The Future of Energy Efficiency Finance

Thursday, March 15th 2012, International Energy Agency, Paris

Workshop report

Background of the workshop

Increasing investment in energy efficiency is a significant challenge in IEA and non-IEA member countries. Governments are endeavouring to promote energy efficiency finance in the buildings and other sectors through a range of economic policy instruments such as tax incentives, grants, subsidies, financial mechanisms, market-based instruments, and public direct investments.

The IEA project on energy efficiency finance aims to evaluate the use of economic policy instruments in energy efficiency policy across different sectors and identify future financial mechanisms to scale-up investments in energy efficiency.

The objectives of this workshop were to assist in understanding and evaluating the use of economic policy instruments to improve energy efficiency, particularly in buildings. It aimed at achieving the following goals:

- To enable a discussion between policy makers and experts on the subject of economic instruments, particularly financial mechanisms, and their role in scaling up investment in energy efficiency. This should address key issues such as what is the most suitable policy input to achieve the level of investment needed in energy efficiency in the future.

- To provide a forum for exchange between government officials from finance and energy ministries responsible for incentive programmes in their respective countries and enable the sharing of their experiences in implementing and administering these programmes and gain insight into successful features and lessons learned.

- To encourage the sharing of data on the use of financial mechanisms to scale up investment in energy efficiency. The various presentations and discussions should reveal the latest data and knowledge on the subject and provide material for carrying out the evaluation of programmes to date.

The target audience of this workshop included energy and finance ministry officials, experts from financial institutions, academic institutions and consultancies. The results from this workshop will feed into a series of papers on the use of economic instruments in energy efficiency that will be published early summer.

Session 1: Introductions and workshop context:

Philippe Benoit, head of the IEA Energy Efficiency and Environment Division, chaired the first session.

The workshop was opened by the IEA Chief Economist, **Fatih Birol**, giving an introduction to the World Energy Outlook (WEO) 2012. Given the importance and the largely untapped potential of energy efficiency for reaching energy policy goals, the IEA will feature energy efficiency as the fuel focus of this year's publication. It should raise the profile of energy efficiency with policy makers worldwide. The WEO 2012 will provide quantitative analysis with regard to energy efficiency by countries as well as by sectors. It will include a dedicated scenario on the costs and benefits of increasing energy efficiency deployment. The presentation underlined the urgency of achieving energy efficiency gains on a much larger scale as well as the fact that many open questions remain with regard to financing the deployment of energy efficiency technologies.

Lisa Ryan, from the IEA Energy Efficiency Unit, provided insights on how the workshop fits into the unit's current stream of work. One of the IEA's 25 Energy Efficiency Policy Recommendations[1] focuses on policies to encourage private investment in energy efficiency and facilitates energy efficiency financing. In order to support the implementation of this recommendation the IEA works to facilitate the exchange of good practices and innovative approaches in energy efficiency finance.

Anuschka Hilke, from the IEA Energy Efficiency Unit, gave an overview of findings from the analysis undertaken by the unit of the use of economic policy instruments for energy efficiency in IEA member countries. Following an overview of barriers for private investment, the role of government and some characteristics of economic policy instruments were presented. Given the very inconsistent use of terms in the literature, IEA has developed a framework of distinguishing the instruments in different categories as a basis for further work. Not only choosing the right policy instrument, but also selecting the design of the instrument as well as considering its interaction with other policy instruments, are critical in order to achieve maximum outcomes for the public money invested. Even though economic policy instruments are widely used; very few thorough evaluations in terms of economic efficiency and environmental effectiveness are available leading to the conclusion that the potential for wasting public funds is big.

The **discussion** underlined the difficulty of designing instruments in a way that they do not overlap but mutually reinforce each other. While the various investment barriers seem to be sufficiently analyzed, knowledge is still lacking with regard to how they can best be overcome. Yet a comparative analysis of existing economic and financial policy instruments is to date not possible as robust evaluations of results delivered by the respective policies are very often not available. More analysis is also needed to evaluate how much a burden these instruments really are to the public budgets. This question needs to be seen in relation to the wider effects of economic efficiency improvements on the economy. Evaluations of the German incentives for energy efficiency in buildings indicate that the increased public revenues in terms of social security contributions and relevant taxes can outweigh the costs for the programme and thus lead to a net benefit to the public budget.

[1] http://www.iea.org/papers/2011/25recom_2011.pdf

Session 2: Economic instruments for low energy buildings

Robin Ried, from the World Economic Forum (WEF), moderated the first part of this session. She briefly outlined the work of the WEF in the area and introduced their recently published report on catalyzing retrofit finance and investment in commercial real estate[2].

Yamina Saheb, from the IEA Energy Efficiency Unit, explained that buildings are an important sector to focus on, given that in most IEA countries this sector is accountable for 30-40 % of primary energy consumption. Yet surprisingly, even for IEA countries full data is not available on how this translates into end-use energy consumption. She made the case for holistic policy packages and long-term approaches in order to be able to realize the huge savings potential of the building shell. Policies should aim to transform existing buildings to nearly Zero Energy Buildings, whenever technically feasible and economically viable, combining mandatory renovation rates with long-term financing instruments.

Ingrid Holmes, from E3G – Third Generation Environmentalism, described how the use of economic instruments can be better targeted using Rogers "Diffusion of Innovation" curve. Subsidies should focus on the 15 % of the population who are innovators and early adopters to bring new technologies to the market. Incentives that are well-targeted at different income groups can help leverage private finance and enhance fairness. In general, economic instruments should be used to pave the way and prepare the market for mandatory refurbishment through regulation, and should be phased out once the barriers to energy efficiency investment have been overcome.

The **discussion** raised several issues. In the Australian buildings sector, there were unexpected negative consequences of the mandatory disclosure programme for office buildings: private investors became even more reluctant to invest in the refurbishment of buildings with a very low energy performance. In Sweden, there were good experiences with changing from financing single measures to a total project approach: as part of a package of measures overall cost-efficiency was achieved, also for measures that would be difficult to finance as a single measure. Also, even though communication and awareness raising is very important, surveys suggested that a neighbour's good experience in refurbishing his house would be a more important driver than information campaigns on the potential efficiency gains through refurbishment. Making energy efficiency refurbishments visible and allowing them to become a status feature, could increase the appetite for imitation in the neighbourhood and reduce the need for incentives. On the question, in which countries experiences were made with instruments for large-scale deep retrofitting, the IEA secretariat explained that there is little experience to date, but that through the new European directive on energy efficiency and the recast of the energy performance of buildings directive, European countries are likely to move on this issue.

[2] http://www3.weforum.org/docs/WEF_IU_CatalysingRetrofitFinanceInvestingCommercialRealEstate_Report_2011.pdf

Session 2c: Country roundtable on grants and tax incentives

Josephine Maguire, from the Sustainable Energy Authority of Ireland (SEAI), presented the "Better Energy Programme", which aims at incentivising 1 million building upgrades in the residential, commercial and public buildings sector by 2020. The programme shall not only lead to an improvement in energy security and environmental performance, but also help to generate employment. The SEAI is tracking the behaviour of 100 households participating in the scheme, in order to find out more about actual energy savings achieved, as comfort taking is likely to partly reduce the estimated savings. However, Ireland is looking for a diversification of instruments and new means of financing, reaching out to new partners and businesses. The market for Energy Service Companies (ESCOs) is only starting to develop. The projects are still of a small size and legal requirements have to be clarified for the public sector. The biggest challenge is to convince the financial sector to get involved in energy efficiency financing. Schemes, such as Pay-As-You-Save, are of potential interest, but it remains yet unclear who will provide the up-front financing in Ireland. There is also a wide-spread reluctance among householders to take on debt.

Christine Patterson, from the Energy Efficiency and Conservation Authority (EECA) of New Zealand, presented the "Warm up New Zealand: Heat Smart" programme, which provides grants for the refurbishment of homes built before the year 2000. The programme has two levels of grants: one for low income earners (i.e. those that hold Community Service Cards), and one for other income levels. In order to decrease free-riding, householders have to contribute to the cost of the work; for example general income recipients pay two-thirds of the cost of the installation. However, this cost can be further reduced with third party finance provided by a range of groups, including charities. Moreover, through Voluntary Targeted Rate Schemes (VTR) city or district councils can effectively provide loans to make up the difference between the grant and the full cost of the refurbishment. The loans, including interest covering administration costs, are recovered via monthly payments on the energy bill which amount to about 7 NZ$ per week over 9 years. The scheme is open to everyone. In order to encourage banks interest in the programme, political pressure from ministerial level as well as a dialogue between the EECA and banks, convinced the banks that the process is simple and that participation in the scheme brings financial advantages.

The **discussion** focused on the question how these programmes can be evaluated. Especially where homes have been heated only to only low temperatures before works were undertaken, (as has been reported for both of the countries presented), justifiable comfort taking and health benefits will often be important outcomes that need to be positively considered. In the case of New Zealand, for example, the health benefits have been found to be considerable. Also questions of data availability on behavioural change were discussed. It was mentioned that as a prerequisite for obtaining the incentive, in Ireland, participants can be obliged to monitor and report back the evolution of demand after the installation.

Mikael Skou Andersen, from the European Energy Agency, presented the case of Denmark and showed how building codes and pricing instruments worked together. The Danish government decided to introduce energy taxes to keep energy prices at a high level, just at the moment where these were going down again after the second oil crisis. Other instruments included subsidies for double-glazed windows in the 1980s as well as the promotion of combined heat and power (CHP) and district heating. Subsidies for windows were targeted only at first-movers by limiting the duration of grants to 5 years and reducing the amount every year by 20%. It is also likely that the instruments were mutually reinforcing, as high energy prices help the enforcement of standards and drive energetic refurbishments. Even though it is difficult to attribute the efficiency achievements to specific instruments, the Danish Ministry of Taxation has shown in a study that economic competitiveness rose each time that energy prices were high.

Stephane de la Rue du Can, from Lawrence Berkeley National Laboratory, gave an overview of incentive programmes for energy-efficient appliances in the United States. More than 76% of the financial incentives in the US are rebate programmes, which give a price reduction for the purchase of new energy-efficient appliances. However also midstream and upstream approaches were presented which target appliance retailers and producers. Utilities join together to buy down wholesale prices of appliances; the possibility of applying this approach on a regional or even global level was discussed. Any incentive should only be given for products with a yet small market share in order to reduce the level of free-riding. Also appliances with the highest efficiency levels should be targeted in order to make them complementary to standards and provide an incentive for further innovation. More evaluation and especially ex-post evaluation is urgently needed of these rebate programmes.

The **discussion** emphasised the importance of buildings codes and how they can be better enforced in tandem with financial incentives for energy efficiency. Requirements for an independent verification at the time of building sale were mentioned as an option. Another option discussed was making the approval of mortgages contingent on compliance with buildings codes verified after construction. Building up the capacity for independent assessments of energy performance of buildings was identified as a key issue.

Session 2d: Financial policy instruments

Mikael Skou Andersen, from the European Energy Agency, moderated the second part of the session which focused on instruments that provide financing for energy efficiency investments in the buildings sector.

Gudrun Gumb, from KfW Bankengruppe, explained how Germany's public bank combines promotional programmes with information and consulting activities as well as their interaction with existing rules and regulation. An important aspect of the success of the KfW loan and grant programme is the branding of the KfW Efficiency House as a trade mark, which serves today as a widely accepted "label" for energy efficient houses in the residential sector. KfW aims to keep the programmes simple and easy to understand for consumers. Thus the complex requirements of the German building code were condensed into only two dimensions: an indicator for overall heat loss through the building shell and the annual primary energy demand. Following the same idea, there is a single interest rate applied to all KfW loans, however the partial debt relief offered varies according to the energetic performance achieved through the refurbishment and the current funds available for the KfW programme. The loan amount is calculated to match the additional investment costs incurred by the energetic refurbishment works.

Mélanie Barcet, from the French Ministry of Ecology, Sustainable Development, Transport and Housing, presented the French eco loan "Eco-prêt à taux zero (Eco-PTZ)" which provides interest-free loans for the refurbishment of houses for 10-15 years. Over a 10 year period, the financial effect of a zero interest loans equals a debt relief of about 20%. The loans are distributed by retail banks, which refinance themselves on the financial markets. The State then offers participating banks compensation to offset the lower interest rates provided to householders. While the uptake of the programme exceeded expectations in 2009, the year of introduction, it did not match these in the following years. A likely cause is that during the economic crisis interest rates of regular loans declined and the incentives of the Eco-PTZ became less attractive. However, also the reluctance of banks to take over the responsibility of the eligibility assessments hindered the uptake of the programme. A number of changes have already been made and more are in the stage of planning to address the identified problems and to increase the attractiveness of the programme, especially with regard to deep refurbishment. In the future householders will be eligible to apply for both tax incentives and interest-free loans.

In the **discussion** the role of banks was discussed in more detail. While in France banks were initially supportive of the programme, they lost interest over time as the specifications of the programme kept becoming more and more detailed. Indeed, it appears that the complexity of the programme was greater than expected, leading banks to frequently demand for clarifications. It also turned out that the eligibility test is difficult for banks to carry out as it demands technical knowledge that is outside of normal banking business. In Germany, banks were already familiar with the concept of on-lending. However, a lot of information and advertising campaigns by KfW were needed to engage the banks. KfW sees a big advantage in being itself a bank. Benefiting from a state guaranty, it can easily raise funds on the capital markets with very low interest rates. It also serves as a mediator between the government on the one hand and the on-lending banks on the other hand, as it is familiar with the concerns of each side. In Australia, the Green Loan programme had the opposite effect compared to France, as the uptake was so

high that the government was unable to provide all the funds needed. Additionally assessors were not sufficiently trained and were part of companies selling energy efficient products. Thus the assessors were tempted to make refurbishment recommendations that would help to sell their products rather than the best measures for a particular building.

Casey Bell, from the American Council for an Energy-Efficient Economy, presented different approaches from the US. The Property Assessed Clean Energy (PACE) scheme ties loans for energy efficiency refurbishments to the property, which are then repaid by an assessment on property taxes. This scheme seemed to be very promising in the beginning; its implementation was however quickly stalled by legal complexities. Other forms of on-bill financing, where the investment is repaid through an additional charge on the utility bill, seem to be more successful. On-bill provides opportunities to penetrate previously underserved markets. For example, utility bill payment history can be used to supplement and enhance underwriting loans with financial institutions. These kinds of schemes can be implemented in a large variety of ways. The challenge remains to scale-up these programmes. An important issue for scaling is the need for product performance data. Setting energy efficiency standards can incentivize adoption, and government assistance to reduce the complexity of the process, for example through technical assistance, is needed in order to reduce the transaction costs.

Alexandra Langenheld, from the Joint Research Centre of the European Commission, described the status of Energy Service Companies (ESCOs) in Europe as revealed by the Commission's regular surveys. A report with 2011 data will be published at the end of the year. Most countries in the EU have only a few ESCOS, exceptions are Germany, France and Italy. Until now the activities are very focused on the public sector, as ESCOs are targeting large energy-users with little risk attached. Deep retrofits are not usually undertaken and would need incentives to make it happen.

In the **discussion** it was clarified that with regard to on-bill financing, there was scope for deeper retrofit in the tariff-based financing schemes. As these can be attached to the meter, longer repayment periods are possible. Concerning ESCO activities outside the public sectors, few examples can be found, e.g. in Finland and Ireland.

Session 3: Innovative funding mechanisms for energy efficiency

Dean Cooper, from the UNEP Division of Technology, Industry and Economics, moderated the session which was focused on investment needs and available sources of funding.

Cecilia Tam, from the IEA Energy Technology Policy Division, showed some preliminary results from the Energy Technology Perspectives 2012, which will include a chapter on clean energy financing. From the modelling it can be seen, that in order to achieve greenhouse gas emission goals, the building sector will have the greatest additional investment needs to 2020 compared to other sectors. In the subsequent decades the investment needs in other sectors will outgrow those of the buildings sector. This applies especially to the transport sector. Thus, the buildings sector needs to be a priority for financing in the short term. Looking at global assets under management, sufficient private finance would be available to cover clean energy investment needs, but the question remains which mechanisms will work best to leverage it. One option could be to increase the share of government-backed green bonds.

In the **discussion** it was made clear that green bonds can only be part of the solution. Looking at the increasing investment needs in other sectors, questions were posed if the needed short term investments in the building sector will be made, given that sectors will be competing in their quest for finance and other sectors might have higher net savings and may seem more attractive from a finance point of view.

Ben Caldecott, from Climate Change Capital, presented the Climate Change Property Fund as a private sector initiative to provide energy efficiency finance. Activities are focused on the UK, where the legislation and the property market are favourable. Even though the externalities are still underpriced, green assets are showing a better performance for a number of reasons, such as a growing importance of CSR, better working environments, legislative pressures to invest in "green" buildings, etc. For these reasons tenants in many cases prefer green buildings.

The **discussion** focused on how governments can encourage private investment of this kind. Rather than regulation, carbon pricing instruments and mandatory disclosure schemes were named by Ben Caldecott as key elements in order to make investments attractive to the private sector.

Robert Nuij, from the European Commission Directorate General for Energy, presented various funding mechanisms available at the European level and in particular the European Energy Efficiency Fund that was established in 2011. The fund provides loans for commercially viable projects. Beneficiaries are local and regional public authorities or private entities acting on their behalf. Projects must achieve at least 20% savings in primary energy demand. Requirements for buildings are stricter as they must achieve a performance improvement of at least two categories related to the performance certificate. The fund is not targeted at financing pilots for new technologies but rather at deploying already well-proven technologies. The fund aims also to strengthen the ESCO market in Europe. The first project is about to be signed, which involves the energetic refurbishment of the Jewish Museum in Berlin. Additionally, 25 projects are in the pipeline. The fund will also serve as a precursor for ideas for the next round of cohesion funding (2014-2020), for which the European Commission proposed a doubling of the funds allocated specifically to energy efficiency and renewable energies.

Session 4: Developing a way forward: conclusions and next steps

Lisa Ryan, from the IEA Energy Efficiency Unit, summarized the issues that were highlighted in the presentations and the discussions. It is clear that the scale of investments required for the deep renovation of the buildings stock and construction of low energy buildings globally implies that significant private investment will be needed. The most common policy instruments in the past to encourage improvement of the energy performance of buildings have been grants and tax relief. These required considerable public funds and did not in many cases favour investment in ambitious levels of building performance improvements. As countries start to implement actions to realise deeper cuts in energy consumption in buildings to achieve longer-term goals, these instruments are likely to be replaced or complemented by other financing instruments which are less capital-intensive for the public sector, leverage more private investments and provide more stable long-term financing opportunities.

The role of public policy and finance is to catalyse private investment in energy efficiency. There is a wide variety of policy instruments available, yet scaling up activities in terms of outreach but also in terms of achieving much higher levels of energy savings, remains a challenge. It is important to ensure coherence between the multitudes of policy instruments often applied within a single country. The strong interdependence of economic instruments on other policy instruments, such as information, awareness raising and training as well as the existing regulations, was highlighted throughout the workshop. A simplification of building codes, which would focus on overall buildings performance rather than the performance of individual components, would also benefit the design and implementation of economic instruments. Reducing the complexity of procedures, a clear communication and easy to understand but strict requirements seem to be one key to the success of economic instruments.

Making energy efficiency more visible, like a brand or status symbol, would help to increase the uptake of financial mechanisms among energy end-users. In some sectors, as in the commercial buildings sector, there appears to be a slowly growing awareness of the potential to recoup investment in energy efficiency through increased asset and rental values. This has not yet been visible in the residential buildings sector. Energy efficiency may often be part of a package of upgrade measures and should be promoted as an economically sound investment decision.

More analysis is needed on how to drive available global assets to invest in energy efficiency. Better evaluation of energy efficiency investments is likely to help reduce the high risk premiums currently still attached to these investments. Designing new programmes in such a way that facilitates better evaluation would be an important start. A definition of commonly-accepted evaluation criteria could help comparing experiences made in different countries.

The IEA will continue to advance this discussion in IEA and non-IEA member countries. The next step under the current project is to publish a report reflecting the current knowledge of financing and the economic instruments used to promote the improved energy performance of buildings, through a number of case studies on country experiences. This will propose options for good practice in financing future energy efficiency in buildings.

Annex: List of Participants

Australia/Australie	Mr. Adam CULLEN Director – Commercial Building Disclosure Team Department of Climate Change and Energy Efficiency GPO Box 854 Canberra ACT 2601 Australia
Austria/Autriche	Mr. Vincenz LERCH Trainee Permanent Delegation 3, rue Albéric-Magnard 75116 Paris France
Belgium/Belgique	Mr. François BRASSEUR Policy Advisor Direction Générale Energie SPF Economie
Czech Republic/République tchèque	Ms. Eva SLOVAKOVA RES Manager Renewable Energy Ministry of Industry and Trade Na Frantisku 32 Prague 110 15 Czech Republic
Estonia/Estonie	Mr. Margus SARNET Director, Building and Housing Department Ministry of Economic affairs and Communications

France	Mme Mélanie BARCET Chargée du financement de la qualité environnementale Housing Ministry of Ecology, Sustainable Development, Transport and Housing (MEDDTL) Grande Arche Paroi sud 92055 La Défense cedex France
France	Mr. Didier BOSSEBOEUF Senior Expert ADEME 7 rue Louis Vicat 75015 Paris France
France	Mr. Rémy TIROUTTOUVARAYANE Ministère des Affaires Etrangères et Européenes
Germany/Allemagne	Ms. Gudrun GUMB Vice-President European Affairs Department KfW Bankengruppe Palmengartenstraße 5-9, D-60325 Frankfurt
Greece/Grèce	Mrs. Konstantina BIRMPILI Ambassador, Permanent Representative Permanent Delegation 15, VILLA SAID 75116 Paris France
Greece/Grèce	Mr. Iraklis DIMITRIADIS Intern Greek Permanent Delegation to the OECD 15, VILLA SAID 75116 PARIS Greece

Greece/Grèce	Ms. Vasiliki MANAVI First Secretary Permanent Delegation 15, Villa Saïd 75116 Paris France
Ireland/Irlande	Ms. Josephine MAGUIRE Programme Manager - Better Energy Sustainable Energy Authority of Ireland Wilton Park House, Wilton Place Dublin 2
Ireland/Irlande	Mr. Charles ROARTY Energy Action Ltd., Unit 14, Newmarket Dublin 8
Italy/Italie	Dr. Alessandro FEDERICI Research Fellow ENEA - UTEE (Technical Unit for Energy Efficiency) ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) ENEA - C.R. Casaccia Via Anguillarese 301, S.P. 104 00123 Roma Italy
New Zealand/Nouvelle-Zélande	Ms. Christine PATTERSON Senior Advisor EECA Level 8, 44 The Terrace, PO Box 388 6140 Wellington
Norway/Norvège	Ms. Beate ELLINGSEN Adviser Ministry of Environment MYNTG. 2 POSTBOKS 8013 DEP

	0030 Oslo Norway
Slovak Republic/République slovaque	Mr. Jan MAGYAR International Cooperation and Projects Dept. Slovak Innovation and Energy Agency Bajkalska 27 827 99 Bratislava Slovak Republic
Slovak Republic/République slovaque	Ms. Alena PALINSKA Ministry of Foreign Affairs
Sweden/Suède	Mr. Rurik HOLMBERG Energy Efficiency Analysis Swedish Energy Agency P O Box 310 SE 631 04 Eskilstuna
Turkey/Turquie	Ms. Zuhal GOGEBAKAN Engineer Ministry of Energy Natural Resources Enerji ve Tabii Kaynaklar Bakanligi Inönü Bulvari No:27 BAHÇELIEVLER 06100 Ankara
Turkey/Turquie	Mr. Suheda GUMUSDERELIOGLU Engineer Ministry of Energy and Natural Resoruces Enerji ve Tabii Kaynaklar Bakanligi Inönü Bulvari No:27 BAHÇELIEVLER 06100 Ankara
Turkey/Turquie	Mr. Tolga YAKAR Project Coordinator Environment and Sustainable Development Programme United Nations Development Programme Turkey

	Yenilenebilir Enerji Gn.Md. Eskisehir Yolu 7.km No:166 Çankaya 06520 Ankara Turkey
United States/États-Unis	Mr. Mark FRIEDRICHS Senior Policy Analyst US Department of Energy Building Technologies Program, EE-2J, 20585-1290 Washington DC United States
EU/UE	Miss Alexandra LAGENHELD Scientific Officer European Commission - Joint Research Center Institute for Energy and Transport - Unit F.7 Renewable Energy (45/ 016) Via E. Fermi 2749, I TP 450 21027 Ispra (VA)
EU/UE	Mr. Robert NUIJ Policy Officer DG Energy European Commission Rue De Mot/De Motstraat 24 1040 Brussels Belgium
Saudi Arabia/Arabie Saoudite	Mr. Naif ALABBADI Director General Saudi Energy Efficiency Center King Abdulaziz City for Science and Technology King Abdullah Rd., P. O. Box 6086, 11442 Riyadh
Business and Industry Advisory Committee (BIAC)/Comité consultatif économique et industriel (BIAC)	Mr. Javier HURTADO CICARELLI Chairman of the Sustainable Development and Social Responsibility Committee Federation for Production and Trade (CPC) Marchant Pereira 10, 3rd Floor Comuna de Providencia Santiago

	Chile
Business and Industry Advisory Committee (BIAC)/Comité consultatif économique et industriel (BIAC)	Mr. Joe LUTHIGER Business Development - Sustainability Hydro Building Systems AG Schweikhofstrasse 52 8925 Ebertswil Switzerland
UN Environment Programme (UNEP)/Programme des Nations Unies pour l'environnement (PNUE)	Mr. Dean COOPER Head, Energy Finance Unit Energy Branch,Division of Technology, Industry and Economics UN Environment Programme (UNEP) 15 rue de Milan 75009 Paris France
OECD/OCDE	Miss Geraldine ANG Junior Policy Analyst ENV/CBD OECD Marshall Building 0141 2 rue André-Pascal 75016 Paris France
OECD/IEA	Mr. Philippe BENOIT Head of Division IEA/SPT/EED IEA Annexe IEA 219 9, rue de la Fédération 75015 Paris France
OECD/OCDE	Ms. Ivana CAPOZZA Principal Administrator ENV/EPI OECD Marshall Building 0030 2 rue André-Pascal

	75016 Paris France
OECD/OCDE	Ms. Jane ELLIS Principal Administrator ENV/CBD OECD Marshall Building 0218 2 rue André-Pascal 75016 Paris France
OECD/IEA	Mrs. Audrey GLYNN-GARNIER Administration assistant IEA/SPT/EEU OECD Annexe IEA 218 9, rue de la Fédération 75015 Paris France
OECD/IEA	Ms. Anuschka HILKE Consultant IEA/SPT/EEU IEA Annexe IEA OZ12 9, rue de la Fédération 75015 Paris France
OECD/IEA	Ms. Ellina LEVINA Energy Analyst IEA/SPT/CCS IEA Annexe IEA OZ15 9, rue de la Fédération 75015 Paris France
OECD/IEA	Ms. Lisa RYAN Energy Economist IEA/SPT/EEU

	IEA Annexe IEA 216 9, rue de la Fédération 75015 Paris France
OECD/IEA	Ms. Yamina SAHEB Senior Energy Efficiency Analyst - Buildings IEA/SPT/EEU IEA Annexe IEA 205 9, rue de la Fédération 75015 Paris France
OECD/IEA	Ms. Cecilia TAM Senior Energy Analyst - Roadmaps and Technology Innovation Policy IEA/SPT/ETP IEA Annexe IEA 241 9, rue de la Fédération 75015 Paris France
OECD/IEA	Mr. Robert TROMOP Head of Unit IEA/SPT/EEU IEA Annexe IEA 243 9, rue de la Fédération 75015 Paris France
	Mrs. Elena MERLE-BERAL Energy Policy Expert International Finance Corporation (IFC) IFC Advisory Services, 36, Bld. 1, Bolshaya Molchanovka Str., Moscow 121069 Russian Federation

	Oshani PERERA Programme Officer International Institute for Sustainable Development 9 Chemin de Balexert 1219 Chateliane, Geneva Switzerland
	Ms. Eva PROMES Research Assistant, Process and Energy Department Delft University of Technology Nieuwelaan 48 2611 RS Delft Netherlands
	Ms. Robin RIED Head, Urban Development World Economic Forum 3 East 54th Street, 18th Floor NY 10022, New York United States
	Mr. John NEWMAN Energy and Environment Consultant 64 rue Jean de La Fontaine 75016 Paris France
ACEEE	Miss Catherine BELL Senior Economic Analyst ACEEE 529 14th St, NW, Suite 600, Washington, DC 20045 United States
Climate Change Capital	Mr. Ben CALDECOTT Head of Policy, Advisory Climate Change Capital 3 More London Riverside London, SE1 2AQ

E3G Third Generation Environmentalism Ltd	Ms. Ingrid HOLMES Programme Leader Low Carbon Finance E3G Third Generation Environmentalism Ltd 47 Great Guildford Street, London SE1 0ES London
EURELECTRIC AISBL	Mr. Nicola REGA Advisor, Environment and Sustainable Development Policy EURELECTRIC AISBL Blvd de L'Imperatrice, 66 - bte 2 B-1000 Belgium
European Environment Agency (EEA)	Professor Mikael Skou ANDERSEN IEA0 European Environment Agency (EEA) KONGENS NYTORV 6 1050 Copenhagen Denmark
Lawrence Berkeley National Laboratory	Mrs. Stephane DE LA RUE DU CAN Program Manager International Energy Studies Group Lawrence Berkeley National Laboratory 1 Cyclotron Road Mail Stop 90 400 94720 Berkeley United States
United Nations Environment Programme Finance Initiative	Mr. Jacinto COELLO Programme Officer Investment Commission United Nations Environment Programme Finance Initiative International Environment House, Office D-512 15 chemin des Anémones 1219 Châtelaine Geneva Switzerland

Vienna University of Technology	Mr. Ignacio DÍAZ-CASTRO Junior Researcher Institute of Chemical Engineering, Future Energy Technology Vienna University of Technology Getreidemarkt 9/166 1060 Vienna Austria
Wuppertal Institute for Climate, Environment and Energy	Miss Dorothea HAUPTSTOCK Junior Research Fellow Research Group 2 "Energy, Transport and Climate Policy" Wuppertal Institute for Climate, Environment and Energy Döppersberg 19 42103 Wuppertal Germany
Wuppertal Institute for Climate, Environment and Energy	Mr. Florin VONDUNG Junior Research Fellow, Research Group 2 Research Group 2 "Energy, Transport and Climate Policy" Wuppertal Institute for Climate, Environment and Energy Doeppersberg 19, 42103 Wuppertal Germany