

EU Hitachi
Science & Technology Forum
1st Dialogue Workshop

Energy Efficiency, a Driver for Innovation?
La Maison de la Culture du Japon à Paris
September 24, 2009

Summary Report

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Energy Efficiency, a Driver for Innovation?

Paris – September 24, 2009

Agenda

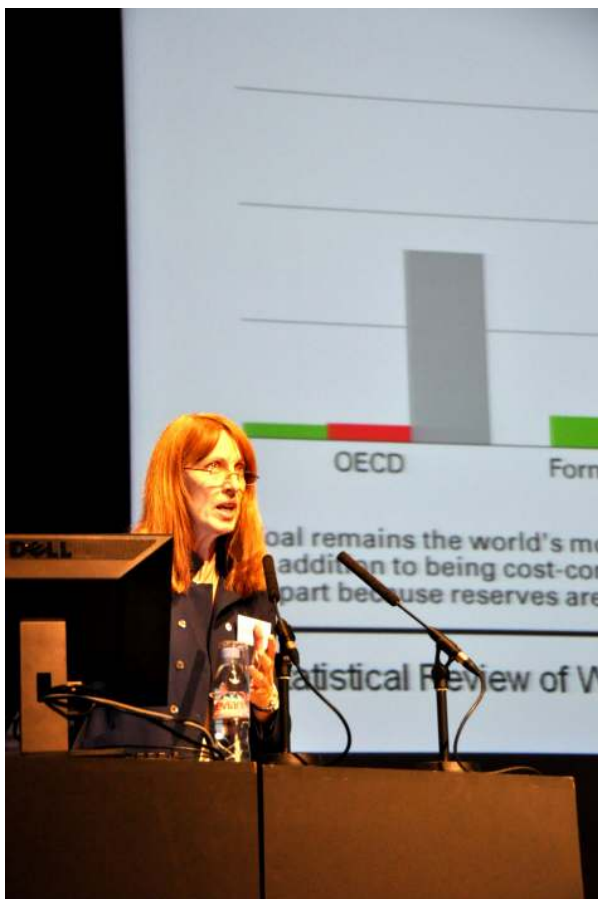
- 15:00 – 15:05 **Welcome** : Sir Stephen GOMERSALL, Chief Executive for Europe, Hitachi
- 15:05 – 15:50 **Setting the Scene : Energy Efficiency Policies**
- in Europe : Prof. Jacqueline McGLADE, Executive Director, European Environment Agency
- in Japan : Mr. Takayuki SUMITA, Executive Director, Japan Machinery Center for Trade and Investment - Brussels Office
- 15:50 – 17:20 **Panel Discussion**
Moderator : Mr. Michel PETIT, Chairman, French Green IT Panel
Panelists :
- Mr. Mathieu WELLHOFF, ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie)
- Mrs. Philippine de T'SERCLAES, IEA (International Energy Agency)
- Mr. Edouard TOULOUSE, ECOS (European Environmental Citizens Organisation for Standardisation)
- Mrs. Elizabeth JASKULKÉ, Chairwoman, ICT and Sustainable Development WG, MEDEF
- Mr. Laurent GOUZÈNES, Group VP, European R&D and Public Affairs General Manager, STMicroelectronics
Conclusions by moderator, speakers and panelists
- 17:20 – 17:50 **Hitachi Environment Policy and Vision** : Mr. Takashi HATCHOJI, Representative Executive Officer, Executive Vice President and Executive Officer, Hitachi Ltd.
Technology illustration : Eco Data Centers : Mr. Michel ALLIEL, Products and Solutions Marketing Director, Hitachi Data Systems
- 17:50 – 17:55 **Closing** : Sir Stephen GOMERSALL

Introduction

On September 24, 2009 in the context of the 12th EU Hitachi Science & Technology Forum, a Dialogue Workshop entitled; ‘Energy Efficiency, a Driver for Innovation?’ was organised by Hitachi, Ltd. This workshop was attended by around 100 invitees including French and EU level stakeholders ranging from policymakers, experts in the field of energy efficiency, industry figures, and members of the general public along with high-ranking Hitachi executives who gathered in Paris at the *Maison de la Culture du Japon à Paris* who generously hosted the event.

Opening Address

The Dialogue Workshop was opened by Sir Stephen Gomersall, Chief Executive for Europe, Hitachi, who welcomed the guests and thanked, on behalf of Hitachi, the *Maison de la Culture du Japon à Paris* for their hospitality, and also the moderator, keynote speakers, and panellists for their participation in the workshop. Sir Stephen pointed out that given Hitachi’s involvement in the French Green IT panel, the key role played by France in the global debate on combating climate change and the policy advances made by the European Union in the field of energy efficiency under the 2008 French Presidency, Paris was a natural choice of setting for this workshop. Explaining the choice of energy efficiency as theme for the debate, Sir Stephen commented that this is a key part of Hitachi’s thinking on the sustainable use of energy in both the production and use of its products worldwide.



Prof. Jacqueline McGLADE, Executive Director, European Environment Agency

Setting the Scene: Energy Efficiency Policies

Keynote Speech 1: European policy for energy efficiency and its impacts on innovation

Professor Jacqueline McGlade, Executive Director of the European Environment Agency (EEA) gave a keynote speech from a European perspective that touched upon some of the key issues and challenges confronting energy efficiency policy in Europe. Professor McGlade started her presentation by stressing the need to accommodate both energy needs and environmental concerns into European policymaking and stated that compromise choices should not be made between the two. She demonstrated that this can be done and will need to be done given that the EU has now set itself the 20/20/20 targets¹ aimed at reducing carbon emissions including a 20% improvement in energy efficiency by 2020.

Indeed the Professor pointed out that EU carbon emissions have already peaked (in 2005) and are now on a downward spiral although she questioned whether this could be said to be the result of a genuine shift brought about by innovation.

¹ A 20% reduction in EU greenhouse gas emissions by 2020, a 20% share for renewable energy in the EU's energy mix by 2020, and a 20% improvement in energy efficiency by 2020.

Professor McGlade also commented that within the reductions that have taken place there is a big distinction between reductions in the ETS (Emissions Trading Scheme) and non-ETS sectors and that in the non-ETS sector there is a wide range (-20% to +20%) of emissions reductions targets amongst the 27 EU Member States.

Professor McGlade went on to talk about the key issue of how much emission reductions will cost. She mentioned that energy efficiency could prove to be a driver for innovation as it is a relatively low-cost option, an example of this being the insulation of buildings. At the moment however, the right price signals are not in place due to the low price of carbon. The professor also pointed out that it is sometimes difficult to fully picture the value chain of energy efficiency in terms of financial or emissions savings. She gave the example of energy efficiency measures that had been put in place in Danish thermal power stations, stating that if these transformation efficiency measures had been implemented across the EU, this alone would have amounted to emissions reductions exceeding the EU-15's Kyoto emission reduction commitments.

Professor McGlade rounded off her presentation by looking at the role of energy efficiency in some key sectors. It was stated that there should be a focus on the benefits of energy efficiency in households although Professor McGlade warned of the dangers of a paradox in which people buy more and bigger products and use them more often due to their energy efficient qualities. To combat this, the professor called for better eco-labelling and carbon-accounting on a personal/household level. As far as households are concerned, Professor McGlade was of the opinion that the power of IT needs to be harnessed and that it is not currently meeting the technological needs in this sector.

In the transport sector, the value of scrappage schemes was questioned as these often do not take into account the final emissions of each vehicle once add-ons such as air-conditioning have been factored into the equation and thus the EEA suspects that these schemes have actually increased Co2 emissions. The Professor did show that energy efficiency can have an effect in the transport sector though and cited the electric car network being put in place in Denmark as an example of how transformations can take place over a relatively short space of time. In a final point Professor McGlade stressed that whatever the sector, dealing with the issue of transmission losses will be key to prevent the gains in energy efficiency being wasted. Here a smart, networked integrated European grid is needed to maximise the potential of energy efficiency.

Keynote Speech 2: Green IT Initiative in Japan

Mr. Takayuki Sumita, Executive Director of the Japan Machinery Center for Trade and Investment based in Brussels, gave the second keynote speech from a Japanese perspective. As a former high-level employee of METI (Japanese Ministry of Economy, Trade and Industry) dealing with in particular 'Green IT' elements of energy efficiency, Mr. Sumita was able to give a thorough overview of developments and policy objectives in Japan in the field of energy efficiency. Mr. Sumita began his presentation by focusing on the ability of IT to contribute to energy efficiency efforts. As Professor



Mr. Takayuki SUMITA, Executive Director, Japan Machinery Center for Trade and Investment - Brussels Office

McGlade before him had touched upon, Mr. Sumita underlined the contribution of Green IT not only in reducing emissions in the IT sector but across a range of sectors such as transportation, industry as well as in the home.

As in France, a Green IT Council has been set up in Japan to promote the benefits of using IT for energy efficiency and also to foster international cooperation in this domain. Mr. Sumita also highlighted the funding efforts that the Japanese government is putting into the development of green cloud computing and the potential of this development to slash energy consumption in the IT, service, and manufacturing sectors in particular. Another government-led initiative that Mr. Sumita presented was the Eco-Points scheme which encourages the purchase of energy efficient products while the government has also established a Green IT award and clear labelling for energy efficient products.

Overall Mr. Sumita felt that energy efficiency policies in the EU and Japan are moving in similar directions and as a final point he cited the need to develop total life-cycle assessments of product emissions as crucial to the development of energy efficiency. Being able to calculate a product's emissions accurately will facilitate the measurement of the energy efficiency benefits of a given product and thus the Japanese Government is currently working on comprehensive methodologies for doing this and also for the implementation of a carbon trading and credit system.



Mr. Michel PETIT, Chairman, French Green IT Panel - Moderator

Panel Discussion

In a first *tour de table* the panel, moderated by Mr. Michel Petit, Chairman of the French Green IT panel, examined the key question of the Dialogue Workshop, namely: Is energy efficiency proving to be a driver for innovation? In doing so, the panel extrapolated several key points linked to this question. The tools available to policymakers to promote energy efficiency were outlined, practical examples of energy efficiency

improvements in industry were given and some of the obstacles preventing energy efficiency improvements and the fostering of greater innovation were also mentioned.

The first theme to be developed in relation to this question was the role of policymakers. In order to promote energy efficiency as a driver for innovation, it was shown that policymakers essentially have three tools at their disposal. The first of these is the use of legislation; this is something that has already been used successfully at European level to stimulate improvements in the energy performance of products through the EU's Ecodesign Directive. Secondly, policymakers can change the economic playing field, weighting it in favour of energy efficient products through either incentives or taxes. Examples of this behaviour in France are the 'eco-loans' for energy efficient products, the incentives and taxes for less and more polluting vehicles, and the recently announced carbon tax on fossil fuels. The third tool is public awareness campaigns whereby the public and, in particular, consumers are made aware of the issues at stake and the need to be energy efficient, most notably in households.

From an industry viewpoint it was illustrated that here too it is clear that energy efficiency improvements are taking place. Examples were given showing energy efficiency improvements in the production processes as well as in product design. Relatively simple procedures can improve the efficiency of manufacturing facilities such as preventing leaks in cooling systems or by educating staff. It was also pointed out that energy efficiency is not only proving to be a source of innovation but also a source of jobs as borne out by the measures for energy efficiency, particularly in buildings, that have been included in many of the recent government stimulus packages.

Given these examples of energy efficiency driving innovation, the question for the panellists then became one of whether these efforts were proving to be sufficient, as well as the issues of what is preventing an even greater take-up of energy efficiency technologies and what needs to be done to improve the current situation. It was generally accepted that more needs to be done in order to fulfil the potential of energy efficiency technologies. It was stated



(From left to Right) Mr. Edouard TOULOUSE, European Environmental Citizens Organisation for Standardisation (ECOS) - Mrs. Philippine de T'SERCLAES, International Energy Agency (IEA)

that one of the main problems lies in the communication of and information available concerning, the importance of energy efficiency. The importance of this point was emphasised several times during the debate because of the risk of a paradox whereby innovations in energy efficiency actually lead to an upward spiral of use of these products resulting in an overall increase in consumption and therefore emissions.

In questioning why energy efficiency technologies aren't being developed more quickly and in more depth, it was pointed out that in many cases innovations in energy efficiency in products are often an after-thought of the design process and are not proactively integrated right from the start of the design process. It was also suggested that many companies underestimate the potential improvements in the energy efficiency of their products and are thus unwilling to invest in R&D to improve energy efficiency. A further issue that was raised was the challenge of financing, at the research and development stage but also for the implementation of projects and for the awareness raising campaigns.

As well as resolving the problems outlined in the above paragraph, the panellists also outlined some concrete action points that are already or would assist in fulfilling the potential of these technologies. The need to utilise all technology tools available was highlighted; while a lot of focus is often put on high-tech technologies, there are often relatively low-tech simple solutions that are overlooked. A combination, therefore, of low-tech and high-tech technologies needs to be fully utilised. It was pointed out that funding for research is increasing both at the EU and national levels with the example of funding for energy efficiency as part of the 'Grenelle' environmental legislation in France being given. A final point underlined was the need to work on many different levels from household i.e. through personal carbon accounting to the local, within communities, to the national and international levels.

Thus looking at energy efficiency policy and industry initiatives on a general level, the panel were able to come to a preliminary conclusion that there are already many examples of positive behaviour from both government and private sectors. However, as demonstrated, in order to stimulate the step-change needed in both industry and personal consumption habits, in order to fulfil the potential of energy efficiency to reduce carbon emissions, a lot more needs to be done which, according to the general consensus of the panel, begs the question of who will lead this transformation, business or Government?



(From left to Right) Mr. Michel PETIT, Moderator - Mrs. Elizabeth JASKULKÉ, Chairwoman, ICT and Sustainable Development WG, MEDEF

In the latter part of the debate, the discussion focused on two sectors that are key for energy efficiency; buildings and transport. Again the panellists looked at what is already happening in these domains as well as what needs to be done and what are the main obstacles to developing energy efficiency in these areas.

In the buildings sector it was pointed out that positive energy buildings already exist and that the

technologies and materials needed to substantially reduce energy consumption are already available although, particularly for new buildings, some technology development is still needed. Examples of innovation already happening in the sector were given as the work starting on new styles of residential areas in France – so-called ‘Eco-districts’ and the idea of having supermarkets on more than one floor which would reduce their surface area and thus improve their energy efficiency.

The main challenge as far as the buildings sector is concerned seems to be the issue of certification of energy efficiency. This was cited as being crucial in order to convince the financial sector of the viability of energy efficiency technologies and create investment certainty. Internationally there appears to be a lack of harmonized standards in this sector with France and Japan having different definitions of what constitutes a positive energy house while even within the EU where there is EU-level



(From left to Right) Mr. Matthieu WELLHOFF, Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME) - Mr. Laurent GOUZÈNES, Group VP, European R&D and Public Affairs General Manager, STMicroelectronics

legislation on eco-certification of buildings, Member States appear to be applying different definitions.

In the transport sector it is clear that energy efficiency can also play a role in driving innovation and cutting emissions through the development of things like intelligent transport systems. From the discussion it was evident that compared to the buildings sector much more innovation and technology development is still needed in the domain of transport in order to develop systems that will enable vehicles to avoid heavily congested routes etc... As had been mentioned earlier in the debate and keynote speeches, and something that is particularly pertinent in the transport sector, is the need for not only technological innovation but also for social innovation. In order to optimise the energy efficiency of transport the general public will have to face up to a switch from private vehicles to private transportation which may prove harder to achieve than the development of energy efficient transport systems themselves.



*Mr. Takashi HATCHOJI, Representative Executive Officer,
Executive Vice President and Executive Officer, Hitachi Ltd.*

Hitachi Environment Policy and Vision

Mr. Takashi Hatchoji, Executive Vice-President and Chief Environmental Strategy Officer of Hitachi, Ltd gave a brief outline of the company's global environmental strategy. This included an explanation of Hitachi's Environmental Vision 2025 which is designed to significantly reduce emissions stemming from both the production and use of Hitachi products. A key element of this vision is improving the energy efficiency of products both used on the energy supply side such as high-efficiency thermal power stations and renewable energy technologies, and on the energy demand side with products such as amorphous transformers, 'Yutaki' heat pumps and energy and water-saving washer-dryers.

In the second part of his presentation, Mr. Hatchoji gave examples of some of Hitachi's global collaborative projects that are aiming to foster technological breakthroughs in the low-carbon domain through cooperation and partnership with

research institutes, competitors and local communities. These projects include a CCS experiment in Europe, an energy-saving project with Chinese industry, and wastewater treatment technology joint research with a university in Singapore.

Technology Illustration: Eco Data Centres

Mr. Michel Alliel, Products and Solutions Marketing Director of Hitachi Data Systems spoke about the contribution of 'eco data centres' to the challenge of reducing the ICT sector's growing carbon footprint. Mr. Alliel demonstrated how Hitachi Data Systems Eco Data Centre is an example of how different technologies can be integrated to maximise efficiency. He explained how the focus is put not just on one component but on incorporating many different energy efficiency techniques in various Hitachi products in order to maximise the efficiency and create a truly 'eco' data centre. Technologies included focus on energy-saving parts and cooling technology for the server, virtualization of storage capacity, a reduction in the heat producing parts of the routers, optimized air conditioning designed specifically for data centre usage, and super amorphous transformers.



*Mr. Michel Alliel, Products and Solutions Marketing Director,
Hitachi Data Systems*

international dimension as witnessed by the current climate change negotiations and also the question of CCS technology development.

Conclusion

The contents of this Dialogue Workshop's keynote speeches, presentations, and panel discussion have, at the same time, provided ample evidence of energy efficiency's role in driving innovation and provided food for thought on what needs to be done to optimise the potential benefits of energy efficiency overall and in key sectors. Numerous examples were given of energy efficiency successes which confirm energy efficiency's role as a driver of innovation yet the overriding tendency of the workshop was to look ahead to the challenges that remain.

It was stressed that both the private sector and policymakers have key roles to play in this development and will need to work together. The public sector will be required to promote energy efficiency through policy instruments such as legislation where needed such as in the

Closing Remarks

Sir Stephen Gomersall closed the workshop with a brief summary of the key points that had been raised in the workshop and he once again thanked everyone for their attendance and contributions to the event. For Sir Stephen, there were several issues that stood out prominently during the presentations and, in particular, the panel discussion. He cited the importance of the role of IT control systems in reducing industrial emissions as something that had been repeatedly emphasized over the course of the discussion. Other prominent issues raised were:

- the need for legislation to both pave the way for and reinforce advances in energy efficiency technology,
- the call for public awareness campaigns,
- eco-labelling and personal carbon accounting to ensure energy efficiency gains were not neutralised, and,
- the need for internationally comparable standards for measuring the total life-cycle energy consumption of products.

Sir Stephen concluded by highlighting a couple of pertinent issues that were not overly mentioned during the debate due to time constraints such as the



Sir Stephen Gomersall, Chief Executive for Europe, Hitachi Ltd.

harmonisation of standards, economic incentives for R&D as well as technology deployment, and public awareness campaigns. In the private sector, manufacturers will need to continue to find ways to make production processes more energy efficient and will have to take into account the energy efficiency of products as a priority right from the beginning of the product design phase rather than as a secondary consideration.

Even if the public and private sectors were to carry out all the above points, this Dialogue Workshop has demonstrated that this may not be enough to maximise the potential of energy efficiency. These sectors will need to work together with NGOs and the general public to ensure that energy efficient products are also subject to efficient use. Social innovations such as personal carbon accounting will be necessary to fully optimise the potential of the innovations being brought about by energy efficiency.



Acknowledgments

I would like to express my sincere appreciation to the distinguished speakers and panellists for their valuable contributions to the 1st Dialogue Workshop. I would also like to thank all attendees whose participation and enthusiasm led to active and constructive discussions.

My gratitude also goes to Mr. Michel Petit who kindly accepted to be the general moderator of this Workshop and who has supported us enthusiastically and efficiently during the whole organizational process.

I would like to sincerely thank *La Maison de la Culture du Japon à Paris* and particularly its President, Mr. Masateru Nakagawa, for having kindly hosted this Dialogue Workshop in their wonderful premises and for the support during the invitation process.

Ko Takahashi
General Manager
Hitachi Corporate Office, Europe

About the EU Hitachi Science & Technology Forum



The EU Hitachi Science & Technology Forum provides a platform where the impact of new technologies on European society is addressed, debated and assessed. A summary of findings is regularly published, and widely distributed to decision makers, academia, business partners, and opinion leaders as a contribution to the EU public policy debate. Hitachi is proud to organize this Forum which main objective is to contribute to shape public policies which will improve the daily life of the EU citizens.

The EU Hitachi Science & Technology Forum was founded in 1998. Its membership is made of European Union scientists, engineers and business people who have been participating in long term internship in a Hitachi operation in Japan. They are joined by other Hitachi partners, specially invited for their knowledge and interest in the covered topic.

The Forum is chaired by Sir Stephen Gomersall (Senior Vice President & Executive Officer, Chief Executive for Europe) supported by a distinguished group of European experts (the Forum Fellows) committed to the overall success of the Forum.

The Forum has benefited from the constant support of the Commission services, of Members of the European Parliament, of academia, of representatives of national civil services whose contributions have enhanced the Forum successful development.

In order to allow for a deeper debate and an enhanced contribution to the societal debate, it has been decided in 2008 to change the format of the Forum by having a large gathering every two years and several smaller Dialogue Workshops in between.

The purpose of the dialogue workshops is both to prepare for the debates of the forum and to disseminate its results afterwards. It is also the occasion to deepen the relationship with

Forum stakeholders. The nature of the Dialogue Workshops allows them to be more flexible in terms of format and location.

Past topics, related to the impact on European Society of new technologies or their application, were covering, among others:

- Information Technologies;
- Electronic Commerce
- Life Sciences;
- Water;
- Energy
- Transportation.
- Urbanization
- ICT for Safety, Trust and Security
- Environment, Energy & Sustainable Society
- Ageing Society

The next Forum will address the issue of 'Sustainable usage of Energy'.

Each time, the Forum moves to a new location, in general a capital city of an EU country. This offers to Forum participants the opportunity to discover the diversity of people and culture which make the EU and provides them with a chance for visiting locations of great interest. Brussels, Dublin, Budapest, Stockholm, Athens, Warsaw, Paris and Munich have recently been visited.