is made available for qualifying investments, in addition to other tax breaks for investments in renewable energy resources.

In an attempt to encourage financial institutions to finance green renovations in the residential sector, the French government temporarily offered an income tax credit for institutions providing private individuals with interest-free loans for green renovations. However, in December 2015, this incentive was removed. In its place, in August 2015, energy transition tax credits equal to 30 percent of the cost of qualifying works were introduced for individuals. This tax credit is capped at EUR8,000 per person. In addition, a new zero-interest eco-loan is being made available to finance qualifying energy refurbishments.

Similarly, in Germany, a much-criticized state support comes from the state-owned KfW Bank, which offers loans for increasing thermal insulation in buildings, with interest as low as 1 percent. Mexico also has city-specific programs for financing at preferential rates.

Other jurisdictions are demonstrating willingness to regulate for green taxes and tax reliefs. In Singapore, action is being taken to establish a multi-agency task force to examine possible strategies. At the moment, these are translating into a broad range of incentives for energy data collection and energy management plans rather than financial incentives. In Taiwan, there are nascent proposals for taxes on energy consumption in buildings and tax reliefs for energy-efficient renovations to private dwellings, but these are not yet in force.

These plans are more mature in other jurisdictions, such as: (i) Malaysia, where there are regulations for the efficient management of high energy-use installations and (ii) the Brussels region in Belgium, where all public and private bodies with large real estate portfolios are encouraged to develop and implement Plans for Local Action for the Use of Energy (“PLAGE”), which promotes an “energy culture involving all employees, suppliers, clients” and is coordinated by an appointed Energy Coordinator. It is proposed that this become mandatory for the largest landowners in the near future.

Sweden’s approach has been to provide incentives for the production of renewable energy by way of a tax deduction of EUR0.06 per KWh produced.

Conclusion

Our survey results demonstrate that there is a wide variety of solutions employed by the jurisdictions in our cohort. The general trend is toward the use of “carrot” tax reliefs and low-interest loans for green investment, although there are examples of the clear use of “sticks” in the form of carbon taxes such as the UK CRC. Spain and a number of the new entrants to the Index this year, including Colombia, Ukraine and Sweden, have joined the club of countries to have implemented some tax-oriented measures. There are also some less surprising results, with the UAE showing no taxes on energy consumption at all. Once again, the US scores less well due to the difficulties in the introduction of federal legislation. Similarly, other jurisdictions, such as Australia, have tried and failed to introduce market-driven emissions trading schemes, the like of which form the cornerstone of EU policies.

In our heat map, we have therefore given credit for: (i) the breadth and variety of regulations in jurisdictions such as France and Germany, and (ii) the innovation in the UK with its CRC. We have given little or no credit to those jurisdictions where there is little or no regulation (i.e., UAE, Poland, Chile and Hong Kong), although we have looked favorably upon those that are bringing appropriate measures onto the legislative agenda, such as Singapore, Malaysia and Taiwan.

Those in the mid-green category are largely there by virtue of their mandatory participation in the EU ETS but also for showing some individual innovation.

Those in the light-green category generally have some small-scale or local- or state-based regulation but nothing of significant national application or innovation.

The trend is likely to be toward more regulation and, as nations review the success of tax breaks and subsidies in producing results in cutting emissions, we are likely to see a trend toward more “stick” regulation in the form of carbon taxes as time runs short.

Trends 2015 to 2016

The only country to merit a category upgrade in this edition of the Index is Canada. It is notable that a change of government elected on a green mandate is the stimulus for significant change. This brings about encouragement that this may signify a shift in the attitude of the electorate toward sustainability and carbon emissions in particular.

We anticipate that sustainability issues, particularly in view of the COP21 outcomes, will feature more prominently in manifesto commitments in future elections, and this, as we have seen in Canada, can be a significant driver for change.

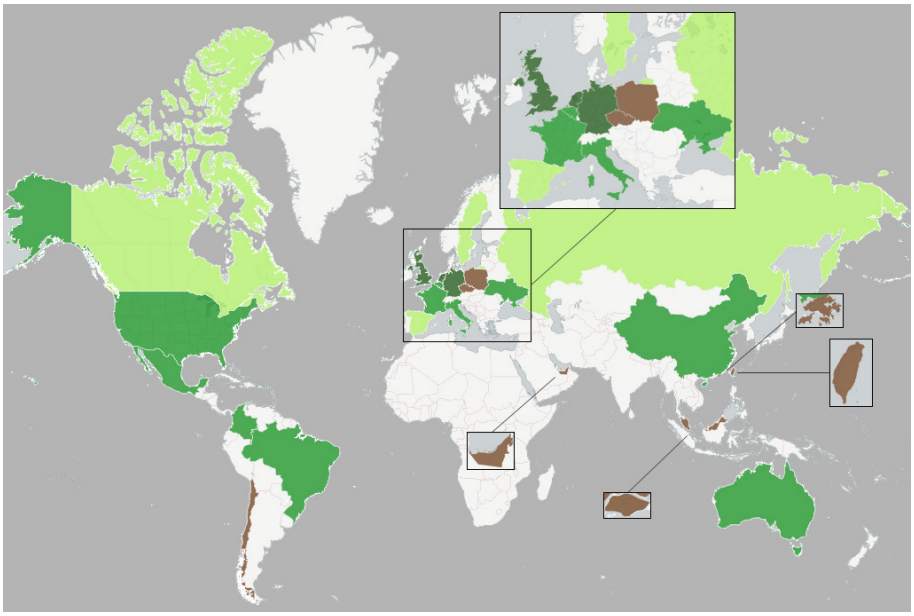
On the other hand, France has suffered a downgrade in category for this criterion on the basis that it has: (i) removed the solar energy improvements tax relief and (ii) replaced the income tax credit for institutions providing interest-free loans for green renovations with a capped personal tax relief for energy improvements.

A number of new entrants to the Index this year, such as Malaysia and Belgium, have taken the approach of regulating for more efficient building management, with some apparent good degree of success.

Others within the new cohort of jurisdictions have not, however, reported significant development in this area and, consequently, have been placed in the lowest two categories.

Financing

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



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Introduction

Financing for real estate energy-efficiency projects and investments have historically been hampered by a number of structural constraints.

Typically, occupiers on short-term leases are not incentivized to initiate energy-efficiency projects where the payback period is longer than a typical lease term of three to five years. When combined with the traditionally high upfront capital costs, legal and planning fees and business disruption, it is perhaps not surprising that the appetite for these projects generally remains at the smaller end of the scale (e.g., energy-efficient lighting and waste-recycling schemes).

Larger scale measures with long-term payback periods (and potentially greater efficiencies), such as ground source heat pumps, will adversely affect balance sheets, and this might discourage corporate decision makers from taking the plunge. In addition, the traditionally high cost of asset financing for energy-efficiency projects and the effect of the global financial crisis of 2008, have meant that corporations have been unwilling to load up with additional debt for energy-efficiency investments.

In this section, we take a look at what financing initiatives are available around the world for green projects, and we assess how our chosen jurisdictions measure up in this important and growing sector.

Survey

The approach taken by our cohort of jurisdictions ranges from unrestrained state-backed loans for green financing through public-owned banks that operate like commercial banks to state-backed support for commercial bank initiatives and onwards through commercial banks' own initiatives to local grants and private finance initiatives.

State-level green financing initiatives are now well-established within the US, Europe and Australia, although the depth of those commitments and their popularity remains widely divergent.

Common to several jurisdictions are state-owned and state-managed funds for investment in energy-efficient projects ranging from major infrastructure development and new building construction, and through renovation projects to retro-fitting at a small scale.

For example, unconstrained by European style state-aid concerns, the US Department of Energy's Office of Energy Efficiency and Renewable Energy offers businesses, industry and universities financial assistance for the development of renewable energy and energy-efficiency technologies.

At the US state level, initial capital funds, known as Energy Revolving Loan Funds (RLFs), are used to attract private partners to invest in long-term, low-interest financing for projects that include retrofitting both commercial and residential buildings. As of July 2013, these had funded 79 energy loan programs across 44 states, representing a total of US2 billion in available financing.

In Colombia, the Territorial Development Financial Entity (FINDETER) combines state and international aid from the Inter-American Development Bank (and other international organizations) for sustainable infrastructure investment projects. In addition, a bill is being proposed, which would facilitate public financing for sustainable homes acquisition and refurbishment.

In Italy, EUR80 million of state funding is available for SMEs investing in energy-efficiency projects, and an additional EUR120 million is now available for enterprises of all sizes investing in energy-efficient projects in the south of the country.

Likewise in Australia, state funding is available via the Clean Energy Finance Corporation (CEFC), which is funded with AUD10 billion to invest over five years in two separate streams - first, a renewable energy stream and second, an energy efficiency stream. In 2013, the CEFC provided AUD100 million in finance for commercial property upgrades that reduced buildings' energy consumption. An additional AUD125 million was invested by the CEFC in 2014-2015, into a "Sustainable Office Trust" fund, targeting older office stock to upgrade energy performance in order to revitalize and reposition them in the market. The future of the CEFC now looks to be more stable under the new liberal government.

Building on these well-established examples, the UK and German governments have established the world's first state-controlled green banks. In Germany, the KfW Forderbank grants low-interest loans to companies and individuals operating in: (i) renewable energy projects, with loans up to EUR25 million and (ii) energy-efficient construction and renovation, with smaller loans of up to EUR75,000 only.

The UK Green Investment Bank was established in 2012, with an initial taxpayer funding of GBP3.8 billion for investment, on a commercial basis, in partnership with the private sector. 80 percent of its capital must be invested in certain priority sectors, including offshore wind farms and energy from waste. As of last year, the bank had invested in a total of 27 projects, committing GBP1.3 billion of its own funds and attracting an additional GBP3 of private investment for every GBP1 of its own money. Although the bank is starting to look to finance smaller deals down to around GBP500,000, such as for biomass boilers, it has generally been focused on larger deals worth at least GBP30 million. In June 2015, the UK government announced plans to sell up to 70 percent of its stake in the UK Green Investment Bank to the private sector, leading to concerns about potential relaxation of the sustainable lending criteria.

France is following suit with its recently established Banque Publique d'Investissement, which is permitted, notably, to finance renovation of existing official buildings.

The Netherlands' "Scheme for Green Projects" is a state-sponsored scheme, whereby commercial banks are encouraged to offer credit at lower interest rates to investors who plan to invest in green real estate projects in return for additional tax benefits for "green" savers and investors. The scope of available loans is directly related to the energy savings that are anticipated with up to EUR100,000 available for the most efficient renovations in residential property and EUR600 per square meter of floor area for non-residential buildings.

In Ukraine, numerous statewide and local loan programs are available for investing in energy-efficient facilities, together with support from the International Finance Corporation to create effective legal and institutional opportunities for obtaining financing for the energy-efficient modernization of multi-apartment buildings through the grant of preferential loans.

There are isolated examples of commercial banks focusing on sustainable technologies such as Deutsche Bank in Germany, which invested USD1.2 billion in renewable energy projects in 2013, and Spanish Bank Triodos, which focuses solely on investment in green financing for sustainable real estate projects and a closed-end real estate fund for sustainably built and managed buildings.

Increasingly, we are seeing commercial banks offering so-called "green" or "sustainable" loans for individuals and SMEs. For example, in Belgium, almost all of the commercial banks recognize that the combination of tax advantages and debtor stability enables them to offer below general market interest rates on loans for planned real estate works encompassing energy-saving measures.

Private financing initiatives in the UK, such as The Carbon Trust and Siemens Energy Efficiency Financing Scheme, make loans as small as GBP1,000 available from a fund of GBP550 million to SMEs for low-carbon equipment. On the other hand, local initiatives, such as the UK's RE:FIT program, seek to promote models for aggregating portfolios to mitigate risks in third-party financing for public bodies. Similar private financing initiatives exist in the US, with the Enterprise Green Communities project, and in France, through energy suppliers such as the EDF.

Finally, at the smallest scale, "crowd funding" platforms, such as the German Environmental Foundation, are becoming established in Germany for investment in sustainability projects.

Conclusion

The scale of the ambition of jurisdictions, including Germany, the UK and the Netherlands, is impressive, with billions of euros being allocated specifically for green investments on interest terms that commercial banks have historically been unwilling to offer. As we have seen, access to these funds tends to be for very large-scale renewable energy projects or very small-scale residential retrofits. As a result, there is some sort of a financing gap for the commercial office market, which is where the payback tension is perhaps most keenly felt.

Increasingly, commercial banks are looking to follow the examples of Deutsche Bank and Triodos Bank, as the success of these enterprises becomes more established with the improvement of the economic climate.

Meanwhile, we have given most credit to jurisdictions showing the best combination of both public and private financing initiatives. Jurisdictions demonstrating one but not the other are mid-green and those with very small-scale projects or projects that are under threat are marked down.

Only if the jurisdiction supports no such project does it not qualify for any green coding.

Trends 2015 to 2016

While it looks for the time being as though the future of the Australian Clean Energy Finance Corporation is brighter, there has been little change reported in the availability of new money or new schemes in Australia or in many of the other 2015 cohort of jurisdictions.

Indeed, concerns about the future direction and sustainable lending credentials of the UK Green Investment Bank remain until the sale of 70 percent of the UK government's stake is completed and any fall-out assessed.

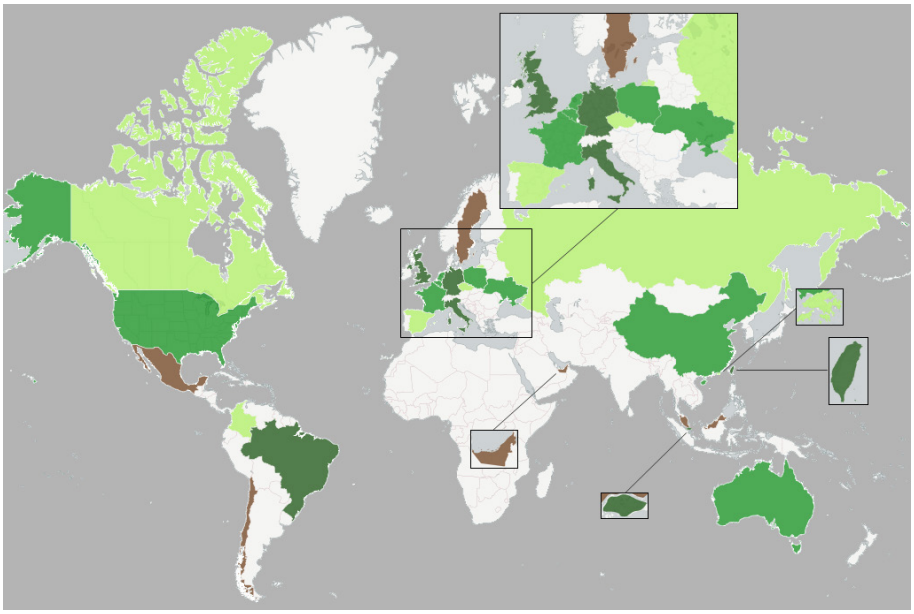
Only in Italy has there been an enhancement in the scope and quantum of state funding for energy-efficient real estate projects and for this reason, Italy is the only country to be rewarded with a category upgrade.

A number of new entrants to the Index this year, such as Belgium, have demonstrated that the commercial banking sector is waking up to the benefits that sustainable retrofitting and developing can bring in terms of longer term loan security. This is being reflected in the increased availability of loans to individuals and SMEs at competitive interest rates.

Unfortunately, however, many of the new cohort of jurisdictions have not reported any significant traction in this area and have consequently been placed in the lowest two categories.

Planning

Is the national or local/state government able to mandate “green” initiatives via the planning/zoning regime?



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Introduction

In case investors and developers are not adequately motivated by the economic, environmental and social benefits attained by sustainable refurbishment/retrofit and development, public authorities are increasingly turning to planning or zoning-control functions to exercise a carrot-and-stick approach to incorporate energy efficiency and sustainability measures within retrofit and development proposals.

Europe’s Energy Performance of Buildings Directive is insisting on nearly zero-energy buildings by 2020. If this is to be achieved, we can expect an intensification of green regulation in this area over the next few years.

As global climate change accelerates, we are likely to experience more of the extreme weather events that have affected nearly all nations around the world in the last few years. Increased flood frequency and severity, coastal erosion, drought and crop failure are all functions of our increasingly erratic global climate. Policymakers must consider how to tackle this at the macro-level by taking a strategic view of the sustainability of large-scale infrastructure projects and effective regional strategies, as well as looking to encourage sustainable development at the local and individual levels.

In this section, we examine how and to what extent national and local government planning/zoning policies are shaping the control and regulation of development in the built environment toward a more sustainable future.

Survey

The surprising element of our research is the extent to which some of the jurisdictions in our survey group have used the planning system to incentivize sustainable development rather than simply mandate an incorporation of sustainable design and construction.

In Canada, for example, meeting the City of Toronto's Green Standard performance measures can qualify a proposed development for additional financial incentives, while in Hong Kong, state-funded concessions are available for incorporating certain green features, such as communal podium gardens, into new building designs with BEAM Plus certification. Such features would not count against the development's permitted gross floor allocation, which means that the usual size limitations can be side-stepped (capped at 10 percent).

In Taiwan, some local government subsidies are available for large renovation projects incorporating biological engineering methods and green community renovation.

In the UK, additional funds are available to Local Enterprise Partnerships producing local strategies and projects with proven carbon emission reductions. In Germany, the Federal Building Code permits exemptions from standard planning policy for projects that include green amendments, such as additional facilities for generating energy from solar sources, thus making permissible projects that would otherwise not receive a construction permit.

However, the majority of our surveyed jurisdictions rely on the development of a combination of state, regional and local policy requirements to regulate sustainable development.

Certain jurisdictions have placed sustainability at the very heart of national planning policy. In Brazil, Federal Decree 4,297/02 established national standards for protecting water and soil resources, biodiversity and quality of life. In the Czech Republic, Construction Code 2006 pushes sustainability to a central role in planning decisions. In Poland, the principles of sustainable development have long been central to spatial planning policies at national, municipal and local levels.

In Taiwan, the "Green Building Promotion Programme" obliges planning authorities to stipulate regulations that require green building evaluation and make sustainability a material consideration in assessing planning application. In Ukraine, state-level construction standards require new construction to incorporate district energy systems with the maximum possible use of alternative energy sources.

In France, cities and regions of over 50,000 inhabitants are encouraged to establish strategies for climate and energy control. To this end, all local planning policies must promote improvement in buildings' energy performance.

At the granular level, different jurisdictions have chosen different methods to implement sustainability policies.

For example, Italian national planning law mandates the use of renewable energy resources for heating, air-conditioning and hot water generation, requiring 35-50 percent of energy to come from renewable resources for applications submitted before 31 December 2016, and a minimum of 50 percent for applications submitted afterward. On top of these percentages is an additional 10 percent for buildings owned by public entities. In contrast, a similar local German state law was abolished five years ago due to the additional cost burden it entailed.

In the UK, since April 2014, a national building regulation requires all new homes to be 6 percent more energy-efficient and new commercial buildings to be 9 percent more efficient.

In many jurisdictions, national policy is enhanced at the local level with state and city planning authorities afforded powers to “top-up” national targets. In Italy, regional authorities must consider the feasibility of district heating facilities.

In Brazil, the state of Rio de Janeiro requires all office buildings over 50 square meters and residential buildings for more than 50 families to be constructed with rainwater collectors and additional rules apply for solid waste recycling. Similar new legislation introduced in 2015, in the Sao Paulo region requires new buildings and certain retrofitting to include an evaluation of draining capacity, vegetation coverage and other socio-environmental aspects.

In France, any major city has the power to develop green policies to improve energy performance and promote renewable energy use.

In Belgium, progress is being made to make structural changes to the planning frameworks, which currently operate at regional level. In the region of Brussels, smart city-planning has developed strategies requiring affordable energy-efficient housing, examining public transport capabilities and enhancing quality of life through neighborhood redevelopment, extending beyond legal minimum requirements.

In Germany, communities can enact laws to require all houses in a certain area to use the local heating systems. In the state of Baden-Wurttemberg, in particular, any modernization of the heating system of a building must incorporate at least 15 percent of heating energy to come from renewable sources.

In the Netherlands, local planning authorities have since 2012 been empowered to impose additional sustainability requirements on development proposals.

In the US, the only planning control initiatives for sustainable buildings have been through state and local governments. For example, a regulation imposed by the New York City Department of Planning introduced zoning regulations to facilitate the construction and retrofitting of green buildings. Chicago’s Climate Action Plan, meanwhile, incorporates energy-efficient building design into its core strategies.

Other jurisdictions have actively sought to facilitate sustainable building design to act as a development example, notably in the UK through Business Improvement Districts. In Singapore, four strategic growth areas require the highest levels of green rating, and special test-bed areas have been identified for innovation of green solutions. These areas provide economies of scale necessary to drive down the cost of energy-efficient projects. Also in Singapore and the UK, research innovations, such as CleanTech Park in Singapore and the Smart City initiative in the UK, are providing a cutting edge for innovation in planning efficient routes for transport of goods and people, effective public health services and real-time data access on building performance.

Among the new entrants to the Index, Colombia has introduced a legislation that will, from July 2016, mandate sustainable construction standards, which will be materialized, among others, into the Territorial Arrangement Planning of the

different municipalities. Russia, for its part, has begun to incorporate sustainable planning objectives within its environmental planning protection requirements. Others, however, including Chile, Sweden and Malaysia, are not reporting any significant development in this regard.

Conclusion

"Smarter city" development is being led by a number of countries, including Germany, the UK and the United States. Growth opportunities to be harnessed by the development of smart cities are estimated to be worth more than USD400 million globally by 2020.

Meanwhile, our research shows the wide variety of tools at the disposal of national governments to regulate through central planning as well as to allow local authorities a large degree of autonomy. We have given credit for actually establishing targets for renewable energy consumption and for making use of renewable incentives to complement the regulation "stick."

Trends 2015 to 2016

Several of the new entrants to the Index this year have demonstrated that sustainable building considerations are at the heart of national and/or local planning strategies, although overall, there is no step change in how the planning system is being used to mandate energy efficiencies in new builds or retrofitting.

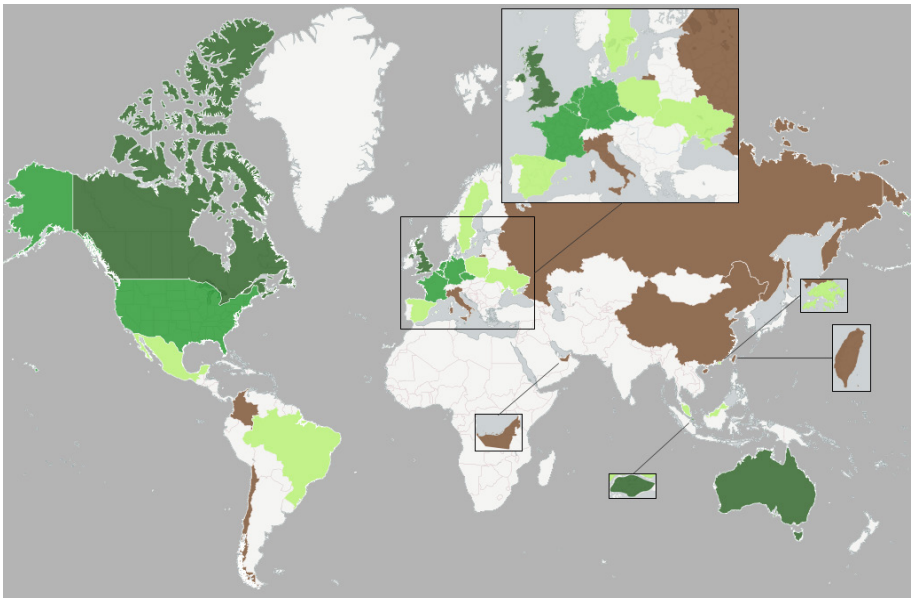
Our sense is that while governments have, for a long time now, been using the planning system to require developers to take responsibility for their environmental impacts, this has largely been directed toward environmental contamination and public health rather than sustainable development and emissions reduction.

Climate change in worst-hit countries, like Taiwan, is driving thought-leadership and forcing the legislature to become more prescriptive. There is huge scope for the planning system to be used as a more effective tool to drive minimum environmentally responsible behavior, and we expect this trend to become established over the next few years.

The only country that we thought merited a step up in category this year is Brazil for its new legislation for development in the Sao Paulo region.

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?



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Introduction

A “green” lease is a lease that requires, or otherwise encourages, certain behaviors and commitments from both the landlord and the tenant with the overall aim of improving the energy efficiency and/or reducing the environmental impact of the building.

Whether or not these provisions are contractually enforceable or merely aspirational depends on the nature and wording of the document. The leases range on a scale of “shades of green,” with “dark green” implying a more environmentally sustainable set of obligations than a “light green” lease.

As green leases are not yet the market norm in many jurisdictions, there is a lack of understanding of the environmental, social and economic benefits that they can entail, particularly when coupled with a corporate focus on sustainability as a key business driver.

With increasing regulation an inevitability following Paris COP21, it will be interesting to see how this filters down into legal requirements for green leases or market-driven green lease cooperation in order to help achieve compliance with emissions reductions.

Part 2 of this Index focuses on appraising the types of green lease provisions commonly found in our selected jurisdictions and aims to draw out certain themes and best practices from the data. But before turning our attention to that, the following analysis aims to establish whether some jurisdictions are more "ahead of the curve" than others when it comes to the use of green leases.

Survey

The one that's constantly running through our survey results is that the use of "green leases" and/or "green clauses" within leases is not yet mandatory within any of the jurisdictions. However, countries are at a variety of different stages on the development curve and the color coding on the heat map reflects our subjective judgment of these.

The closest to any form of legal requirement relating to green leases continues to be in France, where it has been compulsory since 2013, to attach to any commercial lease of premises for office and retail use in excess of 2,000 square meter an Environmental Annex that requires landlords and tenants to exchange energy- and waste-related information. In Germany, the law requires residential tenants to permit the landlord to carry out certain defined energy-saving retrofit improvements without any commensurate rent reduction within the first three months following commencement of the construction works.

Aside from these isolated examples, there are no mandatory provisions to include green clauses within our jurisdictions. Nonetheless, progress is being made. In some cases, it is being led by the public sector in order to "set an example." One jurisdiction where this seems to be working is Australia, where the national government has published a Green Lease Schedule as a template for leases involving Australian government agencies or bodies. In the Netherlands, government authorities since 2013, have adopted the role of "launching customers" to demonstrate the government's commitment to foster the use of green lease provisions.

In other jurisdictions, momentum is being generated by key industry players keen to demonstrate green credentials. Larger landlord companies, with an eye for longer-term investment value and compliance with green certification requirements, are insisting on including green provisions in their portfolio leases. Larger occupiers, on the other hand, are keen to demonstrate compliance through their corporate social responsibility stance and a more accurate sustainability data reporting. In Canada, larger commercial landlords are promoting lease policies that reduce the environmental impact of the building, while larger occupiers are requesting to receive annual compliance reports from landlords.

Similar trends are occurring in Belgium, the Czech Republic, Mexico, France, Germany, Poland, Sweden Malaysia, the UK and Ukraine, where tenant's acceptance of mandatory lease provisions is becoming more commonplace. Clauses range from "mid-green" provisions that require information sharing with a view to cutting energy consumption to "lighter green," non-binding statements of intent to meet joint aspirations on consumption and reporting. In the Czech Republic in particular, we have seen a rise last year in the use of discrete "green" lease provisions being annexed to the main lease.

Common to those jurisdictions is the development of model lease clauses. In a few cases, these clauses are promoted by national or regional governments. In Singapore, for example, the Building and Construction Authority has produced a toolkit of recommended and additional minimum standards. Although not mandatory, there has been a significant uptake of these provisions by landlords of many major shopping malls. Also, in the US, both the federal government (i.e., the General Services Administration) and city authorities (such as the New York City Mayor's Office of Long-Term Planning and Sustainability) have produced model green lease language. In the case of New York, a specific Energy Aligned Clause for sharing costs and benefits of energy retrofits solves the split incentive problem in the commercial lease, which is most common in New York.

In all other cases, the development of model provisions has been led by industry-associated groups such as the Green Building Councils in Hong Kong and the Czech Republic, the Real Property Association of Canada, the Platform on Sustainable Housing in the Netherlands, the Association of Real Estate Owners in Sweden, the Better Buildings Partnership in the UK and the California Sustainability Alliance in the US. In October 2015, the German Private Institute for Sustainable Building, a private stakeholder group, developed and published its own recommendations and sample clauses for green leases in Germany.

Some of the largest landlords and occupiers were involved in developing these model clauses. However, this has not yet translated into widespread adoption of the clauses and, where successful, they tend toward the "lighter green" end of the spectrum.

In the cases of Singapore and the UK, model lease provisions have been developed alongside non-binding memoranda of understanding. The advantage of the memoranda is that they can be more palatable to tenants who dislike the binding nature of clauses in leases. Memoranda of understanding have had some effect in the UK, where they have even been used to retrofit existing leases across a portfolio instead of dealing separately with leases negotiated at different times and between different parties.

In the UK, recent legislation concerning the minimum energy performance of commercial real estate is likely to drive a significant private sector response to lease provisions in order to ensure that landlords can remain compliant with the legislation and continue to be able to lawfully lease their real estate.

In other countries, such as the UAE and new entrants - Chile, Colombia, Russia and Taiwan, there has yet to be industry consensus on green lease provisions or government policy to drive change, and it will be interesting to see in particular whether Paris COP21 is the catalyst for change in these jurisdictions as well. In Russia, the use of green lease provisions is limited on the whole to specific "Green Standard" exemplar projects, although investor concern is also beginning to create demand.

In Italy, while there is a recognition of the potential benefits of green lease provisions, the "split incentive" issue continues to be a major hurdle to the incorporation of green provisions in leases.

Conclusion

There is a sense that costs perceived to be associated with green leases are not always apportioned appropriately between landlords and tenants. Given the tension between lease term lengths and payback periods, this is often known as the "split incentive" problem.

At present, the resolution of this problem is market-led rather than regulated, although we predict that Paris COP21 will have a significant bearing on this issue over the next few years, with national governments needing to find ways to break the "split incentive" stalemate in order to reduce the real estate sector's

contribution to CO2 emissions.

There are a few government initiatives, but in the majority of cases, it has been the industry umbrella organizations and larger landowners that have developed best-practice provisions even if uptake remains low.

On our heat map, we have given credit for the breadth of adoption of green provisions, especially where this has included both public and private sectors, as well as for the development of best-practice materials.

Just because green lease provisions are not mandated, their importance to the value of the underlying investment and the corporate values of the parties involved should not be underestimated. As sustainability continues its rise up the corporate agenda, we can expect to see more green lease provisions in use as occupiers become more accepting of, or even begin to demand, their inclusion.

Trends 2015 to 2016

Overall, the picture remains largely unchanged from 2015, and the new entrants to the Index have not been able to demonstrate any industry-leading examples either by way of policy drivers or by way of private sector leadership.

We considered whether Germany merited an upwards change in category reflecting the recent private sector-wide initiative to develop a standardized set of green lease templates, but we will first wait to see whether there is any significant market take-off before confirming this change in future editions.

We have already seen evidence of increasing green lease interest in the UK as a result of the 2015 legislation restricting the leasing of the least energy-efficient buildings beginning 2018. The onus is on the landlord to carry out energy-efficient modifications so the focus is on ensuring adequate rights of entry and modifications to tenant behavior to ensure that minimum energy-efficiency standards are maintained. We expect this trend to continue over the next couple of years.