

## ENERGY EFFICIENCY: ACCELERATING THE AGENDA

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## Energy Efficiency: Accelerating the Agenda

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## Energy Efficiency: Accelerating the Agenda

### Foreword

The World Economic Forum, in partnership with Accenture, is pleased to release *Energy Efficiency: Accelerating the Agenda*. The work builds on the January 2010 publication, *A New Energy Vision: Towards a More Efficient World*, developed in collaboration with IHS CERA, which explored the key drivers and barriers behind energy efficiency and seeks to address why energy efficiency has not been more successful in scaling.

Energy efficiency is about doing more with what we have. It thus touches on every industry sector and has huge potential to contribute to energy savings and a reduction in carbon emissions. This potential is well-documented from the release of McKinsey's abatement curve to the efforts by the International Energy Agency (IEA) and other international organizations, and yet it continues to be raised as a critical issue to address. This is because despite the potential there is a substantial gap, and energy efficiency measures are still not being implemented at scale, indicating a significant opportunity is being missed. The reasons behind this range from market to institutional failures and the need to be overcome if we are to use energy efficiency to effectively meet rising energy demand, support economic development and meet the critical challenges of climate change, energy security and economic competitiveness.

This study seeks to accelerate the agenda and identify the barriers holding implementation back by looking at the roles of stakeholders and how they can work together to create multistakeholder solutions to bridge the gap. Through this work the Forum hopes to reveal stakeholder perspectives and enable a starting point for increased dialogue and cooperation throughout 2011 and beyond.

The Forum has worked closely with the Mexican Government in 2010 ahead of the United Nations Conference of Parties (COP16) in Cancun in December 2010 to give due attention to energy efficiency and hopes to continue this cooperation with the Mexican and other governments, including South Africa throughout 2011 and ahead of COP17 in South Africa at the end of 2011, to monitor progress and demonstrate early results. This continued focus, multistakeholder dialogue and increased cooperation will be critical to accelerating the agenda.

In the study, the Forum proposes three initiatives which we believe will accelerate the agenda in 2011 and beyond. We trust that these initiatives provide useful input and invite governments, organizations and private sector players to build these initiatives, with our support.

In conclusion, we would like to thank all the organizations that supported us in the development of this research, providing invaluable input and guidance.

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### I. Executive Summary

Energy efficiency is the cornerstone to meeting our climate change goals and in enabling us to meet growing energy needs. If per capita energy demand continues unabated:

- Energy demand is expected to increase by 40% by 2050.
- Carbon emissions are expected to increase to 34.5 GT CO<sub>2</sub> by 2020 and 40.2 GT CO<sub>2</sub> by 2030.
- The estimated capital required to meet projected energy demand through to 2030 is huge, amounting in cumulative terms to US\$ 26 trillion (in 2008 dollars).<sup>1</sup>

The increasing consensus that we need to limit the global temperature increase to two degrees means that this situation is not sustainable and must be averted. Research by the International Energy Agency (IEA) estimates that to avoid this and cap the earth's temperature at two degrees, a total reduction of 3.8 GT CO<sub>2</sub> by 2020 and 13.8 GT CO<sub>2</sub> by 2030 against a 2005 baseline is required. The latter is close to three times as much as the US emits in one year and close to 40% of the expected emissions increase in a business as usual scenario. With the majority of estimated demand increase expected to come from non-OECD countries and 1.5 billion people worldwide still without energy access, a huge challenge presents itself as these countries cannot be denied their development rights. Energy efficiency is therefore recognized to be the most cost-efficient and effective way in which to enable economic growth and competitiveness in both developed and developing nations while meeting rising energy demand and combating climate change.

The World Energy Council (WEC) highlights Europe as an example which has seen significant improvements in energy efficiency **from 1990 to 2006, achieving a 40% average decrease in final energy consumption per unit of GDP** (a measure often used to calculate energy efficiency).

The WEC estimates that if all regions of the world had the same energy efficiency performance as the EU in 2006, a total 420 Mtoe of fuel could have been saved, avoiding 1.3 GT CO<sub>2</sub> emissions.<sup>2</sup> The recognition of the potential of energy efficiency is well-known (either as a contribution to energy savings or emissions reduction) and shared across stakeholder groups. Within the public sector over 70% of countries have developed energy efficiency targets<sup>3</sup> and implemented a wide range of policy measures from mandatory targets to incentives and subsidy schemes. International organizations, NGOs and academia have also been instrumental in quantifying the potential and encouraging action with the International Energy Agency (IEA) estimating a potential **8.2 GT CO<sub>2</sub> emissions reduction each year by 2030**, over half of the potential emissions savings required by 2030.<sup>4</sup> The private sector has also been active with the most energy-intensive industries implementing energy efficiency targets and incorporating it into business decision-making, while other industry players are working to develop innovative business models and capture business opportunities.

US Energy Secretary Steven Chu said in July 2009: "The quickest and easiest way to reduce our carbon emissions is to make our appliances, cars, homes and other buildings more efficient. In fact, energy efficiency is not just low-hanging fruit; it is fruit that is lying on the ground. And energy efficiency means money back in your pocket because you pay less on your energy bills,"<sup>5</sup> recognizing that with the lack of implementation of energy efficiency measures, a significant opportunity is being missed. Indeed, despite the recognized potential of energy efficiency, a gap remains between policy and implementation indicating that capturing this "low-hanging fruit" is not as easy as expected. Policy is not always being implemented with the IEA, identifying that of its 25 policy recommendations **only 57% have been fully implemented**.<sup>6</sup> Organizations and agencies are still operating at a project level versus a programmatic level and institutional and market failures are

<sup>1</sup> World Energy Outlook 2009 Fact Sheet, International Energy Agency, © OECD/IEA, [www.worldenergyoutlook.org/docs/weo2009/fact\\_sheets\\_WEO\\_2009.pdf](http://www.worldenergyoutlook.org/docs/weo2009/fact_sheets_WEO_2009.pdf).

<sup>2</sup> "Energy Efficiency Policies around the World: Review and Evaluation", World Energy Council, [www.worldenergy.org/publications/energy\\_efficiency\\_policies\\_around\\_the\\_world\\_review\\_and\\_evaluation/2\\_energy\\_efficiency\\_trends/1181.asp](http://www.worldenergy.org/publications/energy_efficiency_policies_around_the_world_review_and_evaluation/2_energy_efficiency_trends/1181.asp), Used by permission of the World Energy Council, London, [www.worldenergy.org](http://www.worldenergy.org).

<sup>3</sup> "Overview of energy efficiency policies in the world: synthesis of the WEC-ADEME survey, World Energy Council, June 17-18, 2010, [www.worldenergy.org/documents/wec\\_survey\\_london.ppt](http://www.worldenergy.org/documents/wec_survey_london.ppt).

<sup>4</sup> "Spotlight on the UN Climate Talks in Copenhagen," International Energy Agency, © OECD/IEA, 11 December 2009, [www.iea.org/index\\_info.asp?id=947](http://www.iea.org/index_info.asp?id=947).

<sup>5</sup> "Cleaning Up: Energy and Climate Bill Will Boost the Economy," U.S. Department of Energy press release, 22 July 2009, [www.energy.gov/news/7681.htm](http://www.energy.gov/news/7681.htm).

<sup>6</sup> "Spotlight on the UN Climate Talks in Copenhagen," International Energy Agency, © OECD/IEA, 11 December 2009, [www.iea.org/index\\_info.asp?id=947](http://www.iea.org/index_info.asp?id=947).

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preventing the private sector from implementing and investing in energy efficiency at scale. Energy efficiency initiatives are not yet mainstream in all sectors and developing the investment case for efficiency projects at scale remains difficult. While they are independently taking various steps, the public and private sectors are not recognizing and acting on each other's needs effectively. This report investigates how to bridge this gap and capture this opportunity, scaling up successful energy efficiency implementations globally. The report outcomes are based on interviews conducted across stakeholder groups.

The research identified three clear areas of activity which can capture the opportunity and frame a scalable, public-private energy efficiency initiative for 2011.

- First, to develop a comprehensive energy efficiency ecosystem within and across the main emitter countries by developing a platform that brings together key public, private and expert actors from across the value chain to co-design scalable projects, programmes and policy enablers as well as common metrics and standards. The Clean Energy Ministerial Process could be a useful vehicle in this regard.
- Second, and related to the public-private platform mentioned above, to create a set of action-oriented private sector networks within some key industry sectors, each focused on developing a set of specific actions during 2011 and delivering on them, so as to create a step change in energy efficiency outcomes within their particular sector. A model such as the Cement Sustainability Initiative of the World Business Council for Sustainable Development could be a useful one to work from. An energy-intensive sector may be a good place to start.
- Third, and related to the two activities above, a public-private initiative led by international organizations/NGOs and academia to develop for the corporate sector during 2011 a set of harmonized international standards on measurement and reporting for energy efficiency that can sit alongside carbon emissions reporting

These ideas will be explored in a private discussion involving business leaders and public sector officials co-hosted by the Forum and the Mexican Government's Ministry of Foreign Affairs and Ministry of Economy at the Green Solutions event, at the

time of the UN-hosted Conference of Parties (COP 16) in early December 2010. The expectation is that they would then be further discussed at the World Economic Forum Annual Meeting 2011 in Davos in January and potentially developed to be launched at the time of the second Clean Energy Ministerial meeting in April 2011. Progress could be reported at the COP 17 in South Africa at the end of 2011. As the summer 2010 meeting of the Forum's International Business Council recommended that the World Economic Forum develop an institutional initiative on energy efficiency for 2011, the Forum will explore potential partnerships with the international public sector, governments and private sector/expert stakeholders to take these forward or related ideas which may emerge from the Cancun and Davos discussions.

## II. Introduction to the Research

Energy efficiency is a critical component of the energy landscape and a necessary condition to meet the challenges of climate change, energy security and economic competitiveness against a backdrop of population and demand growth. Energy efficiency should therefore be recognized as an integral aspect of industrial and development plans going forward. However, despite widespread acknowledgement of this potential, a gap remains both in understanding the challenges of energy efficiency and the barriers to implementation. Over the past couple of years, the Forum has actively contributed to progress this agenda item through various platforms, including:

- **The Low-Carbon Prosperity Task Force (LCPT)** which was convened by the World Economic Forum following the appeal by then United Kingdom Prime Minister Gordon Brown in January 2009 and was made up of leading policy-makers, business leaders and experts from international organizations and academia. The task force made specific recommendations regarding the issue of energy efficiency – the need for the private sector to play a greater role in shaping the agenda, improving and harmonizing standards and the creation of a global network of centres of energy efficiency excellence, presenting these to the then United Kingdom prime minister and other world leaders at the United Nations Climate Week in September 2009.

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- **Energy Vision Update 2010: Towards a More Efficient World**, a focused publication produced in collaboration with IHS CERA, which highlighted the potential, challenges and barriers to energy efficiency to provide a level of clarity for solution building going forward.

The World Economic Forum's 2010 energy efficiency research agenda, in partnership with Accenture, seeks to continue to move the public-private cooperation on energy efficiency forward, providing a forum for solution building; where the two sides can identify and act on key interventions that will help drive industry momentum. This year's activity explores how the public and private sector can work together more effectively as well as the potential for multilateral agencies and non-governmental organizations to catalyse the process. The research builds on the work already completed by the Forum as well as other industry players, including:

- The International Energy Agency's (IEA) identification of 25 policy recommendations to obtain 8.2 GT CO<sub>2</sub> savings each year by 2030, measurement against implementation of these recommendations and recent launch of their Policy Pathways to support implementation
- The United Nations Foundation's urging of G8 countries to double current annual energy efficiency improvements – reaching a rate of 2.5% per year – and the launch of their initiative "Efficiency First" to encourage greater international cooperation within this space
- The World Business Council for Sustainable Development's development of a roadmap to improve efficiency in building space and the development of their "Cement Sustainability Initiative" to share leading practice and accelerate progress across the cement industry
- The Inter-American Development Bank's funded initiatives across Latin America and the recent launch of their "Energy Innovation Centres"
- The European Climate Foundation's "Energy Efficiency Initiative" supporting EU member states in creating regulatory and market frameworks for large-scale efficiency investments and in promoting energy efficiency in buildings and appliances

By combining research and dialogue the study aims to maintain the position of energy efficiency on the global agenda and continue to shape this agenda through the Forum's relationships, and in particular the following:

- Identify **where we are today**; gaining a robust understanding of the current energy efficiency landscape – key dimensions, what is working, what is not working and identifying those global leading practices that should be shared
- **Challenge the concept of energy efficiency as "low-hanging fruit"**, highlighting the implementation barriers which are limiting large-scale implementation of energy efficiency measures and approaches to overcoming those barriers and identify a set of practical recommendations across sectors (public, private and the multilateral agencies, NGOs and academia) to help clarify roles and responsibilities and to strengthen the business case for energy efficiency measures, driving adoption
- Recommend **concrete action** throughout 2011, identifying three initiatives that are actionable and could lead to significant progress in bridging the gap

This study has been compiled from a set of deep-dive interviews with key stakeholders from the public sector, international organizations and academia and from the private sector. A total of 23 interviews were conducted with the breakdown by sector as follows:

- Public Sector: 5
- International organizations, NGOs, academia: 7
- Private Sector: 11

The study is global and cross-sector in remit, focusing much more on the roles that the varying stakeholder groups can play rather than identifying industry-specific recommendations in an effort to provide cross-sector market clarity and identify market accountability. The report's output will feed directly into one of the private sessions being co-hosted by the World Economic Forum and the Mexican Government at Green Solutions alongside the COP-16 negotiations in Cancun in December 2010, with the ultimate objective to inspire concrete action across stakeholder groups throughout 2011.

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### III. Where We Are Today

The World Economic Forum's 2010 Energy Vision Update: Towards a More Efficient World, developed in collaboration with IHS CERA, defines energy efficiency as a critical 'energy source'<sup>7</sup>. In a world **where demand for global energy services is expected to grow by 40% by 2050**<sup>8</sup>, there is an imperative to find a way to tap this source. Given general concerns about energy security and the positive impact in terms of spurring innovation and positive action while reducing costs and increasing competitiveness, energy efficiency has moved from being a low-hanging fruit to becoming a strategic imperative for countries and businesses. The flurry of policies, initiatives and programmes that are underway indicate that this is a topic on the cusp of gaining momentum.

Of all the energy options, energy efficiency is expected to be able to provide the largest capacity for energy in the near and medium term while contributing to reductions in greenhouse gas emissions. This potential can be measured in a number of ways, including energy savings, cost savings and reduction in emissions. Research efforts by the International Energy Agency (IEA) have for example identified 13.8 GT of potential carbon abatement by 2030 with 57%, or **8.2 GT CO<sub>2</sub> by year, coming from implementation of energy efficiency measures**<sup>9</sup>. All sectors, including industry (power, cement, steel), buildings, household (including lighting) and transport, will have an important role to play in realizing this potential.

The increased recognition of this potential has moved energy efficiency to the top of the global political and business agendas. Research and efforts to date have identified clear policy recommendations for promoting energy efficiency, such as the introduction of small levies on energy sales that are then reinvested into efficiency activities, performance standards on appliances, buildings and vehicles, and changes to utility regulations. A number of businesses have also begun to include energy efficiency within their business planning and target setting. These achievements and leading practice examples are numerous and well-documented. The purpose of this section is to identify where

the market is today through the respective roles played by policy, international organizations, non-governmental organizations (NGOs) and academia and the private sector – all of which have been instrumental in achieving progress to date, in particular:

- The public sector has identified energy efficiency as a policy priority, setting targets, implementing policy measures, rolling out initiatives across the public sector to create an example for the private sector and pursuing international cooperation.
- The private sector has begun to roll out measures and invest in energy efficiency, and has developed a number of innovative business models to support scale.
- The international organizations, NGOs and academia have all been instrumental in raising awareness of the issues and barriers, in quantifying the potential of energy efficiency and in catalysing action.

These roles are further explored hereafter.

#### 1. Role of the Public Sector

Within policy-making circles, the increase in focus on energy efficiency over the past decade has been substantial. This focus has resulted in multiple roles being played by the public sector, namely in:

- Setting energy efficiency targets
- Implementing policy measures to support energy efficiency scale up in the private sector
- Leading by example; implementing energy efficiency measures internally to prove the case for energy efficiency and to provide an example to the private sector
- Building international momentum through the creation of international platforms

The success of the public sector in playing these roles is however not consistent across markets and indeed no public sector body seems to have developed a holistic package to support energy efficiency. This needs to be taken into account when identifying leading practice examples.

<sup>7</sup> *Energy Vision Update 2010: Towards a More Energy Efficient World*, World Economic Forum/CERA, 2010.

<sup>8</sup> World Energy Outlook 2009 Fact Sheet, International Energy Agency, © OECD/IEA, [www.worldenergyoutlook.org/docs/weo2009/fact\\_sheets\\_WEO\\_2009.pdf](http://www.worldenergyoutlook.org/docs/weo2009/fact_sheets_WEO_2009.pdf).

<sup>9</sup> "Spotlight on the UN Climate Talks in Copenhagen," International Energy Agency, © OECD/IEA, 11 December 2009, [www.iea.org/index\\_info.asp?id=947](http://www.iea.org/index_info.asp?id=947).

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### 1.1. Setting Targets

According to a survey conducted in 2009 by the World Energy Council (WEC) **approximately 90% of countries responding** (contributing to 90% of global energy use) **have a national department or ministry for energy efficiency**, with approximately 60% having regional or local agencies. Moreover, **approximately 70% of countries have quantitative national targets for energy efficiency improvement**<sup>10</sup>. These departments will be

responsible for implementing policies that improve energy efficiency or encourage its improvement across sectors, including the introduction of building codes, standards for fuel efficiency and for appliances, and incentive schemes to support investment measures, as well as for promoting international cooperation in this field. These efforts are critical as they set in place the framework under which the energy efficiency market can be developed and progressed.

### Figure 1: Spotlight on Setting Targets

#### China's 11th Five-Year Plan

China's 11th Five-Year Plan considers energy security to be intricately linked to climate change, and energy efficiency as a key enabler to both. As such, the country committed **to a target of 20% reduction in energy consumption per unit GDP from 2005 to 2010**<sup>11</sup> making energy efficiency a core focus in China's 11th Five-Year Plan with particular emphasis on reduction in emissions from energy-intensive industries. The plan included a suite of measures:

- Implementation of top ten Energy Saving Projects
- Adoption of minimum performance standards for electric motors
- Introduction of specific energy **reduction targets for the 1,000 largest state-owned enterprises** (95% of companies established an energy management office)
- Elimination of tax incentives/rebates for energy-intensive enterprises
- Closure of highly polluting companies (e.g. the government set a target of closing 10 GW by end of 2010, which it surpassed in early 2009<sup>12</sup>)
- New central government-backed investment funds (US\$ 1 billion in grants and subsidies to support national energy efficiency projects)
- Rating of government officials on the energy efficiency performance of their jurisdictions and stronger regulatory infrastructure through amendments to the Energy Conservation Law<sup>13</sup>

Close to the end of the 11th Five-Year Plan, the government is taking its commitment (and mandated targets) very seriously, and will impose heavy penalties and fines on those provinces or businesses that miss them. The country is also ensuring that lessons learned from the 11th Five-Year Plan are built into the 12th Five-Year Plan.<sup>14</sup> Market expectations are that the targets for energy efficiency in the 12th Five-Year Plan will be more aggressive and in line with the country's commitment to **reduce energy intensity by 40-45% by 2020** compared to 2005 levels<sup>15</sup>. However, they will be in ranges to enable a degree of flexibility. Moreover, a national and independent monitoring system is being developed to enable targets to be met in a carbon-neutral manner – this speaks to a challenge that the government has had in enforcing targets for the 11th Five-Year Plan, namely that local governments took measures such as power cuts or power rationing and businesses were finding alternative methods, e.g. using diesel generators for power, to reach their carbon reduction targets. The 12th Five-Year Plan should combine a strong commitment to energy efficiency with meticulous enforcement.

<sup>10</sup> "Energy Efficiency: A Recipe for Success," World Energy Council, September 2010, [www.worldenergy.org/publications/2838.asp](http://www.worldenergy.org/publications/2838.asp), Used by permission of the World Energy Council, London, [www.worldenergy.org](http://www.worldenergy.org).

<sup>11</sup> Ma Kai, Minister, National Development and Reform Commission, Government of China, "The 11th Five-Year Plan: Targets, Paths and Policy Orientation," 19 March 2006, [www.gov.cn/english/2006-03/23/content\\_234832.htm](http://www.gov.cn/english/2006-03/23/content_234832.htm).

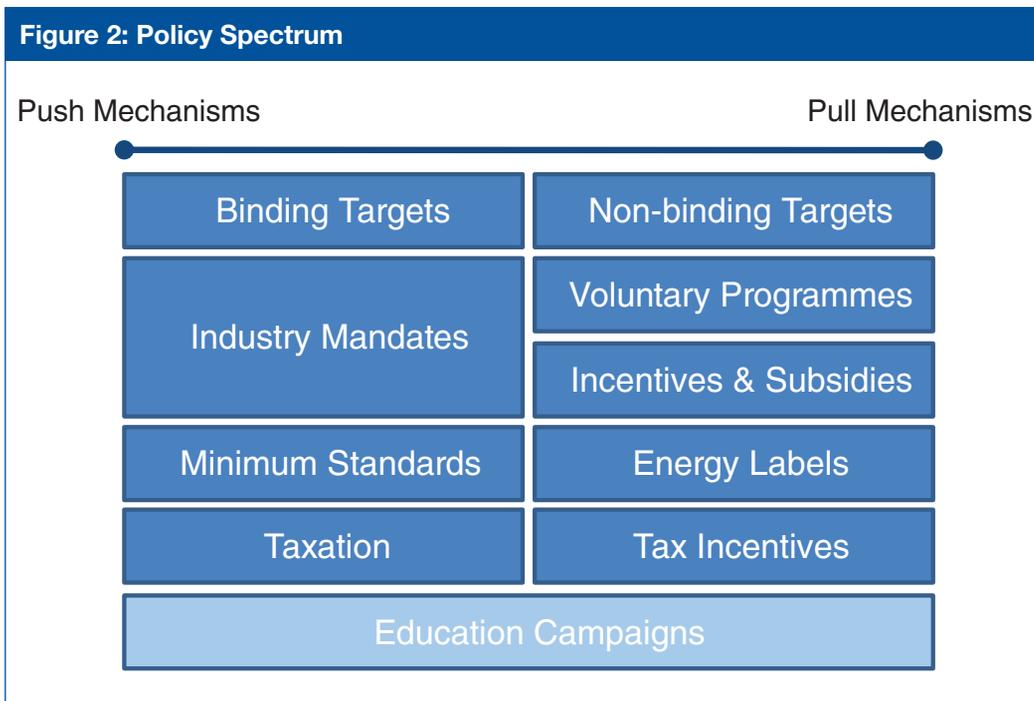
<sup>12</sup> "China accelerates power shutdown programme" in China Coal Monthly, 25 March 2009, via Factiva, © Beijing Xinhua InfoLink Development Co Ltd/CINIC.

<sup>13</sup> Cheung, Ray and Kang, Aram, "China's Booming Energy Efficiency Industry" in New Ventures, World Resources Institute, May 2008, [http://pdf.wri.org/chinas\\_booming\\_energy\\_efficiency\\_industry.pdf](http://pdf.wri.org/chinas_booming_energy_efficiency_industry.pdf).

<sup>14</sup> "17th CPC Central Committee sets targets for 12th Five-Year Program," Xinhua News Agency, 1 November 2010, via Factiva, © 2010 Xinhua News Agency.

<sup>15</sup> "China sets target on gas emissions; Beijing follows U.S. call to make reductions, but with different benchmark" in the International Herald Tribune, 27 November 2009, via Factiva, © 2009 The New York Times Company.

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### 1.2. Implementing energy efficiency measures

Defining targets and designating departments to look after energy efficiency evidently should be supported by implementation measures. The level of policy maturity and the implementation approach varies significantly in line with the market approaches and characteristics of the different regions. While in the developed world, including USA, Europe and Japan, energy efficiency standards for building codes, transport and appliances have been around for a number of years, focus on energy efficiency in Latin America (with the exception of Brazil and Mexico), China and India is largely new. Moreover, while some countries follow a free market approach implementing incentives and subsidies as well as voluntary schemes to encourage private sector take-up, others follow a more top heavy approach mandating improvements across sectors (see Figure 1. Spotlight on Setting Targets). The table below (Figure 2. Policy Spectrum) highlights the various policy tools that are used across the policy spectrum.

These policy tools have a direct impact on enforcement, the subsequent drivers for action and the speed and way in which the market develops. For example, while targets in China are legally binding, in Europe they are not. The result is that in China, industries are pushing heavily to meet targets by the end of 2010 to avoid penalties, whereas in Europe the private sector has not been fully



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### Figure 3: Spotlight on Implementation

#### Mexico's Lighting Initiative

In 2008, the Mexican Congress approved the law on Sustainable Use of Energy, whose implementation started in 2009. A National Program for the Sustainable Use of Energy resulted from this legislation, which identified seven key priority action lines to improve efficiency. The most important of these was lighting.

The core objective of the initiative is to foster a market transformation and to achieve better use of energy in the lighting sector through regulation and projects:

1. In the former, a mandatory standard (Norma Oficial Mexicana) is being developed to establish minimum requirements for lighting efficiency in the residential, commercial, services, industrial and public sectors.
2. For the latter, two projects are being designed:
  - Residential sector: exchange of incandescent light bulbs for compact fluorescent lamps (CFLs) in low- and middle-income households. The target is to roll out 45.8 million CFLs across the country by 2012.
  - Municipal sector: BANOBRAS (a Mexican development bank) will provide credits to municipalities to replace inefficient public lighting technologies, with the expectation that the costs would be offset by the energy savings.

This initiative requires close cooperation with the private sector and local authorities, as well as the development of compelling consumer campaigns.

incentivized to take action. Indeed, a recent study by the European Commission highlighted that the EU was only on track to deliver 11% of the committed 20% energy savings by 2020<sup>16</sup>. Although the answer is not necessarily to mandate and enforce targets, understanding local market circumstances when discussing leading practice is critical as like for like implementation will more often than not, not be possible. Moreover, the focus is often different. While focus in developed countries is on retrofitting existing old buildings and developing standards for new appliances, focus in developing countries will be on new construction and replacing old appliances. Policy measures will have to reflect this.

Moreover, these local market conditions and the extent that targets are mandated will have a direct impact on the type of role played by the public sector and the response from the private sector. On the one hand, the role of the public sector when targets are mandated is primarily to enforce these

targets; however, when they are voluntary schemes, the role of the public sector is to encourage take-up of these initiatives, either through the provision of credits or subsidies or through the launch of consumer behaviour programmes.

On the other hand, where targets cascade down to industry and are legally binding, the private sector will have to respond and will face penalties if those targets are missed. However, where schemes are more incentive-driven, private sector involvement may be based more on industry competitiveness as per Japan's example of the Top Runner Programme (see Figure 4).

<sup>16</sup> Roadmap 2050, European Climate Foundation, [www.roadmap2050.eu](http://www.roadmap2050.eu).

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**Figure 4: Spotlight on Implementation**

### Japan's Energy Policy

Japan has the lowest energy consumption per GDP in the world and has improved its efficiency by 37% since the 1970s. Japan's focus on energy efficiency was a result of the first and second oil shocks. At the time, Japan was importing a high percentage of energy resources and, thus, to reduce exposure to external events and increase energy security, Japan began to look into alternative energy sources while pursuing energy efficiency. With the rise of oil prices in the 21st century this focus gained new momentum coupled with the discourse on climate change.

The star programme of Japan's energy efficiency policy is its *Top Runner Program* which has been very successful in raising the standards of appliances within the country. The program focuses on the supply-side of product markets, targeting manufacturers and importers to improve the efficiency of their products. After market investigation, the program selects the "top runner" identifying its standards to be the industry standard. The exact standard level and year by which they should be enforced is the product of a consultative process with key stakeholders, before it becomes required by law. It is furthermore an iterative process meaning that the standards will continue to improve as technology does. The program has generated competition within the appliance market in Japan and has successfully advanced the standards for 23 product categories to date.

Japan's continuous policy innovation is driven by the need to resolve the "trilemma" of economic development, energy security and climate change. One example of such innovation is the "Smart Community" concept, a holistic approach that integrates energy efficiency and renewable energy throughout the supply chain, from appliances to the smart grid and energy generation. In April 2010, the country selected four test beds which check this concept; the four pilot cities are:

- Kitakyushu City which focuses on real-time energy management throughout the technopolis including 70 companies and 200 homes and is being developed in partnership with Fuji Electric Systems, GE, IBM and Nippon Steel
- Kyoto Keihanna District which focuses demand-side energy management in urban housing complexes, done in collaboration with Kyoto Prefecture, Kansai Electric Power, Osaka Gas Power, Kansai Science City and Kyoto University
- Toyota City looking at consumer-driven, demand-side management as well as innovation in sustainable mobility, partnering with Toyota Motor, Chubu Electric Power, Toho Gas, Toshiba, Mitsubishi Heavy Industries, Denso, Sharp, Fujitsu and Dream Incubator
- Yokohama City which looks at multi-town integration of energy systems, as well as effective use of heat and unused energy retrofitted to 4,000 smart houses, office buildings and with 2,000 EVs, supported by Accenture, Toshiba, Panasonic, Meidensha, and Nissan

These pilots are taking the concept of efficiency to the community scale and supporting the provision of a sustainable energy landscape for Japan.

### 1.3. Leading by example

In addition to implementing policy to support cross-sector investment into energy efficiency improvements, the public sector is also leading the way for the private sector, taking on an exemplary role. This includes setting internal targets by the government's ministry for energy efficiency improvements and focusing efforts on initiatives such as improving the building stock of publicly owned buildings (see Figure 4. Spotlight on Implementation). It further means working to drive change across the private sector. For example, the creation of the



<sup>17</sup> "About the BBP," Better Buildings Partnership, [www.betterbuildingspartnership.co.uk/about-the-bbp/](http://www.betterbuildingspartnership.co.uk/about-the-bbp/).

## Energy Efficiency: Accelerating the Agenda

*Better Buildings Partnership* (BBP) in London in December 2007, a partnership between London's leading commercial property owners and allied organizations, was driven by the mayor of London and the London Development Agency. The BBP

now works to develop innovative ways in which to contribute to efficiency improvements in existing London building stock.<sup>17</sup>

### Figure 5: Spotlight on Creating a Public Sector Example

#### The London Development Agency, RE:FIT Programme<sup>18</sup>

The United Kingdom Government is committed to a target of 20% reduction in emissions by 2020; London wants to be more progressive than that, aiming for a 60% reduction in carbon footprint by 2025. To meet these targets the London Development Agency (LDA) is focused on a number of programmes, including the RE:FIT programme which seeks to improve the building stock of publicly owned buildings throughout the capital, estimated to contribute 10% to the country's total emissions each year.

#### The Model

In 2008, the LDA launched the RE:FIT buildings energy efficiency programme (previously known as the Buildings Energy Efficiency Programme (BEEP)) which uses preselected energy service companies (ESCOs) to retrofit public sector buildings. The public sector is required to finance the retrofit works; however, ESCOs take on construction and performance risk and guarantee expected savings (both in terms of energy and cost) from the measures implemented over an agreed payback period, entering into a performance contract with the building owner. The added advantage of the public building stock, where there is just one owner, is that a number of buildings and projects can be aggregated into one contract, enabling economies of scale for the ESCO selected, and leading to a sustainable business model and investment for all parties involved.

#### The Results

The initial pilot project retrofitted 42 public sector buildings, including those owned by Transport for London, the Metropolitan Police and the London Fire and Emergency Planning Authority. Approximately 146,000 m<sup>2</sup> of building space was retrofitted leading to over 5,000 tonnes reduction in carbon emissions and an average 28% reduction in energy consumption. The average cost of these retrofits across the scheme amounted to £7 million. With the retrofits enabling an average of £1 million of energy savings per year, the pay-back period will be seven years.

#### Next Steps

The pilot has now gone into operating mode, and RE:FIT (as well as the panel of suppliers) is available to all public sector organizations across the country. The LDA is currently focused on increasing the take-up of the model and the availability of and access to finance in the public sector:

- The £100 million London Green Fund, which comprises contributions of £50 million from the London ERDF Programme, £32 million from the LDA and £18 million from the London Waste and Recycling Board, will make repayable investments into waste, energy efficiency and decentralize energy projects in Greater London via Urban Development Funds (UDF). The European Investment Bank (EIB), the London Green Fund manager, is currently procuring a UDF to operate and manage a £50 million energy efficiency UDF, which can invest in energy efficiency retrofit to public and voluntary sector buildings and social housing. The energy efficiency UDF, once operational, may provide an additional source of repayable funding to those public sector organizations using RE:FIT for retrofit to their existing building stock.
- The other key barrier to wide-scale public building retrofit is the availability of a funded "off-balance sheet" energy efficiency retrofit contracting model, whereby the retrofit assets and associated funding is accounted for off the public sector organization's balance sheet. This is of particular importance given the ongoing budget constraints following the 2010 Comprehensive Spending Review (CSR). Developing a contract framework which would enable these organizations to undertake retrofit works without having it on their balance sheets is fundamental and a key focus area being progressed by LDA and its partners going forward.

<sup>18</sup> RE:FIT programme website, London Development Agency, [www.lda.gov.uk/projects/refit](http://www.lda.gov.uk/projects/refit).

## Energy Efficiency: Accelerating the Agenda

### 1.4. Building International Momentum

Finally, the public sector is also playing an important role in building international momentum – demonstrating commitment to energy efficiency and significant effort to progress the agenda. This is being seen with countries leading the development of a number of international platforms and initiatives which support international cooperation on a national basis or across industry-specific sectors and with the number of countries signing up to these initiatives. Examples include the International Partnership for Energy Efficiency Cooperation and the Clean Energy Ministerial (Figure 6).

These efforts have primarily emerged over the past 12 to 15 months, so monitoring and ensuring progress over the next 12 to 15 months will be critical to successful scaling of energy efficiency. Indeed, the momentum should not only be strengthened, but maintained.

Through these three roles, the public sector is critical to ensuring that energy efficiency is a recognized priority and to developing the right institutional and regulatory frameworks to support scale-up. The extent, however, to which the public sector has been successful in playing these roles to date and, particularly, in implementing policy measures that meet market needs is open to speculation and varies across geographies.

Policy-makers' implementation of energy efficiency measures can often be too general or narrow in focus, indicating insufficient support for scale-up. For example, policies often do not take into account specific industry requirements, making them difficult to implement. Moreover, energy efficiency is not usually the responsibility of one ministry alone and thus requires a high level of internal coordination which can slow or impede progress. Political terms can also result in limited implementation as they can imply little policy continuity. This is a challenge that has been felt in Mexico with the implementation of their lighting initiative across municipalities. Finally, local market conditions also play an important role, meaning that leading practice policy often exists in small pockets with replication in other markets difficult. These challenges mean that a lot of recommended measures have not been implemented at all. Following publication of its 25 policy recommendations, the IEA assessed implementation progress across all member countries to find that only 57% of recommendations had been fully implemented (see Figure 7).

The European Union has also acknowledged this policy gap, identifying that currently the region is only on track to deliver 11% of its 20% energy-savings commitment by 2020. To bridge this gap and meet the stated targets the European Climate Group has identified that a tripling of policy impact is required.<sup>21</sup> This gap merits further attention and a better understanding of the implementation barriers to gauge how the public sector can help bridge this gap.

### Figure 6: Spotlight on Building International Momentum

#### The Clean Energy Ministerial

The first Clean Energy Ministerial, held in July 2010 hosted by the US Department of Energy, brought together ministers and stakeholders from more than 23 countries with the objective of cooperation in accelerating the world's transition to clean energy technologies. Resulting from the conference, 11 initiatives were launched, 2 of which directly address the scaling of energy efficiency, namely:

- *The Global Superior Energy Performance Partnership (GSEP)* which aims to support businesses and governments in their reduction of energy use as well as support governments in the adoption of relevant policies and programmes. The GSEP has three core components: a harmonized implementation and certification process, sectoral task groups to accelerate adoption of energy efficiency measures within those sectors and cross-sectoral technology task groups to accelerate the adoption of specific energy-saving solutions.<sup>19</sup> Participating countries include Canada, the European Union, France, India, Japan, Korea, Mexico, Russia, South Africa, Sweden and the United States
- *Super Efficient Equipment and Appliance Deployment Initiative (SEAD)* aims to increase adoption of super efficient equipment and appliances in the market by cooperating on R&D and manufacturer incentives as well as standards development. Participating countries include Australia, Canada, the European Union, France, Germany, India, Japan, Korea, Mexico, Russia, South Africa, Sweden, the United Kingdom and the United States.

These initiatives are being initially funded by the US, with Sweden providing funds for SEAD. The progress of these initiatives will be closely monitored and the next Clean Energy Ministerial is expected to be held in the United Arab Emirates in April 2011.<sup>20</sup>

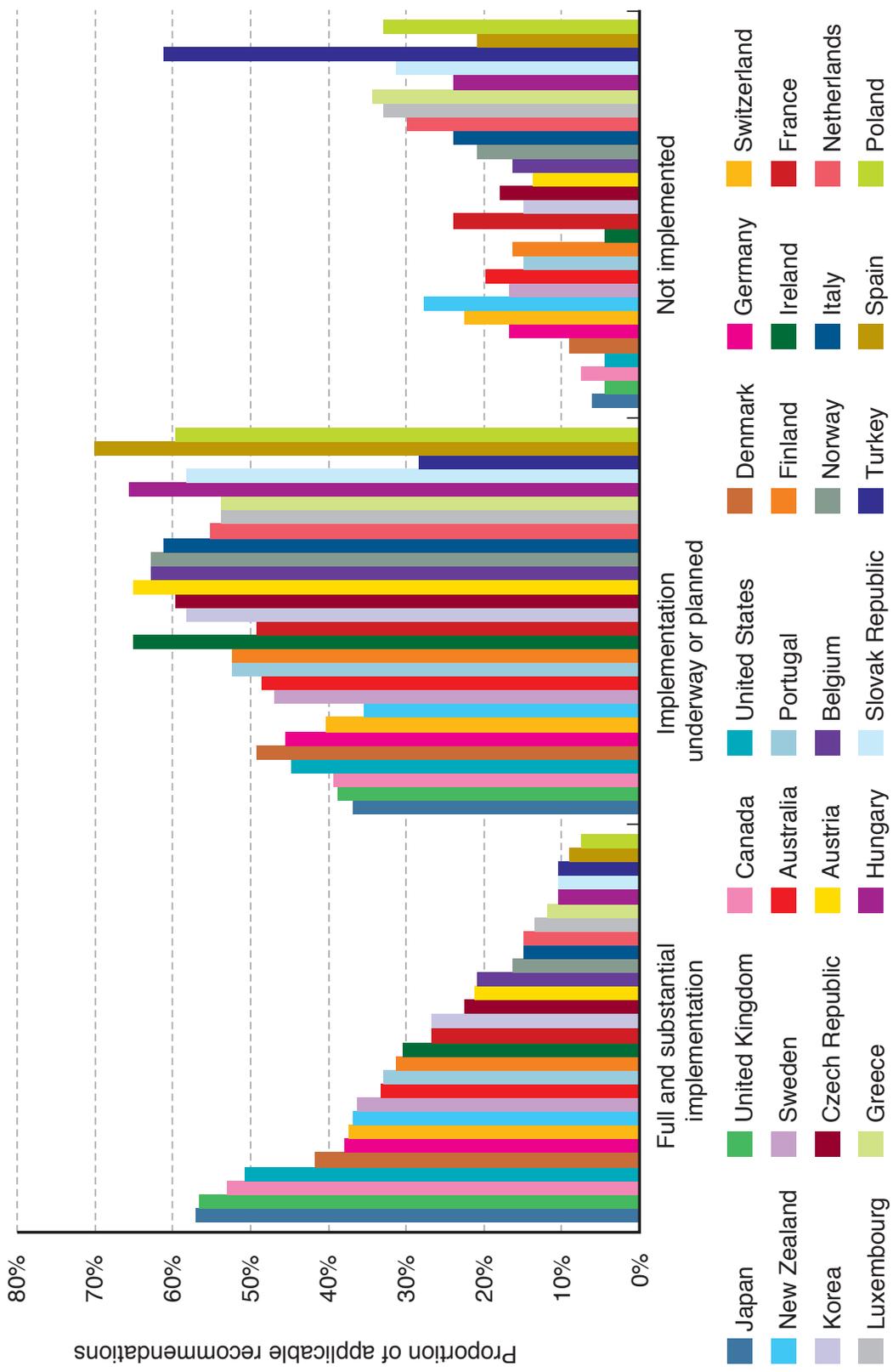
<sup>19</sup> "Fact Sheet: The Global Superior Energy Performance Partnership", Clean Energy Ministerial, U.S. Department of Energy, <http://energy.gov/news/documents/GSEP-Fact-Sheet.pdf>.

<sup>20</sup> 2010 Clean Energy Ministerial website, <http://www.cleanenergyministerial.org/index.html>.

<sup>21</sup> Roadmap 2050, European Climate Foundation, [www.roadmap2050.eu](http://www.roadmap2050.eu).

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Figure 7: Level of Implementation of Applicable IEA Recommendations, All IEA Countries, All Recommendations<sup>22</sup>



Note: Proportion of all recommendations minus those recommendations considered 'not-relevant'.

<sup>22</sup> *Implementing Energy Efficiency Policies – are IEA members on track?* International Energy Agency, © OECD/IEA, 2009, [www.oecdbookshop.org/oecd/display.asp?k=5KSCR8TJ7948&lang=en](http://www.oecdbookshop.org/oecd/display.asp?k=5KSCR8TJ7948&lang=en).

## Energy Efficiency: Accelerating the Agenda

### Figure 8: Spotlight on Industry Leading Practice

#### Incorporating Energy Efficiency into Chevron's Business

Chevron is one example of a company which has incorporated energy efficiency into its business for over two decades. In 1991, the company created the position of Corporate Energy Coordinator and established the Chevron Energy Index to monitor and foster energy improvements corporate-wide. Since then, Chevron has improved its energy efficiency by over 30%.

To drive this agenda forward, Chevron is running two key initiatives: 1) to improve energy efficiency in existing businesses by developing and deploying Chevron best practices, and 2) to economically design new facilities with high levels of energy efficiency. Since energy costs (within a large energy company) typically represent 35-55% of total operating expenses in the company's largest business segments, energy efficiency improvements also contribute to large cost savings. The points below provide an overview of Chevron's lessons learned and key energy efficiency principles.

1. Create a long-term vision of what excellence looks like in business segments to help keep alignment and move towards industry-leading performance
2. Create a culture where best practices are created, shared and freely adopted
3. Implement industry-leading targets and ensure consistency in calculation of performance gaps to industry-leading performance
4. Use internal and external benchmarks to identify improvement opportunities
5. Conduct internal energy audits to provide expert feedback to local management
6. Track and manage key energy metrics
7. Focus on new projects with a secondary focus on replacing equipment in existing projects

## 2. Role of the Private Sector

The energy efficiency market will not reach scale without the involvement of the private sector. To date, the private sector has played a role both in implementing energy efficiency measures internally and in supporting market development through the pursuit of business opportunities and financial mechanisms. The fulfilment of these roles has however been limited across markets. Going forward in supporting the development of sufficient support for the private sector to fulfil these roles will be critical to the market's development.

### 2.1. Implementing energy efficiency measures

The role of the private sector in implementing energy efficiency projects and in developing the market varies according to industry type – these variations are shaped by four primary drivers:

- Potential for carbon legislation which will force action and/or existing targets and mandates
- Potential for energy efficiency measures to support cost reduction – particularly during times of austerity
- Competitive positioning that implementation of energy efficiency measures supports
- Increased brand equity from being an industry leader in energy reduction



The influence of these drivers varies according to the industry sector as well as the region they sit in. For example, potential for carbon legislation and potential cost savings may be a major driver in energy-intensive industries, but where energy prices account for a small fraction of total costs, other drivers will evidently outweigh it. Therefore, the industries which are more energy-intensive are likely to view energy efficiency as a major business driver (see Figure 8. Spotlight on Industry ).

Moreover, those markets that are compliance-driven are likely to scale up more quickly as the business investments are mandated by regulation; in more

## Energy Efficiency: Accelerating the Agenda

**Figure 9: Private Sector Views**

	Low Energy User	Heavy Energy User
% Cost of Energy	<ul style="list-style-type: none"> <li>Approximately 1-1.5% of total operating costs</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 35-55% of total operating costs</li> </ul>
Business Strategy	<ul style="list-style-type: none"> <li>Low priority so projects need a strong business case to be carried out</li> <li>Efforts often CSR-driven or compliance-driven</li> </ul>	<ul style="list-style-type: none"> <li>High priority due to high cost and competitive positioning</li> <li>Responsibility often designated to a particular management unit</li> <li>Specific targets set</li> <li>Projects assessed in same way as other projects</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>Difficulty in developing compelling business case</li> <li>No designated role/responsibility within an organization to deliver energy efficiency gains</li> <li>Lack of incentives for action</li> </ul>	<ul style="list-style-type: none"> <li>Lack of long-term policy certainty</li> <li>Lack of global standards</li> <li>Need to compete for investment with all capital projects</li> </ul>

liberal markets focus will be on potential cost savings, competitive positioning and increased brand equity. Figure 9 below depicts the differing views of energy efficiency within businesses based on the level of energy intensity.

### 2.2. Developing the market

Companies are also viewing the rising focus on energy efficiency as business and investment opportunities. The pursuit of business opportunities can be seen across sectors with the rise of energy service companies (ESCOs) from the likes of Edison to Johnson Controls. Edison, one of the largest power companies in Italy, has created a separate business unit entitled "Energy Efficiency and Business Development" to connect business leaders and policy-makers and to better serve the needs of its customers. Edison's new business unit effectively acts as an ESCO and works with its customers to identify true energy efficiency needs (and which technologies would best support these needs). In parallel, Edison assesses the policy gaps preventing scaled implementation, lobbying government to bridge those gaps. Johnson Controls is similarly

focused on expanding its portfolio in this space. With its main operations in the US and the ESCO market in the US estimated to be over US\$ 5 billion a year<sup>23</sup>, it is a lucrative business model. Offering services to the market (primarily through the use of Energy Performance Contracting), the company has also recently launched the Institute for Building Efficiency, which provides practical information and analyses of technologies, policies and practices for buildings.<sup>24</sup>

The development of investment portfolios and financial mechanisms/business models to support scale-up is another opportunity area for the private sector. Interesting to note is that the players entering this space are all doing so with a variety of models behind them. The table below (Figure 10) highlights a number of the models being pursued today, some of which are industry-specific.

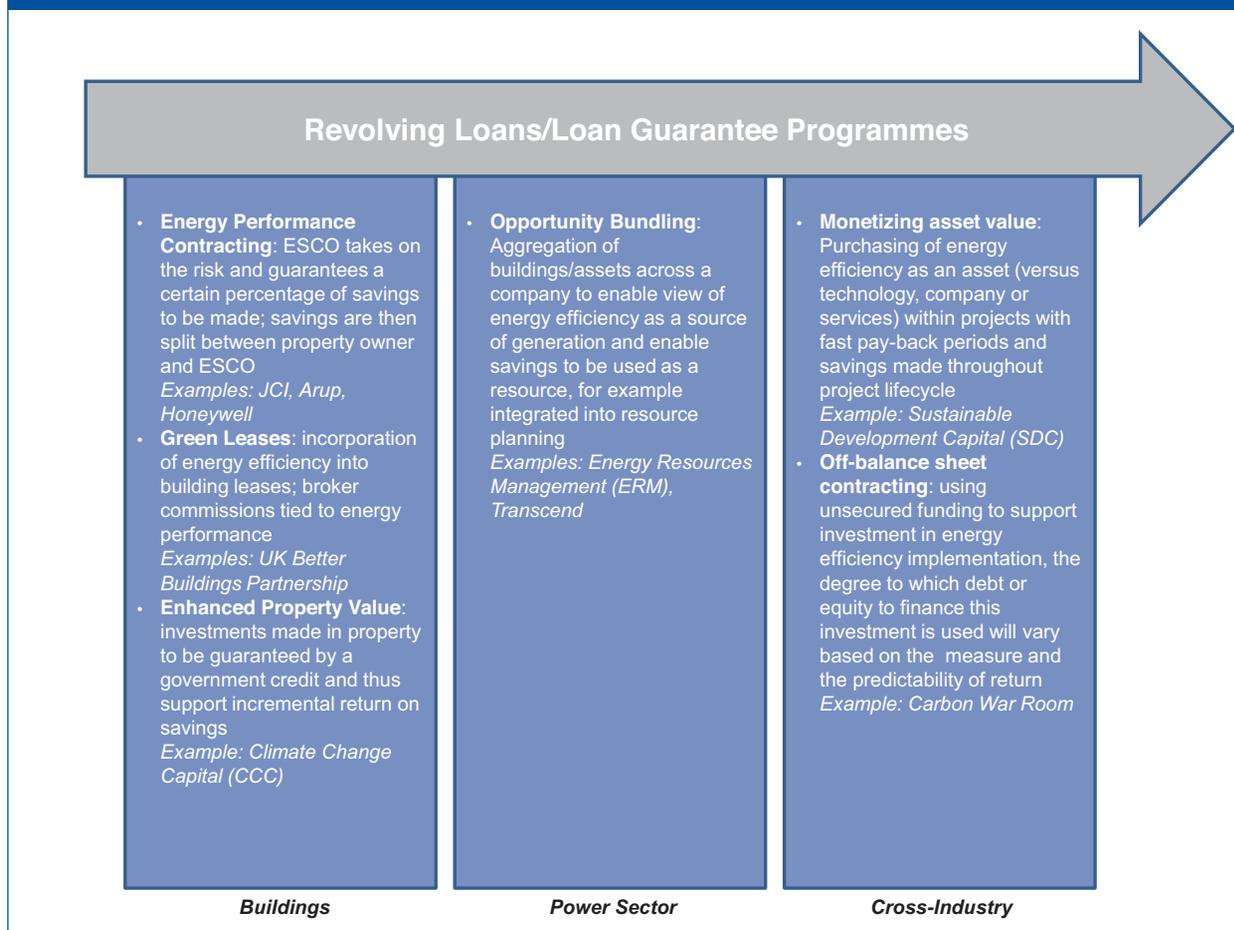
It is important to note, however, that while there are companies investing, they are limited relative to the market potential and business opportunities that exist. This private sector involvement will be a necessary condition to achieving progress and scale. This sentiment can further be reflected when

<sup>23</sup> "Energy Retrofit Market, HVAC and Mechanical Systems," The National Energy Management Institute, February 2002, [www.nemionline.org/downloads/hvac/3\\_Energy%20Retrofit.pdf](http://www.nemionline.org/downloads/hvac/3_Energy%20Retrofit.pdf).

<sup>24</sup> Institute for Building Efficiency website, [www.institutebe.com](http://www.institutebe.com).

## Energy Efficiency: Accelerating the Agenda

Figure 10: Energy Efficiency Financing Models



assessing the spectrum of roles played by the various actors in the market, indicating that scale is still limited and a gap between potential and implementation remains. According to the IEA, a total of US\$ 525 billion is required from now until 2030 to meet carbon reduction requirements.<sup>25</sup> With a significant portion of this investment expected to come from the private sector, there is substantial progress to be made.

The private sector can support this progress by working together and sharing leading practices across industries, as per the WBCSD's Cement Sustainability Initiative, an alliance of 24 cement producers across the world to cooperate on energy efficiency.

### 3. Role of International Organizations, NGOs and Academia

International organizations, NGOs and academia have played instrumental roles in making the case

for energy efficiency, supporting policy development, providing financing and catalysing action.

#### 3.1. Making the case for energy efficiency

By raising awareness of energy efficiency and quantifying its potential, international organizations, NGOs and academia have shifted policy and business attention to energy efficiency and forced stakeholders to ask how they can implement energy efficiency savings to contribute to energy security, the environment and cost savings/industry competitiveness. The IEA, for example, identified a total of 13.2 GT potential CO<sub>2</sub> emissions savings each year by 2030 with **57% of those savings being the result of energy efficiency measures**. Such data points are critical to calling attention to energy efficiency and also to supporting investment in energy efficient technologies. The latter is a further reason why independent bodies such as the IEA or academic institutions are so well placed to

<sup>25</sup> "Money Matters", © OECD/IEA, September 2010, [http://www.iea.org/papers/efficiency/money\\_matters.pdf](http://www.iea.org/papers/efficiency/money_matters.pdf).

## Energy Efficiency: Accelerating the Agenda

### Figure 11: Spotlight on Making the Case

#### University of Berkeley Supporting Energy Efficiency Research

The Lawrence Berkeley National Laboratory's Environmental Energy Technologies Division (EETD) studies energy use, including the use of appliances and buildings, as well as the impact of policies on energy use and climate change mitigation.

Within their research into energy use, one area of focus is energy efficiency standards for appliances.<sup>26</sup> One study analysed the realized and projected impacts of energy efficiency standards for residential and commercial appliances in the United States during the period 1988-2006. The study found that these standards would reduce resident and commercial consumption and CO<sub>2</sub> by 4% in 2030 compared to not having those standards in place. It further found these **efficiency gains would lead to US\$ 241 billion in consumer savings by 2030.**<sup>27</sup>

Research of this nature helps to make the case for energy efficiency in a credible manner.

provide these data sets; they are not supportive of any particular commercial interests and thus add credibility to the research and results.

The creation of market transparency further supports the case behind energy efficiency as it enables stakeholders to get a consistent view of where the market is and how much potential remains untapped, as well as promoting understanding and action within different industries. The World Energy Council, for example, has developed benchmarking tools for governments and businesses, including one that enables comparison of generation plants around the globe allowing companies to see their level of efficiency relative to the industry average. **The WEC estimates that this could help save 1 GT CO<sub>2</sub> and US\$ 80 billion annually.**

These efforts have largely put energy efficiency on the map, conjuring a flurry of activity to identify how best to capture this potential.

### 3.2. Supporting policy development

The international organizations, NGOs and academia have also been instrumental in recommending actions to policy-makers in an effort to accelerate policy development and implementation. This has consisted of identification of specific recommendations to meet a specified potential of energy efficiency. The United Nations Foundation

in their report *Realizing the Potential of Energy Efficiency* challenges the G8 countries to **achieve a 2.5% improvement rate per year**<sup>28</sup>, identifying the specific actions that would help them achieve this target. Policy toolkits and roadmaps, either industry-specific (for example the World Business Council for Sustainable Development's Buildings Roadmap) or cross-sectoral have also been concrete ways that these organizations have attempted to support policy development. This is a particularly important initiative as a large majority of recommendations made to date have not been implemented, revealing that it is not as easy as one might read.

### 3.3. Providing financing

Some international organizations, those with financing arms, have furthermore supported the scaling of energy efficiency projects over the past few years through the provision of finance. This is often done through the provision of grants to governments which are then redirected to the private sector. These grants and loans are very successful in enabling projects to develop and thus prove the case for energy efficiency through real-life examples. For example, the International Finance Corporation's China Utility Energy Efficiency Program (CHUEE) has been one of the IFC's most successful programmes in enabling rapid scale-up of sustainable energy investments through the provision of guarantees for sustainable energy portfolios. The European Bank

<sup>26</sup> Appliance Energy Standards, Environmental Energy Technologies Division, The Lawrence Berkeley National Laboratory, <http://eetd.lbl.gov/r-ea-aes.html>.

<sup>27</sup> Meyers, Steve; McMahon, James; Atkinson, Barbara, "Realized and Projected Impacts of U.S. Energy Efficiency Standards for Residential and Commercial Appliances", The Energy Efficiency Standards (EES) group, March 2008, [http://ees.ead.lbl.gov/bibliography/realized\\_and\\_projected\\_impacts\\_of\\_u\\_s\\_energy\\_efficiency\\_standards\\_for\\_residential\\_and\\_commercial\\_appliances](http://ees.ead.lbl.gov/bibliography/realized_and_projected_impacts_of_u_s_energy_efficiency_standards_for_residential_and_commercial_appliances).

<sup>28</sup> "Degette Amends Climate Bill to Establish National Efficiency Target" in US Fed News, 25 May 2009, via Factiva, © HT Media Limited.

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### Figure 12: Spotlight on Supporting Policy Development

#### The International Energy Agency's "Policy Pathway" Series

To support policies in the implementation of the International Energy Agency's (IEA's) 25 recommendations for energy efficiency, the IEA has begun to develop a *Policy Pathway: Showing the Way to Energy Efficiency Implementation Now* series. The objective behind the series is to provide practical ways to develop, support, monitor or adjust energy efficiency policies across countries, while bearing in mind local market conditions to facilitate practical implementation and, thus, bridging the gap between recommendations and implementation. Each policy pathway is based on direct experience, published research, workshops and leading practice examples.

The first published policy pathway is *Monitoring, Verification and Enforcement (MVE)* and aims to cover compliance within equipment and appliance energy efficiency programmes. A policy pathway on *Building Energy Performance Certification* was released in November 2010 and *Energy Management in Industry* is expected in spring 2011.<sup>29</sup>

for Reconstruction and Development (EBRD) and the Inter-American Development Bank (IDB) are other proactive players in this space.

#### 3.4. Catalysing action

Finally, international organizations, NGOs and academia have, through their efforts, begun to catalyse action among policy-makers and the private sector. This has been done through a number of ways, namely by bringing together key stakeholders and developing action-oriented initiatives. For example, the IEA's *Energy Efficiency Finance Action Network* seeks to bring together the public and private sectors to bridge the financing gap and scale up investments.<sup>30</sup> This convening of stakeholders

can also lead to brokering of negotiations. For example, the recent agreement between the American Council for an Energy-Efficient Economy and the Association of Home Appliance Manufacturers was, among others, brokered by non-governmental organizations including Earthjustice and the Alliance to Save Energy.<sup>31</sup>

Finally, action has been catalysed by supporting capacity building through, for example, the IDB's recently launched *Energy Innovation Centres* which attempts to facilitate knowledge sharing and dissemination while providing technical training and capacity building to support project scale-up. The interesting point to note about many of these examples is that they all attempt to involve the private sector as a necessary condition to action.

### Figure 13: Spotlight on Providing Financing

#### The Inter-American Development Bank's US\$ 50 Million Programme in Mexico

The Inter-American Development Bank (IDB) provides loans, guarantees and investments to countries in Latin America wanting to invest in energy efficiency. One example of the latter was a **US\$ 50 million program** which the IDB put together with Mexico's Electrical Energy Savings Commission (FIDE) for the sale of energy-efficient electric motors. This program enabled discounts to be offered for electric motors, supporting increased demand. Through this project, the IDB also worked with the manufacturing base to support the development of a robust supply chain and enable demand to be met. The electric motors initiative in Mexico resulted in the **transformation of 100% of the market in two years.**

<sup>29</sup> "New IEA Policy Pathways Series shows how to substantially improve implementation of energy efficiency recommendations", International Energy Agency press release, © OECD/IEA, 11 October 2010, [www.iea.org/press/pressdetail.asp?PRESS\\_REL\\_ID=400](http://www.iea.org/press/pressdetail.asp?PRESS_REL_ID=400).

<sup>30</sup> de T'Serclaes, Philippine, "Energy Efficiency Finance Action Network (EEFAN): Proposal for the initiation of an international public and private action network for the scaling up of energy efficiency financing", International Energy Agency, © OECD/IEA, September 2009, [www.iea.org/finance/EEFAN.pdf](http://www.iea.org/finance/EEFAN.pdf).

<sup>31</sup> Energy Efficient and Smart Appliance Agreement of 2010, Association of Home Appliance Manufacturers, [www.aham.org/industry/ht/d/sp/i/49934/pid/49934](http://www.aham.org/industry/ht/d/sp/i/49934/pid/49934).

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### Figure 14: Catalysing Action

#### World Business Council for Sustainable Development (WBCSD) Cement Sustainability Initiative

The WBCSD is supporting an initiative by the cement industry, the Cement Sustainability Initiative, a global effort made by 24 major cement producers operating in over 100 countries, making it the largest initiative ever developed by any sector. The initiative aims to articulate the value of sustainability (and energy efficiency) to the industry and identify specific actions that can be taken by companies, providing a model for others to follow suit.

Specific projects developed include development of roadmaps and a global cement database on CO<sub>2</sub> emissions to increase market transparency.<sup>32</sup>

This further underlines the role that international organizations can play in convening and mediating between the right stakeholders for concrete action.

The efforts made by the organizations above in raising awareness of the need for efficiency improvements have been substantial. However, projects and initiatives remain small and project-based, meaning there is substantial work to be done to reach scale. As the market continues to develop, these organizations will need to maintain momentum and work together to facilitate focused efforts that are of value to moving energy efficiency forward. Particular focus should be on:

- Convening all stakeholders to facilitate clear communication between them
- Increasing involvement of the private sector by providing them with a platform on which they can articulate their market requirements
- Supporting international cooperation on standards

This continued effort and a focus on reaching scale will be critical to the market going forward.

#### IV. Challenging the Concept of “Low-hanging Fruit”

Energy efficiency is widely known as “low-hanging fruit.” Supporting this, organizations such as the IEA and the UNF have been instrumental in quantifying the potential of energy efficiency and recommending policies for implementation of energy efficiency measures. However, despite this increased focus, a gap remains. Indeed, experience demonstrates

that capturing this low-hanging fruit is not as easy as one would expect; businesses and consumers need incentives to want to do so. Today, the policies and market structures in place are currently not robust enough to support energy efficiency scale-up and, thus, efforts remain project-based. Understanding why this is the case will be critical to bridging the gap.

Companies and individuals tend to invest in assets and products they can see, feel and touch. Energy efficiency does not necessarily meet these criteria and furthermore must compete with other more tangible business priorities, limiting investment and scale. Our previous report, *Energy Vision Update 2010: Towards a More Energy Efficient World*, developed in conjunction with IHS CERA, highlighted a number of these implementation barriers around access to capital, namely:

- The issue of asset life: investments are typically “locked in” for the life of the product once made. It is, however, much easier to invest in new products or buildings rather than to retrofit existing ones, making investments in maintenance or upgrades even more challenging.
- Split incentives: the entity investing in energy efficiency is often not the same one that is benefiting from the investment, making the business case difficult to develop.
- Disaggregated investments: the value in energy efficiency tends to be in aggregating small projects to enable scale and greater savings. However, aggregating these projects is more challenging, again posing a barrier to investment decisions being made.

<sup>32</sup> “Cement Sustainability Initiative”, World Business Council for Sustainable Development, [www.wbcscement.org/index.php?option=com\\_content&task=view&id=35&Itemid=90](http://www.wbcscement.org/index.php?option=com_content&task=view&id=35&Itemid=90).

## Energy Efficiency: Accelerating the Agenda

Through our continued research, the list of barriers has lengthened and now includes barriers such as institutional and regulatory structures, lack of international standards and complexity of affecting large-scale consumer behavioural change. These implementation barriers are all acting as a brake on our ability to convert intent into action, pose considerable challenge to the concept of energy efficiency as “low-hanging fruit” and urgently need to be addressed.

They will only be removed with improved information flow between the public and private sectors. It is important to understand what policy-makers need from industry and vice versa, what industry needs from policy-makers. We need to accelerate the market demand for energy efficiency products and services, to generate longer term self-sufficient economic models for driving energy efficiency practices into the mainstream.

Primary interviews with a number of actors across the stakeholder groups identified support the output

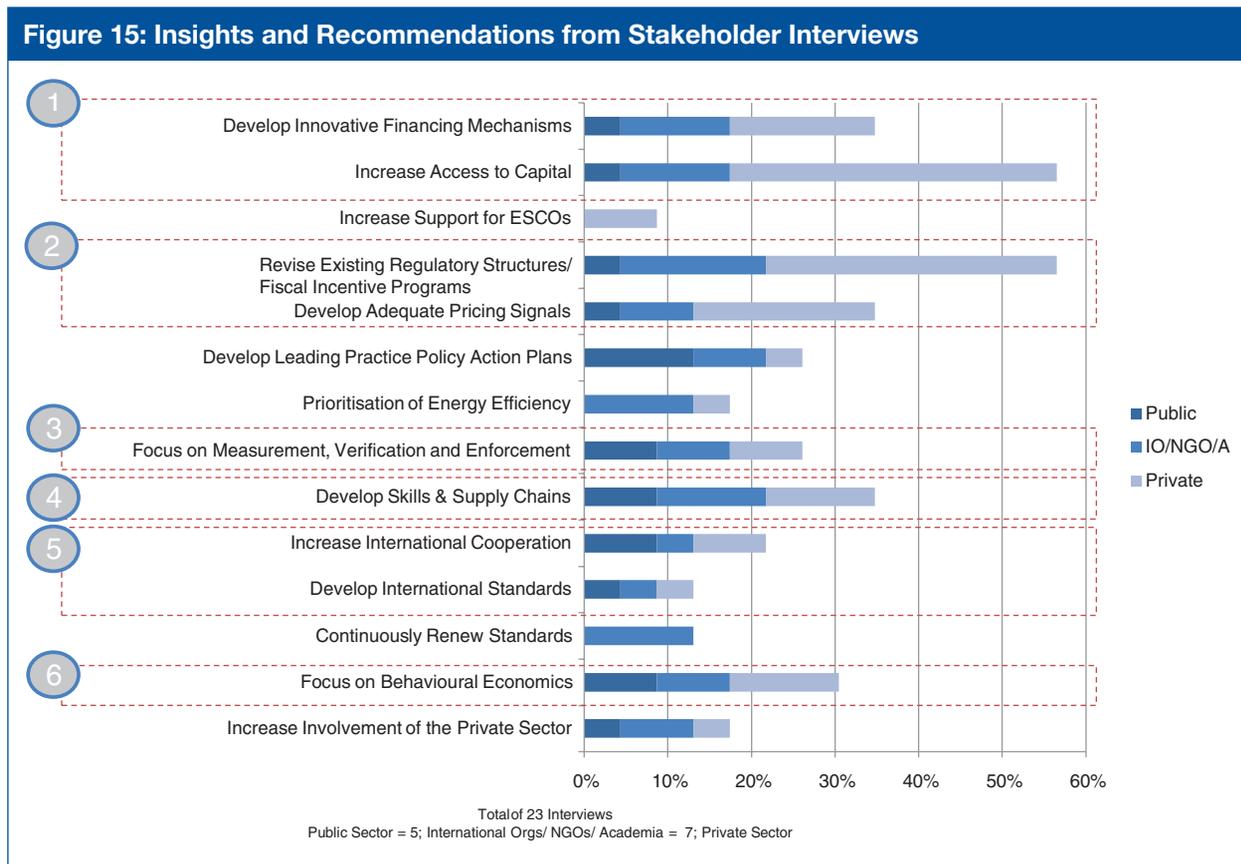
of this study. These interviews focused on identifying the current policy and market gaps, and solutions to bridging those gaps, including recommendations on the respective roles to be played by stakeholder groups. This section explores the key insights from the interviews as well as the six key implementation barriers and recommendations to overcome these barriers across stakeholder groups, developed from the interviews conducted as part of this study.

### 1. Interview Insights

The table below quantifies the priority areas (implementation barriers and solutions) identified in the 23 interviews conducted as part of this work with the highlighted initiatives being those that were most significant.

Figure 15: Insights and Recommendations from Stakeholder Interviews

The output from Figure 15 makes reference to some interesting insights that emerged from the interviews and which provide greater understanding



## Energy Efficiency: Accelerating the Agenda

of the market landscape and what could change so that progress can be made. Three key insights are detailed hereafter.

### 1.1. The private sector is calling for greater access to capital and more supportive institutional and regulatory structures

The private sector today does not feel it has sufficient institutional/regulatory support to capture the opportunities of energy efficiency. The overwhelming feeling from the private sector interviews was that while they recognized the potential of energy efficiency and wanted to capture the opportunities it presents, the existing structures make it difficult for them to unlock capital and develop a strong investment case to do so. For example, accounting standards do not enable accurate recording of energy efficiency investments, therefore making it difficult to prioritize them when managing a business. The private sector called for greater support of access to capital, revision of existing regulatory structures to take energy efficiency into account and development of adequate pricing signals to support development of a stable environment and subsequent upscale in investments.

### 1.2. The public sector believes energy efficiency is appropriately prioritized and is now focused on developing leading practice policy

The interviews highlighted that the public sector largely believes that energy efficiency is sufficiently prioritized within policy-making. Public sector focus is therefore on creating leading-practice policy action plans to support implementation and scale-up. The latter indicates that the public sector largely recognizes the gap between opportunity and implementation and is focused on action moving forward. This focus is, however, not necessarily apparent to either the private sector or the international organizations, NGOs and academia who, on the whole, believe prioritization of energy efficiency is a challenge.

### 1.3. All stakeholder groups acknowledge the need for a standardized method of measurement, verification and enforcement

Despite differing views of the market, all stakeholder groups acknowledge the gap between opportunity and implementation, recognizing that a standardized method of measurement, verification and enforcement would help create market transparency,

a more stable environment and an upscaling of investments. This should be considered of high priority going forward.

Communication between the public and private sectors with regard to energy efficiency has today been limited and, therefore, there is a substantial disconnect between what the public sector sees and what the private sector sees. While the public sector is more focused on skills building and the development of supply chains to support market scale-up, the private sector sees a fundamental gap in supporting institutional and regulatory frameworks preventing them to act on these opportunities, with a particular focus on the need to facilitate access to capital. This disconnect helps to explain the limited scaling of energy efficiency implementation today.

Recognizing the fundamental disconnect between the public and private sectors, the international organizations, NGOs and academia are playing the role of market facilitators or intermediaries, recognizing challenges/frustrations from both sectors. For example, while recognizing the public sector imperative to develop international standards, they also recognize the private sector's feeling that energy efficiency is not a high enough priority on policy agendas. Development of this role will be fundamental to bridging the disconnect between the public and private sectors.

The interview insights highlight a lack of communication between the public and private sectors as well as the role played by international organizations, NGOs and academia in attempting to reconcile the two sectors and develop a common view of the landscape and requirements for change. These, therefore, support the need for a multistakeholder dialogue, with particular emphasis on private sector engagement and recognition of the role of the international organizations in facilitating this dialogue, to overcome some of the identified implementation barriers. This dialogue will further facilitate market transparency and the provision of comprehensible and fact-based information to consumers. The next section explores the specific implementation barriers, identified as being most significant from the interviews, and highlights suggested recommendations across stakeholder groups to overcoming them. It will be

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important to tally these implementation barriers and recommendations to the key interview insights to develop a practical way forward.

### 2. Implementation Barriers and Recommended Solutions

The key priority areas identified by the public sector, international organizations, NGOs, academia and the private sector (highlighted in the table above) are access to capital, institutional/regulatory support, measurement enforcement and verification, development of skills, behavioural economics and an increase in international cooperation, particularly on standards.

To help overcome these barriers, all stakeholder groups will have a role to play. While the exact nature of these roles will vary by implementation barrier, the following high-level conclusions can be drawn:

- **Public sector** should take the lead from both a national and an international point of view. Firstly, from a national point of view, public sector should focus on reviewing existing structures, appropriately tailoring them and complementing them with new ones to develop a robust institutional and regulatory structure. From an international point of view, public sector should continue to engage with other governments to share lessons learned and to support international cooperation, where appropriate (e.g. standards development);
- **International organizations, NGOs and academia** should continue to play the role of market shaper/ facilitator in an effort to support the articulation of public and private sector needs and help clarify implementation priorities and development of a roadmap going forward.
- **Private sector** should take a more pro-active approach to energy efficiency, working together to articulate market requirements to support public sector efforts, to aggregate projects for greater scale.

The key implementation barriers and how these stakeholder groups can work to address them are detailed hereafter.

#### 2.1. Access to Capital

Access to capital remains a critical implementation barrier today. Although there are willing investors (including pension and insurance funds) and thus capital, businesses have not managed to identify credit worthy counter parties to unlock this capital and revenue streams remain unclear; a number of reasons for this have been brought to light, including:

- *Challenge of aggregation:* energy efficiency savings from one building or asset does not always merit investment (this is heavily linked to the challenge of artificially low energy prices). This is particularly relevant when looking at third party investors who search for greater investments to enable higher returns. Indeed, large corporate banks are unlikely to invest their time and energy on conducting due diligence for investments lower than US\$ 100 million as the returns compared to competing investments would be minimal. Being able to aggregate assets and/or buildings will support scale but given the high number of asset/building owners, this is a challenge within the business/consumer segments.
- *Split incentives:* the entity paying and the entity benefiting from an energy efficiency investment are often not one and the same, meaning that there is often not sufficient incentive to support the initial investment, despite it being cost-effective in the long term. Buildings often suffer from this barrier given the number of actors involved ranging from the construction of the building (it is more expensive to construct an energy efficient building) to the property owner (when renting in particular, the property owner will not benefit from any investment made directly as savings will be made on energy bills) to the renting party (who is often not willing to make the investment because the pay-back period may outlive their tenure). This dilemma is known as split incentives and is a major barrier to investment.

The table below identifies some recommendations highlighted by the stakeholder groups.

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### 1. Access to Capital

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>• Provide market support for energy service companies to support scale-up and implement changes to financial accounting standards</li> <li>• Accelerate technology diffusion with strong policy and institutional signals</li> <li>• Continue to invest in own buildings and operations to set leading market example, leveraging effective business models and financial mechanisms available today to prove the case, e.g. performance contracting</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>• Continue to support development of platforms of cooperation to leverage convening power and bring together key players in the market to support development of new business models and drive towards policy implementation</li> <li>• Work together to ensure that efforts are not duplicated but are maximized across the spectrum</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>• Increase knowledge and awareness of financial mechanisms available today to support energy efficiency implementation</li> <li>• Create platforms of financial institutions (supported by multilateral development banks and IFCs) which aggregate projects and funds to create scale and prove the business case behind energy efficiency</li> <li>• Continue to invest in development of innovative financial mechanisms to support energy efficiency, for example look at the potential for creating feed-in-tariffs for energy efficiency</li> </ul>

These recommendations point to the important role that each stakeholder group can play in overcoming this barrier. Policy-makers can support the development of market mechanisms to increase access to capital through, for example, investing in energy efficiency to set an example and to help prove the business case. International organizations should continue to convene stakeholders to support the development of innovative business models that can overcome some of these barriers, for example, performance contracting or green lease contracts. Business can work together, with the support of the public sector, to share and aggregate projects and funds to enable greater scale.

### 2.2. Institutional and Regulatory Structures

The challenge of access to capital is paired with a lack of sufficient institutional and regulatory structures in place to support this access to capital and the development of a bankable energy efficiency

market. The need for stable policy and regulatory frameworks will be a critical first step, but additional aspects need to be considered, these include:

- *Relatively low energy prices:* the impact of energy costs today is often not sufficient to merit investment in energy efficiency, in a typical business for example (excluding energy-intensive industries) energy costs represent between 1-1.5% of total costs. This percentage is too low to justify the capex investment on a traditional business case – particularly when taking into account competing priorities.
- *Accounting challenges:* energy efficiency is not consistently valued today and therefore cannot be accounted for in the way a typical investment would be. Moreover, often it is not viewed as a core business requirement and, therefore, companies do not want it on their balance sheets. This further complicates financing and accounting, creating institutional barriers.

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- *Antiquated incentive structures:* power industry incentives are structured in such a way to encourage more production, not less. This again reflects the fact that the negative externalities of carbon are not taken into account and, therefore, discredits investment into energy efficiency or low-carbon technologies. Governments need to recognize the efforts made today and break down these barriers to increase the scale of such programmes.

Implementation barriers which prevent investments at scale are not new and are predicated on an antiquated institutional and regulatory structure that has not taken into account the requirements of a low-carbon world. These need to be reviewed in line with long-term policy commitments to facilitate a stable environment in which to promote these investments. The table below highlights some of the identified recommendations by stakeholder group.

Policy-makers need to take the lead and revise existing institutional and regulatory structures to disband the hurdles preventing energy efficiency implementation and to implement new structures to support its scale-up. This exercise should further be done on an industry by industry basis. While some areas such as revision of financial accounting standards will be applicable across industry sectors, other measures such as review of utility incentive structures are evidently industry-specific. This effort should be supported by international organizations and the public sector to facilitate clear articulation of the required changes and additions to institutional and regulatory structures, and a supportive policy framework.

### 2. Institutional and Regulatory Structures

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>• Be more aggressive in prioritizing energy efficiency and set concrete and immediately actionable targets, e.g. 1 year versus 10 years</li> <li>• Review financial accounting standards to account for energy efficiency investments separately</li> <li>• Promote energy efficiency investment as a percentage of production in utilities</li> <li>• Focus on developing a fit-for-purpose structural system to support private sector investment and scale – and revisit existing systems that may act as barriers to investment</li> <li>• Implement a regulatory/fiscal incentive which awards businesses for energy efficiency investments, i.e. provides them with a credit which recognizes the value of the investment and minimizes market risk and/or offers them property tax relief/capital gains relief</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>• Continue to support development of platforms of cooperation to leverage convening power and bring together key players in the market and drive towards policy implementation</li> <li>• Work together to ensure that efforts are not duplicated but are maximized across the spectrum</li> <li>• Revitalize the role of the International Partnership for Energy Efficiency Cooperation (IPEEC)</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>• Create business platforms to work with government on policy requirements, e.g. changes required to financial accounting standards</li> <li>• Work with agencies and governments for more formal roles within IPEEC</li> </ul>

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### 2.3. Standardized Measurement and Reporting of Energy Efficiency

A key third implementation barrier identified was the lack of a standardized way to measure or report on energy efficiency. The inability to do so is directly translated into an inconsistency in the way that energy efficiency is valued and thus a misconstrued perception of high market risk. If an asset is considered to have differing market values, investment will be limited. This lack of standardization further creates inability to effectively report on energy efficiency as companies, governments and markets are actively measuring different things. The latter is particularly true on an international level, with different countries taking a number of approaches. Labelling programmes is a case in point. While the US energy labels focus on cash savings, energy labels in Europe and India both focus on kWh savings.<sup>33</sup> This creates a greater sense of confusion in the market, clouding any element of market transparency. A consistent value is thus necessary with the potential of bringing this into a

wider carbon pricing debate at a later stage. The table below identifies a number of recommendations across stakeholder groups to try and overcome this barrier.

The critical recommendation identified above is one of collaboration and cooperation across stakeholder groups to work together and introduce standardized measurement and reporting for energy efficiency. While efforts have been made in this vein, commitment could be strengthened and every actor could be involved.

### 2.4. Skills and Supply Chains to Implement and Monitor Energy Efficiency Measures

The inability to measure and report on energy efficiency is compounded by the lack of skills and poorly developed supply chains in the market to actually implement and monitor energy efficiency projects and investments.

## 3. Standardized Measurement and Reporting of Energy Efficiency

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>• Work across governments to define a consistent value for energy efficiency (emissions vs cost savings) and a standardized way to measure and report on it</li> <li>• Facilitate transparency of process, methodology and support required to understand it</li> <li>• Implement mandatory measurement and reporting schemes at the private sector level, e.g. The Carbon Reduction Commitment Programme</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>• Support the development of standards for verification, monitoring and enforcing by providing a platform for debate as well as technical expertise</li> <li>• Help create market transparency and provide support for understanding of methodology and requirements</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>• Automatically set targets and attempt to capture the value of energy efficiency savings through measurement and verification</li> <li>• Take the lead by aggregating and assessing the value/contribution of projects currently running</li> <li>• Work with governments for a standardized approach to help unlock the capital available for energy efficiency</li> </ul>

<sup>33</sup> *Energy Vision Update 2010: Towards a More Energy Efficient World*, World Economic Forum/CERA, 2010.

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First, a number of skill sets need to be developed including:

- Risk assessment and financial appraisal of energy efficiency investments
- Robust implementation of technology to support energy efficiency
- Energy efficiency auditing across industry sectors

The skills challenge is evident across market sectors from energy and infrastructure firms to financial institutions. On the one hand, a lack of skills/knowledge in the financial sector leads to misplaced perception of risk leading to an inability to bring projects into the mainstream. This skills gap is particularly pertinent in the SME sector. On the other hand, a lack of skills in industry to implement and monitor energy efficiency discredits the industry and leads to non-compliance. In one case, a local government had to scrap its Home Insulation Scheme after many million homes were badly insulated, leading to health and safety issues and<sup>34</sup> causing embarrassment and concern about

retrofitting. This lack of skills can further lead to non-compliance as inspectors are not sufficiently trained to monitor energy efficiency measures.

The supply chains to support energy efficiency furthermore are not developed. The limited market size means that energy efficiency supply chains are not adequately developed in all markets. Therefore, implementing measures where the raw materials are not readily available can be costly and thus undermine the economics of energy efficiency. This challenge should be taken into account and the development of a supply chain supported to enable implementation. The table below looks at the roles the relevant stakeholders can play in this regard.

To facilitate market capability and development, every stakeholder group should play an important role. Policy-makers need to support the development of skills and supply chains as the potential of energy efficiency implies significant job creation and economic development. International organizations can provide platforms for development

### 4. Skills and Supply Chains to Implement and Monitor Energy Efficiency Measures

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>• Act as a champion of energy efficiency and support development of skill sets and supply chains, this should include particular support to ESCOs to support growth in numbers</li> <li>• Integrate activities into country's overall economic development plans as capacity and skills required will lead to job creation and economic growth</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>• International organizations should support the public sector in bringing these skills to market and in helping to develop supply chains – particular focus should be on bringing more mature market experience from developed countries to developing regions of the world, e.g. the IDB's Energy Innovation Centres</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>• Businesses could continue to develop internal capacity to sell externally, including through creation of energy management divisions</li> <li>• Businesses could invest in business model innovation to support scale and capture growing market opportunities</li> <li>• Financial institutions could develop in-house capability to better understand energy efficiency investments, particularly at the SME level as projects will likely continue to be small scale given the nascent nature of the industry</li> </ul>

<sup>34</sup> "House blaze linked to insulation scheme", Australian Broadcasting Corporation (ABC) News, 29 May 2010, via Factiva, ©2010 Australian Broadcasting Corporation.

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of these capabilities and continue to support leading practice sharing across markets. Finally, the private sector should make a stronger commitment to this market opportunity by investing in internal capability to put themselves on the map as a key player in this rapidly developing market.

### 2.5. International Standards for Globally-Traded Products

Scale being one of the key implementation barriers to energy efficiency begs a closer look at the role that international standards can play in expanding the market across a set of globally traded products. While countries have individually been relatively successful in implementing national standards for products (note the *Top Runner Program* in Japan described earlier), there has been limited harmonization of standards despite recognition of their benefits. Moreover, aside from the *Top Runner Program* previously referenced, few countries make an effort to continuously review these standards meaning that once the efficiency bar is improved, a new normal is created. This is known as the “rebound effect”. The challenge is that as demand increases and new technology comes online, energy efficiency goal posts need to keep moving – international standards can help to support this movement.

The table below identifies a set of recommendations that will support a push to the creation of international standards for a set of globally traded products.

The development of international standards is always a difficult task – but it is not impossible as demonstrated by communications and IT standards. This is again an area where collaboration and cooperation across stakeholder groups will be fundamental. To support this development and the public sector in mandating these standards, international organizations can help to identify international leading practice for standards development, while the private sector can create industry consortiums to take the lead and set industry standards which could then be applied on an international scale.

### 2.6. Behavioural Economics

Energy efficiency, while generally making economic sense and being technologically robust, speaks to the broader challenge of behaviour. While a limited number of consumers, deemed “green consumers”, are likely to make purchasing decisions based on impact to the environment, the large majority are not. Understanding where energy savings sit on a list of priorities of consumers or businesses will thus be hugely important. This goes above and beyond cost savings and focuses on the market “nudges” that are required to alter consumer choice and permanently shift behaviour, i.e. what market mechanisms can be developed to change the rationale of individuals and incentivize consumers/businesses to invest in energy efficiency, ensuring they are looking at it as a natural priority and a source of competitive advantage.

## 5. International Standards for Globally Traded Products

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>Mandate standards across globally traded industry and product sectors, e.g. consumer electronics, implementing leading practice from countries such as Japan with its <i>Top Runner Program</i></li> <li>Coordinate across governments to enable international standardization</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>Identify international leading practice for standards and work with governments to implement these</li> <li>Provide a platform for dialogue</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>Create a consortium of companies to progress discussions and agreement on highest standards within a given industry</li> <li>Be proactive and set voluntary targets to reach these standards</li> </ul>

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A global Accenture survey, focused on better understanding the new energy consumer, found that 83% of consumers thought that carbon reduction and efficiency gains should be made from the development of low-carbon energy sources versus changes on the demand side.<sup>35</sup> How then do you get consumers and businesses to shift economic behaviours and invest in energy efficiency to support a sustained change? Little effort has really been made to understand consumer decisions with regard to energy efficiency and what can be done to force a change. This requires greater investigation into what mechanisms you can put into place, e.g. standards and labelling, and what information you can provide to consumers to shift behaviour.

The table below recommends that priority be granted to programmes that try to assess behavioural economics in energy efficiency to facilitate sustained progress and a developed market.

Policy makers should help create market transparency to better incentivize reduction in consumption and increased savings as a competitive advantage – both within communities and businesses. They should furthermore promote campaigns and studies managed by international organizations and the private sector to better understand consumer behaviour and what market mechanisms can be developed to shift behaviour. Leading practice sharing and lessons learned across stakeholder groups and markets will support a better understanding more quickly.

### 6. Behavioural Economics

Stakeholder Group	Recommendations
Policy-makers	<ul style="list-style-type: none"> <li>• Raise awareness and environmental consciousness through community-based schemes which enable community members to understand performance relative to others</li> <li>• Support development of mandated reporting within businesses (similar to the UK's Carbon Reduction Commitment) to benchmark companies against one another</li> <li>• Implement a carbon price to give energy efficiency a quantifiable value and help force the economics and changes in business decision making</li> </ul>
International Organizations/ NGOs/Academia	<ul style="list-style-type: none"> <li>• Help to articulate the value of energy efficiency for business stakeholders</li> <li>• Implement programmes to study behavioural economics and the possible “nudge” factors to move energy efficiency along</li> <li>• Develop a greater number of benchmarking tools to expose inaction and incentivize action</li> </ul>
Businesses	<ul style="list-style-type: none"> <li>• Recognize the opportunities in the market and the competitiveness that energy efficiency brings to businesses, e.g. Duke Energy's description of energy efficiency as a “fifth fuel” in their consumer Save a Watt programme<sup>36</sup></li> <li>• Focus on understanding and changing behavioural dynamics, i.e. how customer choices are made</li> <li>• Focus on identifying the value of energy efficiency for company shareholders</li> <li>• Focus on understanding what operational changes (in the way products are marketed, positioned etc) can influence behaviour</li> </ul>

<sup>35</sup> *The New Energy World: The Consumer Perspective*, Accenture, 2010, [http://www.accenture.com/Global/Services/By\\_Industry/Utilities/R\\_and\\_I/Energy-Consumer.htm](http://www.accenture.com/Global/Services/By_Industry/Utilities/R_and_I/Energy-Consumer.htm).

<sup>36</sup> *How Save-A-Watt Will Work*,” Duke Energy website, [www.duke-energy.com/environment/sustainability/sar07-08/how-save-a-watt-will-work.asp](http://www.duke-energy.com/environment/sustainability/sar07-08/how-save-a-watt-will-work.asp).

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While collaboration and cooperation across stakeholder groups along with greater international coordination will be the key to success (as highlighted by the interview insights), the public sector and international organizations should take the lead in developing supporting market frameworks and policy mechanisms, while engaging the private sector to support these market needs. The private sector, in turn, can focus on creating the energy efficiency market by focusing on developing innovative business models, skills and supply chains, and on better understanding behaviour to identify market mechanisms to overcome the barriers that this causes. The next section explores particular initiatives that bring together these insights and recommendations to develop concrete action for 2011.

### V. Action to Accelerate the Agenda

Energy efficiency is not a new concept and while its potential has been recognized by policy-makers, international organizations and the private sector alike for some time and significant efforts have been made to support scale-up, energy efficiency activities in practice tend to materialize in the form of a disaggregated number of relatively small projects. Achieving progress and scale has not been as easy as expected.

During 2010, a number of forums and initiatives have been supported to position energy efficiency more firmly within the international community agenda as a key mitigation strategy for greenhouse gas emissions. These include, among others, the first Clean Energy Ministerial (CEM) hosted by the United States Department of Energy in July 2010 and the Energy Efficiency and Energy Access Forum hosted by the Mexican Secretariat of Energy, in partnership with the World Bank, the Inter-American Development Bank, the United Nations Foundation and the World Economic Forum in September 2010.

These various events have helped raise the profile of energy efficiency ahead of the United Nations Conference of Parties (COP 16) climate negotiations, scheduled to take place in Cancun 29 November through 10 December 2010.

A key recommendation from this work is that a private sector call for energy efficiency action should be raised at the COP 16, to help trigger a multi-country public-private process so as to catalyse progress at scale on the issue through 2011 with

progress presented to the Conference of Parties (COP 17) in South Africa at the end of the year. There are three clear areas of activity which can frame such an initiative for 2011. They reflect the findings of this work:

- First, to develop a comprehensive energy efficiency ecosystem within and across the main emitter countries by developing a platform that brings together key public, private and expert actors from across the value chain to co-design scalable projects, programmes and policy enablers as well as common metrics and standards. The Clean Energy Ministerial Process could be a useful vehicle in this regard.
- Second, and related to the public-private platform mentioned above, to create a set of action-oriented private sector networks within some key industry sectors, each focused on developing a set of specific actions during 2011 and delivering on them, so as to create a step change in energy efficiency outcomes within their particular sector. A model such as the Cement Sustainability Initiative of the World Business Council for Sustainable Development could be a useful one to work from. An energy-intensive sector may be a good place to start.
- Third, and related to the two activities above, a public-private initiative led by international organizations/NGOs and academia to develop for the corporate sector during 2011 a set of harmonized international standards on measurement and reporting for energy efficiency that can sit alongside carbon emissions reporting. More details on how these three recommended actions could be organized are set out below.

### 1. Development of a Comprehensive Energy Efficiency Ecosystem

Many of the building blocks to support scale-up of energy efficiency exist today. Effort therefore should be concentrated on regrouping these building blocks and ensuring the right level of coordination between the public and private sectors to create a bankable energy efficiency ecosystem. This initiative should be led by the public sector, but involve both international organizations and the private sector to support the right market input. This is about ensuring the appropriate market mechanisms to support bridging of market gaps and developing a common language for energy efficiency.

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Several international platforms exist today that focus on scaling energy efficiency (for example the Clean Energy Ministerial and the IPEEC initiative). More substantive public-private interaction within these and other platforms can help to develop the common energy efficiency ecosystem envisaged. A series of national dialogues could take place to foster the development of this ecosystem on a country by country basis, to support and complement any multi-country engagement opportunity. A focus on developing one or two example country public-private dialogues could be the goal for 2011.

The figure below depicts an overview of this proposed initiative and the roles of the respective stakeholders.

### 2. Creation of an Action-oriented Network of Private Sector Actors to Take the Lead

Private sector engagement and input is a major challenge to energy efficiency implementation. To overcome this, the private sector should mirror efforts being made in the public sector and take initiative to develop an action-oriented network of stakeholders within a given industry, much akin to the World Business Council for Sustainable Development's *Cement Sustainability Initiative*,<sup>37</sup> which was launched at the Conference of Parties in Copenhagen in December 2009 and is an international network of 24 major cement producers with operations in more than 100 countries.

This proposal recognizes that there are many businesses that are eager to work towards scaling energy efficiency, but that clarity is lacking on how to

**Figure 16: Develop a comprehensive energy efficiency ecosystem**

<b>Objective</b>	Develop a comprehensive energy efficiency ecosystem through a series of national dialogues and continuous engagement of the private sector		
<b>Actions</b>	<ul style="list-style-type: none"> <li>Review existing regulatory/institutional measures acting as a barrier today and develop an action plan to overcoming them, a sequence of reforms</li> <li>Develop measurement and reporting mechanisms</li> <li>Identify implementation priorities using a disaggregated marginal abatement curve</li> <li>Develop funds and innovative financial mechanisms (e.g. off-balance contracting) to support scale-up and prove the viability of investments</li> <li>Identify programmes to support capacity building and behavioural segmentation/targeting</li> </ul>		
<b>Tools</b>	<ul style="list-style-type: none"> <li>Existing platforms and working groups, e.g. CEM, IPEEC, IEA, WBCSD</li> <li>Best practice market mechanisms and measurement tools</li> </ul>		
<b>Roles</b>	<p><b>Public Sector</b></p> <ul style="list-style-type: none"> <li>Lead development of initiative</li> <li>Identify target actions and develop roadmap for delivery</li> <li>Document lessons learned</li> </ul>	<p><b>IOS/NGOs/Academia</b></p> <ul style="list-style-type: none"> <li>Articulate best practice examples and help distil market information</li> <li>Support development of roadmap</li> </ul>	<p><b>Private Sector</b></p> <ul style="list-style-type: none"> <li>Input overview of policy measures causing market failure today</li> <li>Support development of roadmap and implementation of learning programmes</li> </ul>

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accomplish this. The creation of an action-oriented network would provide these businesses with clarity on their potential roles, as well as a suite of concrete measures for implementation. The Forum proposes that an sample network first be trialled within one industry, preferably an energy-intensive industry as this is where the most gains can be made, before scaling to other industries. The figure below depicts what the proposed initiative should look like.

Concrete action could be prioritized for 2011 and early lessons learned as well as future plans for 2012 and beyond explored at COP 17 in South Africa. With the success of one sector-based approach, the expectation would be that other industries would follow.

### 3. Development of an International Standard to Measure and Report on Energy Efficiency

Today the value of energy efficiency is both intangible and inconsistent, resulting in an inability to price energy efficiency in the market, difficulty in developing the business case and a higher perception of market risk. Identification and agreement of a consistent way in which to measure (whether this be in Kwh savings or cost savings) that can be translated into a market price (and could eventually be included as a carbon price) will support the creation of market transparency through greater technological and financial certainty and the subsequent upscaling of investments. It would further demonstrate progress on company reporting and support businesses pursuing valuable business opportunities.

**Figure 17: Create a coordinated network of private sector actors**

<b>Objective</b>	Create an action-oriented network of private sector actors		
<b>Actions</b>	<ul style="list-style-type: none"> <li>• Set energy efficiency targets for the network</li> <li>• Develop a coordinated approach to systematically report and measure progress</li> <li>• Discuss creation of agreed standards across the industry – whether a set standard or through replication (on a small scale) of Japan’s <i>Top Runner Program</i></li> <li>• Identify projects for implementation throughout 2011 (e.g. consumer awareness programmes, operational projects) and define a roadmap for their implementation</li> <li>• Report back on project outcomes</li> <li>• Discuss and agree policy mechanisms that should be revised</li> </ul>		
<b>Tools</b>	<ul style="list-style-type: none"> <li>• Existing projects underway</li> <li>• International best practice examples</li> </ul>		
<b>Roles</b>	<p style="text-align: center;"><b>Public Sector</b></p> <ul style="list-style-type: none"> <li>• Encourage development of network</li> <li>• Engage network in discussion regarding recommendations for policy revision</li> </ul>	<p style="text-align: center;"><b>IOS/NGOs/Academia</b></p> <ul style="list-style-type: none"> <li>• Articulate best practice examples and help distil market information</li> <li>• Support development of roadmap</li> </ul>	<p style="text-align: center;"><b>Private Sector</b></p> <ul style="list-style-type: none"> <li>• Take the lead in creation of action-oriented network</li> <li>• Manage the core activities of the network</li> <li>• Document outputs and lessons learned</li> </ul>

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An initiative led by international organizations, NGOs and academia to develop an international standard on measurement and reporting thus should be established. This initiative could take several forms:

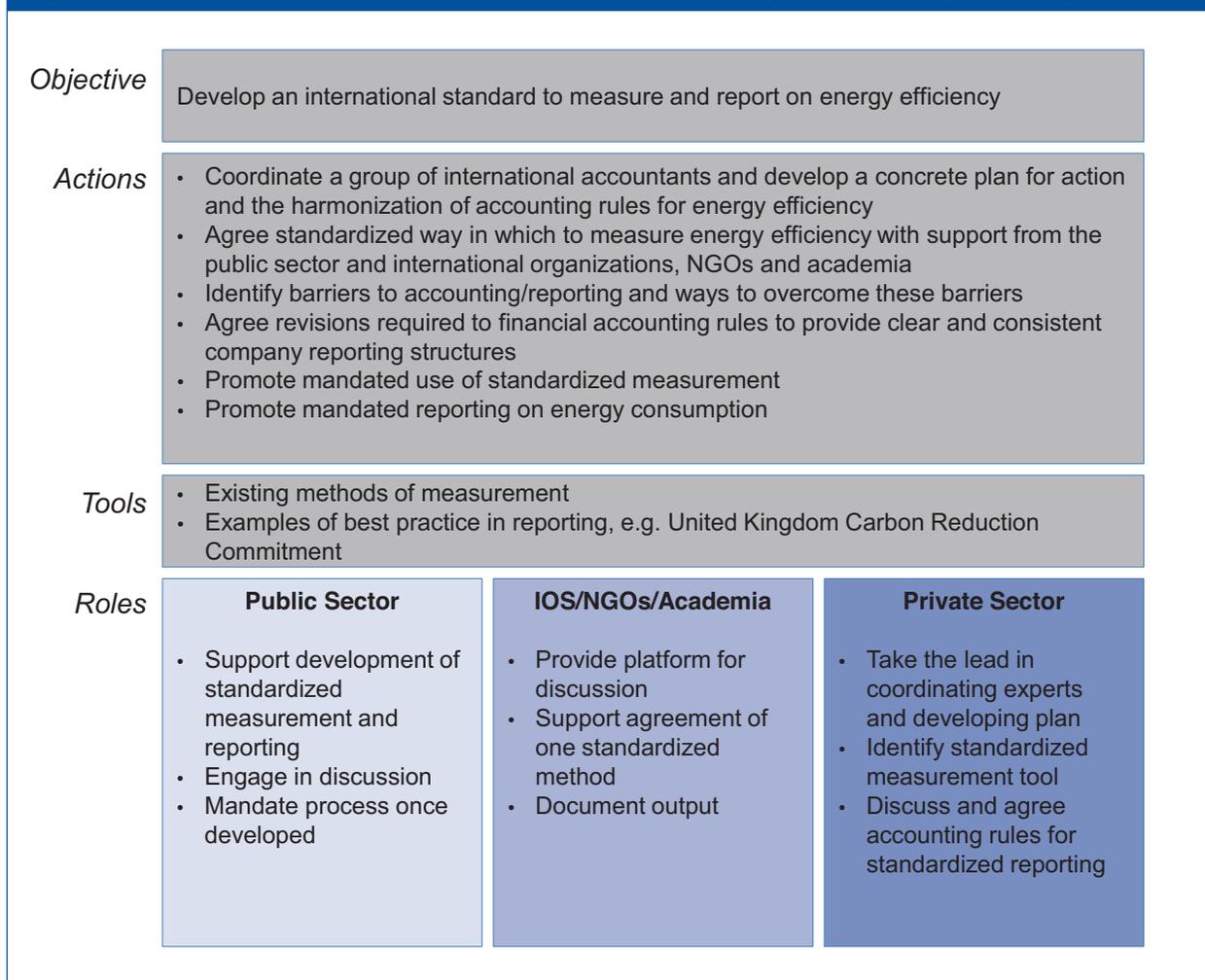
- An international organization to take the lead and identify existing ways in which energy efficiency is measured, benchmark these methods and provide a platform for consensus building and agreement of one standard
- Public sector to take the lead, liaising with other governments and providing an inlet for private sector input
- Private sector to take the lead by bringing accountants together to harmonize financial/company reporting. This could mirror the initiative launched in 2008 by the World Economic Forum to harmonize carbon accounting.

A useful (if not exact) analogue might be the work of the Carbon Standards Disclosure Board, a process supported by the World Economic Forum to harmonize accounting rules for private sector carbon disclosures so as they can feature in corporate financial reporting. As a private sector-led activity, this provides an interesting way in which to tackle the energy efficiency standards harmonization and reporting problem – bottom up versus top down.

### VI. Conclusions

Energy efficiency is recognized across countries and industry sectors as being the most scalable and lowest cost way in which to reduce energy consumption and enable cost savings in an era of increased energy security concerns, climate change concerns and rising demand. While it is not a new

**Figure 18: Develop international standards to measure and report on energy efficiency**



## Energy Efficiency: Accelerating the Agenda

concept and extensive efforts have been made across stakeholder groups to raise awareness and implement energy efficiency measures, measurable progress has remained limited.

The focus of this study was to identify where we are today, what is working well, what is not and to explore the role of each stakeholder group in pursuing energy efficiency to really gauge why implementation to date has been so limited. The study was based primarily on interviews conducted with each of these stakeholder groups to better understand the different perspectives and highlight what these stakeholders believe are the key implementation barriers and potential solutions to overcoming these barriers.

The results of the study highlight the important roles that each stakeholder has played in getting energy efficiency onto the agenda and in supporting pilot developments; namely:

- The public sector has largely identified energy efficiency as a policy priority with over 70% having defined quantified targets, and has supported this priority with policy implementation including the introduction of standards and building codes, incentives and subsidies, as well as implementing measures within ministries and governments and supporting international cooperation;
- The international organizations, NGOs and academia have been instrumental in raising awareness and quantifying the potential of energy efficiency, as well as in providing funds and catalyzing action; and,
- The private sector has implemented energy efficiency measures and targets within their own businesses achieving cost savings (this is true of energy-intensive industries), has built skills to support market demand and has begun to develop innovative business models.

While the efforts have all been commendable, the untapped potential remains extensive. Through the interviews conducted, critical reasons behind this emerged as being a substantial disconnect between the public and private sectors as well as absence of widespread international cooperation to date. These two elements will be the necessary market conditions for progress.

Indeed, the research highlighted that today the public and private sectors do not share the same view of implementation barriers, with the international organizations/NGOs and academia recognizing barriers on both sides. Among the emerging list of barriers however, the following were most often remarked:

1. Difficulty of Access to Capital including the challenges of split incentives and disaggregated investments;
2. Lack of Sufficient Institutional/ Regulatory Structures in place to support business take up of energy efficiency;
3. Lack of a standardized method in which to measure and report on energy efficiency which leads to market confusion and a misperception of high risk;
4. Lack of skills in the market to implement and monitor energy efficiency measures paired with a poorly developed supply chain;
5. Lack of global standards for globally-traded products, e.g. appliances, which limits the market size and further creates market confusion; and,
6. Poor understanding of behavioural economics and what market incentives can be deployed to tip energy efficiency to scale.

It is clear that the various stakeholder groups all have a role to play in overcoming each one of these barriers, but none can accomplish this alone. The key is to trigger a multi-stakeholder dialogue process that is linked to a recognized platform for international cooperation on energy efficiency.

Reflecting the findings of this work, three clear areas of activity which can frame such an initiative for 2011 have been identified.

- First, to develop a comprehensive energy efficiency ecosystem within and across the main emitter countries by developing a platform that brings together key public, private and expert actors from across the value chain to co-design scalable projects, programmes and policy enablers as well as common metrics and standards. The Clean Energy Ministerial Process could be a useful vehicle in this regard.

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- Second, and related to the public-private platform mentioned above, to create a set of action-oriented private sector networks within some key industry sectors, each focused on developing a set of specific actions during 2011 and delivering on them, so as to create a step change in energy efficiency outcomes within their particular sector. A model such as the Cement Sustainability Initiative of the World Business Council for Sustainable Development could be a useful one to work from. An energy-intensive sector may be a good place to start.
- Third, and related to the two activities above, a public-private initiative led by international organizations/NGOs and academia to develop for the corporate sector during 2011 a set of harmonized international standards on measurement and reporting for energy efficiency that can sit alongside carbon emissions reporting.

These initiatives will be explored in a private discussion involving business leaders and public sector officials co-hosted by the Forum and the Mexican Government's Ministry of Foreign Affairs and Ministry of Economy at the Green Solutions event, at the time of the UN- hosted Conference of Parties (COP 16) in early December 2010. The expectation is that they would then be further discussed at the World Economic Forum Annual Meeting 2011 in Davos in January and potentially developed to be launched at the time of the second Clean Energy Ministerial meeting in April 2011. Progress could be reported at the COP 17 in South Africa at the end of 2011. As the summer 2010 meeting of the Forum's International Business Council recommended that the World Economic Forum develop an institutional initiative on energy efficiency for 2011, the Forum will explore potential partnerships with the international public sector, governments and private sector/expert stakeholders to take forward these, or related ideas which may emerge from the Cancun and Davos discussions.





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