IEA Implementing Agreement
Demand-Side Management
Technologies and Programmes

FORTIETH EXECUTIVE COMMITTEE MEETING

PRE–MEETING DOCUMENT (PMD)
Part 2

14 – 16 November
Espoo, Finland

REPORT FROM THE IEA SECRETARIAT TO DSM ExCo

October 2012

Information on recent and ongoing developments within the IEA Secretariat

Collaboration between IEA and UNFCCC

The two organisations will share expertise in energy and electricity data, clean energy-related policies and

measures, and clean energy technology

26 September 2012 - The International Energy Agency (IEA) and the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (an international treaty aimed at reducing greenhouse gas emissions) have agreed on a framework for collaboration in order to reinforce their mutual efforts to promote clean energy and combat climate change.

This takes the form of a Memorandum of Understanding, which entered into force on 3 September 2012.

This new level of formal collaboration is spurred by fresh analysis from the IEA which indicates that current energy policies are likely to result in a global average temperature increase well above the 2 degree Celsius limit reaffirmed by world leaders at the meeting of the parties to the UNFCCC in Durban last year.

Building on existing ad hoc projects, the IEA and the UNFCCC secretariat have formalised their intention to pool their technical expertise in energy data, clean energy-related policies and measures and technology.

The IEA has extensive experience with regard to best practice in energy statistics, clean energy development and energy policy making. The UNFCCC on the other hand sets the overall framework for intergovernmental efforts to tackle the challenge posed by climate change, and creates institutions and mechanisms which help countries adapt to the inevitable effects of climate change and to curb their emissions. Going forward, the two secretariats will work together to support international efforts to create a low-carbon future.

Energy Technology Perspectives 2012

The Energy Technology Perspectives 2012 (ETP2012) was launched in June 2012. On the basis of three future long-term energy scenarios, ETP 2012 highlights key technological challenges and opportunities in each of the main energy-using sectors and the new policies that will be needed to realise change. Other topics include clean technology progress tracking, innovation policies and finance.

A chapter on flexible energy systems introduces the needs for increased flexibility to manage growing fluctuations in electricity generation and demand, and analyzes resources to deliver those by discussing peak power plants, interconnections, demand response and storage. The chapter also includes costs for T&D investment, smart grid cost and benefit analysis and an assessment of the technical potential of demand response to deliver flexibility.

Data visualisation, summaries, fact sheets, webcasts and presentations are available at www.iea.org/etp

Contact: Markus Wrake (markus.wrake@iea.org)

Tracking Clean Energy Progress

The report is an early excerpt of Energy Technology Perspectives 2012 (will be released 11 June 2012). Tracking Clean Energy Progress provides a comprehensive tracking of progress in the development and deployment of clean energy and energy efficiency technologies in the power generation, industry, buildings, and transport sectors. Progress is compared against rates required to achieve a 2°C limit in global temperature rise (referred to as the "2 degree scenario" or "2DS").

The report finds that while some progress has been made, most clean energy technologies are not on track to make their required contribution to reducing carbon dioxide (CO2) emissions and thereby provide a more secure energy system. It highlights that getting back on track is possible, if timely and significant policy action is taken.

The 2013 report is currently in preparation and the IA's input is very welcome.

Contact: Justine Garrett (Justine.garrett@iea.org)

World Energy Outlook 2012 - Released on 9 November 2011

Oil, coal, natural gas, renewables and nuclear power are all covered, together with an update on climate change issues. Global energy demand, production, trade, investment and carbon dioxide emissions are broken down by region or country, by fuel and by sector.

Special strategic analyses cover:

- What unlocking the purely economic potential for energy efficiency could do, country by country and sector by sector, for oil markets, the climate and the economy.

- The Iraqi energy sector, examining both its importance in satisfying the country's own needs and its crucial role in meeting global oil and gas demand. (Iraq Energy Outlook has been released www.worldenergyoutlook.org/iraq)
- The water-energy nexus, as water resources become increasingly stressed and access more contentious.
- Measures of progress towards providing universal access to modern energy services.

IEA Technology Roadmaps

Latest roadmaps published

- Fuel economy for road vehicles - Sept 2012
- Solar heating and cooling - July 2012
- Bioenergy for heat and power - May 2012

Current roadmaps under development and expected release dates

- Hydropower - end Oct/early Nov 2012
- High efficiency, low emissions coal technologies – Nov 2012
- Cement in India - Dec
- Chemical catalysis - early 2013
- Energy efficient building envelopes - Q2 2013
- Energy storage - end 2013

Under discussion

- Hydrogen

National roadmaps

IEA will provide technical support for a solar roadmap in South Africa ans is discussing a solar roadmap with China.

15 released so far

2011

- China wind power
- CCS in Industrial Applications
- Energy efficiency in buildings: heating and cooling equipment
- Geothermal
- Biofuels
- Smart grids

2010

- Nuclear
- CSP
- PV

2009

- Cement
- Wind
- EV
- CCS

Energy Technology Storage Roadmap

Energy storage technologies can be used in a wide variety of applications and is a very valuable source of ancillary services and flexibility to the energy system, but its deployment is restricted by high capital costs

and round trip inefficiency. Today over 130 GW of electricity storage is deployed globally, most in the form of reservoir and pumped hydro (representing 99% of global capacity). Deployment of new hydro and the current status of other storage technologies, including mechanical and chemical conversion devices, struggle to compete with conventional electricity system technologies in cost and performance.

However, in specific cases where the competing technologies are expensive, the value of storage can outweigh this significant barrier. Increased production from variable renewable generation and the increasing need for flexibility in the future may create new opportunities for storage. Much research and development work is underway internationally exploring new ways to achieve the benefits of storage at lower cost, to reduce the costs of new and emerging storage technologies and to address the other barriers towards increased deployment. Therefore it is paramount that energy storage is considered and evaluated from the context of current status and future development and deployment opportunities in the energy system. This will include concepts that address the current status, predicted evolution in comparison with current and future energy system needs. The inputs to the roadmap will be developed through expert workshops, detailed analyses and modelling (final schedule and scoping is dependant on resources made available).

Contact: David Elzinga (david.elzinga@iea.org)

Policy Pathways

- The newest Policy Pathway 'Improving the fuel economy of road vehicles – a policy package' was co-launched with the newest Technology Roadmap 'Fuel Economy of Road Vehicle' at a well-received and attended Webinar by Ambassador Jones in September.
- In conjunction with IIP and EBRD, in April we launched a Policy Pathway on 'Energy management, programmes for industry'.
- The following two Policy Pathways are scheduled for completion later this fall: 'Building codes and minimum energy performance requirements (MEPs)' and 'Energy-efficient urban transport systems'.
- In 2013, we are scheduled to produce a Policy Pathway on 'Energy efficiency services for small and medium-sized enterprises.'

Contact: Sara Pasquier (sara.pasquier@iea.org)

Consult also the ***Policy Pathways: Q&A Fact Sheet.***

Electricity Grid Perspectives

Electricity networks are an essential part in a clean energy system and responsible to deliver electricity from the generator to consumer. The path towards a clean energy system must include the transition towards a grid that provides an "intelligent" link to generation and demand – one where generation and demand are optimized, not only individually, but in relation to each other. This analysis aims to compare different electricity grid scenarios and compare their potential to deliver generation and end-use scenarios set out by global energy analysis at the IEA. A set of different electricity system and grid technologies will be required depending on the grid scenarios:

Two extreme grid scenarios could compare a system based on transmission "highways", supplied by remote centralised renewable energy, against a distributed model, where a broad range of generation technologies

are deployed close to the consumer and increased distributed energy resources. Both electricity grid scenarios will be modeled to meet the global climate goals, using different configurations of deployed grid technologies.

Key outputs

- Convey importance of electricity grids in the vision for a clean, reliable and secure electricity system
- Analysis and evaluation of electricity grid deployments to 2050 from technology & policy perspectives
- Models to compare different electricity grid scenarios and required technologies

Contact: Steve Heinen and David Elzinga (steve.heinen@iea.org and david.elzinga@iea.org)

How2Guide for Smart Grids in Distribution Networks

Support the development and implementation of national level energy technology strategies, otherwise known as technology roadmaps on a worldwide basis. Providing authoritative technology, policy, and methodological guidance, this initiative aims to catalyse the widespread deployment of Smart Grids in Distribution Networks at the national and regional level.

Each How2Guide will be technology (or system) specific, geographically neutral (i.e. applicable in any country or region), and will (a) Highlight the key technology and policy considerations any national technology strategy will need to address, (b) Provide the methodologies for developing and implementing comprehensive national energy technology strategies. Once completed each guide publication will be widely disseminated through IEA networks, in collaboration with international communication partners.
Furthermore each guide will be converted into comprehensive training modules to support the direct and indirect ("train the trainer" courses) provision of intensive training for national level government policymakers.

Contact: David Elzinga (david.elzinga@iea.org)

Policies for Energy Provider Delivery of Energy Efficiency (PEPDEE)

The IEA together with its working partner the Regulatory Assistance Project (RAP) undertook a new work programme focussing on energy efficiency and energy providers. Formulated under the auspices of the International Partnership on Energy Efficiency Cooperation (IPEEC) and led by the UK's Department of Energy and Climate Change, the Policies for Energy Provider Delivery of Energy Efficiency (PEPDEE) activity has been established to promote co-operation and knowledge-sharing on how energy providers can improve the energy efficiency of their customers. Other participating governments included the US, Australia, and the European Commission.

PEPDEE seeks to facilitate co-operation and knowledge-sharing among IEA and IPEEC member countries on how energy providers can improve the efficiency of gas and electricity customers and what regulators and governments can do to mobilize such efforts. PEPDEE's objective is to improve collaboration by all stakeholders on regulatory mechanisms and programme designs that save energy.

The final workshop report for the North American workshop, held April 18-19 at the American Gas Association offices in Washington, DC is now available www.iea.org/media/Workshopreport.pdf

Contact: Grayson Heffner (grayson.heffner@iea.org) or Janine Migden-Ostrander (jmigden@raponline.org).

Electricity Security Action Plan

Electricity Security Action Plan – Demand Response Work Stream

At the October 2011 Ministerial, IEA member countries endorsed the Electricity Security Action Plan (ESAP) as a mechanism to support the development of more integrated and effective policies to help maintain electricity security while accelerating the decarbonisation of power systems at least cost. ESAP acknowledges the substantial potential for demand response to help to increase the market-based flexibility needed to facilitate the large-scale introduction of variable renewable generation to meet decarbonisation goals.

At the February 2012 meeting of the IEA Standing Group on Long-term Cooperation, member countries endorsed a comprehensive 2-year work program to help implement the ESAP. The endorsed work program identifies 5 key work streams, one of which addresses demand response, and especially focuses on the potential for new 'smart' grid, metering and control device technologies to facilitate more effective harnessing and deployment of demand response into the future. Work under this work stream will build on the IEA publication Empowering Customer Choice in Electricity Markets (IEA 2011), with the next project in this work stream scheduled to commence during the second half of 2012.

The Demand Response workstream will start up during Q1 2013 and the IEA would be very happy to discuss the project with DSM IA at that time.

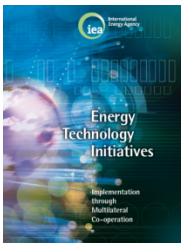
Contact Doug Cooke Doug.cooke@iea.org

Network Standby Power

1-Watt standby power policies have been implemented in many countries. On a product level, these policies have had a clear impact on markets. On an aggregated level, standby power consumption is growing due to increased number of appliances but also due appliances increasingly being connected to networks. To ensure quality of service, most network-connected products are on 24 hours, 7 days a week i.e. these products do not power down to low power modes. Projections indicate that residential networked standby power consumption could reach 850 TWh by 2020, savings potentials are in excess of 550 TWh. The IEA Energy Efficiency Unit is working together with the IEA Implementing Agreement for a Co-operating Programme on Efficient Electrical End-Use Equipment (4E) and the Clean Energy Ministerial Super-efficient Equipment and Appliance Deployment (SEAD) initiative to collect data and develop methodologies and policy guidance needed to cut standby power consumption of network-connected end-use appliances. IEA/4E/SEAD are planning a technical workshop on 7-8 March 2013 in Toronto, conference in September 2013 and publication in 3Q 2013. The project team would be happy to discuss possible synergies with ongoing/planned IEA IA DSM activities - contact: vida.rozite@iea.org.

IEA latest summary of key energy data available on iPhone and iPad

The IEA annual publication of energy data – *Key World Energy Statistics 2012* – can now be downloaded free of charge on iPhone and iPad. The annual summary, which was first produced in 1997, contains timely, clearly-presented data on everything from the annual Canadian production of coal to the electricity consumption in Thailand, the price of diesel oil in Spain and thousands of other useful energy facts. Also available in hard copy.



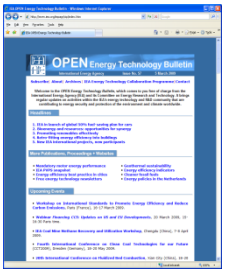
Energy Technology Initiatives 2012

The update is under preparation
For more details contact the author: Carrie POTTINGER (E: carrie.pottinger@iea.org).

Energy Technology Network *News*

Information on recent developments with the energy technology network: the CERT, Working Parties, Experts' Groups and IAs in the areas of strategy, governance, position, influence, guidance resources and outreach activities. It is a 10-minute, automatic presentation that can be printed out for future reference. It is posted on at the following address: **https://www.iea.org/w/ia/NetworkNews.pdf (username: impag, password: experts99).**
For more details contact Carrie POTTINGER (E: carrie.pottinger@iea.org).

OPEN Energy Technology Bulletin



The *OPEN Energy Technology Bulletin*, emailed periodically from the IEA Secretariat, circulates news of activities, findings, events and publications originating within the IEA Energy Technology Network. Through the *OPEN Energy Technology Bulletin*, the IEA seeks to generate broader cross-fertilisation of energy technology information and ideas among a readership of energy policy-makers and all those concerned with energy technology issues around the globe. Members of the Technology Network are invited to submit news items for publication. For more information, please contact Diana Louis (E: Diana.Louis@iea.org).

IEA Energy Technology Network and IEA Logos - Guidelines for use

This new 12-page brochure explains the conditions of use of the IEA Energy Technology Network logo and the IEA's own logo, including graphic guidelines for use. Created by the IEA Secretariat in 2010, the logo promotes the work and initiatives of the Technology Network. We encourage all IAs to use this logo extensively and appropriately and to ensure that everyone connected with your IA understands the conditions of use of the IEA's own name and logo. Also now available: a generic PowerPoint slide deck for use by the IAs. For copies of the slide deck and the brochure please email Diana.Louis@iea.org.

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OUTLINE SPECIFICATION

IEA DSM Website Developments for 2012 - Bulk Email Facility

Prepared by: Matt Alexander

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1 INTRODUCTION

IEA DSM has identified a need to send regular email newsletters and other correspondence to members of the public that have registered their interest via the website.

Currently, this relies on a lot of manual effort in extracting a list of recipients as Excel and then emailing using a standard email client in small batches. This is both time consuming and impractical and so it is suggested that the secure Administration area of the IEA DSM website is further developed to allow for bulk email sending as and when required.

Any requirements for further information or questions should be directed to Matt Alexander at our registered office:

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2 FUNCTIONALITY

The secure Admin area of the website would be updated to provide administrator level users access to a new bulk email system.

The system would provide a searchable and filterable list of all registered users. The admin user would filter the list as required (e.g. all users that have registered in the last 6 months) or would choose to select all users in the database, before clicking to confirm the selection and to compose a new message.

A simple text editor would be provided that would allow for the email body to be composed, inserting images and links as required.

Once composed, the email will be personalised to each recipient and sent. A record of all sent emails will be stored in the database so that admin users can review previous emails and see a list of which users were sent which emails.

All emails sent from the system will contain a link to "Unsubscribe". Should the user decide to no longer receive emails from IEA DSM they would simply click this link to be taken to a page on the IEA DSM website that would ask them to confirm their email address. Once confirmed, the system will no longer send emails to that address.

Simple reporting will be provided to show when emails were sent, to how many people and how many times the unsubscribe link was clicked.

2.1 SUMMARY OF PROPOSED DEVELOPMENTS

The following developments are proposed in response to the above:

- 2.1.1 Search and filter registered users.
- 2.1.2 Simple email composing.
- 2.1.3 Automated "Unsubscribe" from emails.
- 2.1.4 Email reporting

3 DEPLOYMENT TIME & COST

The table below outlines the required development time for each item.

ITEM	DESCRIPTION	TIME (days)
2.1.1	Search and Filter registered contacts (building on the process that is already in place for managing contacts)	1
2.1.2	Composing of emails using defined template	2
2.1.3	Automated unsubscribe	1
2.1.4	Email reporting	2
	TOTAL TIME	**6**
	TOTAL COST	**€ 3,000**

Hans Nilsson 2012-10-02

Why smarter grids?

ISGAN arranged a workshop in Nice September 25-26th on this subject with representatives from 23 countries. The Workshop was very enlightening and showed that the issue both has matured significantly but also that the perception of what a smart grid is differs quite a bit depending on local circumstances.

In the IEA Road-map for smart grids (http://www.iea.org/papers/2011/smartgrids_roadmap.pdf) such are described as "A smart grid is an electricity network that uses digital and other advanced technologies to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end-users." The emphasis in descriptions has been on the communication element for monitoring and managing and with very little room to answer how and why the consumer should engage.

The presentations at this workshop however showed a much more profound focus on local/distributed generation combined with storage as a means to improve the use of renewable resources and to enhance the reliability of the delivery of power. There was further much more interest shown in customer reactions and motives to participate and even to make use of meter-data in a way that provides customer service from third-parties.

For some countries the meter is however still the main issue. This is the case where meter-reading and meter-accuracy is a problem. In those places the customers are indeed opposing installation and there is an even more accentuated need to manifest customer benefits from the change.

Relation to the DSM-Programme

- Decentralised power and the chance to make better use of local and dispersed resources is the main driver and Demand Response comes fairly high on the agenda. This growing interest for the smart grid, SG, as a resource to harvest small-scale intermittent resources and match them to a demand constitutes an obvious relation to our **task XVII - Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Renewable Energy Sources**. There is a need for an immediate discussion with the leadership of ISGAN both on how existing results can be used and on the way forward. Such a discussion should embrace both the integration issues and demand Response (The old **task XIII - Demand Response Resources** and task **XIX - Micro Demand Response and Energy Saving**). Storage systems are important in many of the projects not the least with local applications. The Japanese experience from the Tsunami shows that such systems can be important
- There are obvious differences in how "smartness" is perceived but it seems as if all projects find that an extended use of renewable fuels is smart. The issue is then weather the customer should be involved or if such smartness can be achieved by macro-activities (storage, wheeling, forecasting).
- In terms of relationship between the DSM-Programme and ISGAN they have a higher profile in terms of government engagement in their ranks and sponsors to events (Schneider, Alstom) but also in representation from some countries that might benefit a lot from "general" DSM, e.g. Japan.

- The experiences from the more advanced deployment activities, such as Salzburger netz (below), shows that **task XXIII - The Role of Customers in Delivering Effective Smart Grids**, and **XXIV - Closing the loop - Behaviour change in DSM, from theory to policies and practice,** are very important and should also be subject to some deeper contacts between the DSM-Programme and ISGAN.
- Where is the value for the customer? Metering without any distinct "value proposition" to the customer seems to lead in the wrong direction. Therefore the US "Green Button" (see below) could be interesting since it goes beyond the simple metering propositions. This is certainly also of interest for **task XVI - Competitive Energy Services**
- On the above issues we may want to consider to open a joint new cluster called "Applications for smarter energy"?

CONTENTS

PRESENTATIONS

Hideo Hato, President of NEDO, Japan, opened up with a very useful presentation of the Japanese aspirations to create smarter grids, which is based upon a three-phased strategy: 1) make use of renewable in distributed generation, 2) develop similar structures on the demand side (notably with storage opportunities), 3) Create smarter communities.

REMARK: His presentation is interesting for DSM showing (I think) that we should make new attempts to reach the Japanese, i.e. NEDO and that we should try to connect also task XVII-work into this area. Should we open a new cluster called "Applications for smarter energy"?

Drivers towards smart grid deployment

In this session several witnesses were called and challenged to describe which the drivers are in their opinion and constituency.

Mathieu Craye from DG-Energy stated the EU drivers to be 1) Security of supply, 2) Environment, 3) Internal market and in particular said that on the last issue the "empowerment of the consumer" was gaining importance. He was spelling out that this should mean that the customer should be a) Informed and engaged, b) provided a choice and c) integrated i.e. also have the opportunity to supply from own generation.

Jiang Xiuchen, from the Chinese smart grid R&D centre said the main drivers in China is to integrate renewables, which however is somewhat resisted by the smaller distribution companies who does not want to have local production. Another driver is to facilitate for electric vehicles and to enable the establishment of a strong power grid for Ultra High Voltage (!?). The roll-out of experiments seems to be very top-down with very little concern about consumer aspects.

Sanjeev Kumar, Ministry of Power, India had a long list of drivers and mentioned that the potential for renewables is huge but not exploited, e.g. 100 GW each for wind and solar power. The drivers are: 1) T and D losses can be reduced (with more local power), 2) Providing power-access to masses, 3) Renewables integrated to grid, 4) Peak Load Management, 5) System Improvements (in particular reliability), 6) Prosumer enablement (!), 7) Electromobility. There is a smart grid task force established but it seems as if the activities are more in an early stage.

Kyoung-Hoon Lee, Ministry of Knowledge and Economy, Korea, based his presentation very much on the ongoing activities that we in the IEA DSM-Programme know well since our meeting at Jeju Island. His drivers were mentioned more on a high level and from the starting point that demand is growing very fast. However Korea is committed to 1) deliver Climate Change response, 2) energy efficiency (being the 5th fuel) and 3) that smart grids (and green technology) is an industrial growth engine.

Kazunari Tanaka from METI in Japan started off from the Fukushima experiences that have sharpened the need for energy efficiency and renewable fuels. One of his issues is that local resources were abundant and can be better harvested with a "smart system".

Paul Wang finished the session with a survey made by Annex 1 in ISGAN trying to map which the key drivers are for smart grids in terms of issues and technologies. For Developed countries the six priorities are: 1) System efficiency, 2) Renewable standards (?), 3) Enabling customer choices, 4) New products, 5) energy efficiency improvements, 6) Reliability improvements. For developing countries (India, China, Mexico) had No 1 and 6 above in their first two places and Reducing costs as No 3.

Coming to technologies they rank AMI as No1 Followed by Demand response (our task XIII) and Integration (our task XVII).

Remarks: Customers are now much more present in the presentations than they used to be. We are awfully close on some subjects and there is a clear need to discuss co-operation, Not the least that ISGAN can make use of experiences made in e.g. Task XIII, XVII and XIX.

Still, to many presenters, SG is mainly a technology issue, which I think is best shown by putting AMI so high on the technology agenda.

Presentation of key demonstration projects

Remy Garaude-Verdier from ERDF, presented the GRID4EU project in which the main topics are stated as being "Renewables for distribution networks" and "Participation of customers", i.e. to reduce peak loads. Two parts of the project were presented more in detail. One was Nicegrid in the Nice region were behaviour of customers is said to be a topic but it seems rather to in terms of an algorithm to be fed into a NEM (Network Energy Manager) which is a computer. The other was from Iberdrola in Spain where their "Customer Engagement" was relying solely on that customers receives more detailed information about their use.

Michael Strebl[1] from, Salzburg Netz, presented Smart Grids Modellregion Salzburg[2] that had a more thoughtful foundation for his work. Their understanding is that 1) The EU Climate Policy, 2) The social trends and 3) the ICT revolution will "turn the energy market upside down". They are therefore studying the Technology changes AND the Customer Integration. They have also

[1] michael.strebl@salzburgnetz.at and http://www.salzburgnetz.at/Unternehmensstruktur.1785.0.html
[2] Smartgrid week in Salzburg May 2013

modelled how communities can handle if they have e.g. 50% PV and 50% electric vehicles (c.f. Task XVII). Some of their subprojects are called Buildings to grid and Consumer to grid in which they have involved psychologists. (Here is a clear motive also for Task XXIV to take contact.) Mr Strebl finished off by noticing that there must be an "added value" which not necessarily has to be economic for the customer.[3]

Ron Melton, PNL USA reported on a project covering 5 states in the Northwest. He made remarks on that the general public was not interested but that in the area there was a strong tradition of energy efficiency activities. There was no explanation on how these pieces should be reconciled.

Francisco Varela from the Mexican Federal Commission for Electricity reported on a massive roll out of Advanced Meters. Facilitating the meter reading is obviously good for the grid owner but customers do not see any advantage and sometimes try to resist and block the change.

Cao Xiao, from the Electric Power Research Institute in China had a project that was basically focused on extending the use of windpower by better forecasting and by improving opportunities to transmit over long distances by use of UHV. Smart meters were mentioned but it was not obvious for what reason.

Seul-Ki Kim from Korea Electrotechnology Research Institute reported on some micro-grids in Korea. In some of them they have suffered problem to attain customer interest. But customers are catching up. It seems as if Energy Storage Systems (ESS) are important but not easily embraced by the users.

Masaki Yamamoto had some experiences to share from NEDO in Japan. His results were also about microgrids. Multiple Power Quality Microgrid (MPQM) was said to be defined by customer wishes. There have been defined 5 different Quality levels based on e.g. risk for, and duration of, failures and outages. By use of batteries some levels where maintained even at the Tsunami when the general grid in Japan shut down. There have also been studies about public opinion (that might be of interest to task XXIV).

Eric Lightner from DOE in USA mentioned briefly about an interesting option called "Green Button Initative"[4] that allows customers to download standardised information about consumption to share with third parties in order to get some services for e.g. energy efficiency.

Session 3

Was formed as a discussion between those who presented key projects the first day (see above). The first part of this discussion was focused purely on technical issues such as standards and compatibility.

The second part was dedicated to issues measuring the impacts of deployment. Vincenzo Giordano from JRC suggested either KPIs e.g. the amount of distributed generation achieved or Voltage Quality, or C/B analysis also showing for whom the C/B accrues.[5] In the debate the Korean participant also mentioned the necessity of gathering stories about the changes to learn how actors reacted.

[3] See also "Picking Green Tech's Winners and Loosers"
http://www.ssireview.org/images/articles/2011SP_Features_ChristensenTalukdarAltonHorn.pdf
[4] http://www.greenbuttondata.org/
[5] Check the JRC Publications on C/B analysis for smart meters
http://ses.jrc.ec.europa.eu/sites/ses/files/documents/guidelines_for_cost_benefit_analysis_of_smart_metering_deployment.pdf and on

The third part of the workshop dealt with knowledge sharing and was chaired by Paddy Turnbull from the Global Smart Grid Federation. One of the participants asked for some assistance from e.g. ISGAN to co-operate between projects.

The fourth and final part had the title "Fostering consumer engagement in and through projects". Session was chaired by Roland Roesch, IRENA, and David Marchand-Maillet from the Smart Energy Demand Coalition. Since many projects are pilots/demonstrations of some sort the customers are often part of a niche-market and pioneers and therefore easily engaged. Maybe there could be detected a higher interest because of feedback information, a guinea-pig effect? Strangely enough the idea of "educating" the customer popped up which is quite contrary to e.g. the Salzburg example (see above).

A voice from South Africa highlighted the need to show "the value proposition" to a reluctant customer. Hübner from the Austrian government also asked to step away from the simplistic views of smartness as a meter with a household attached to it. The partner for the grid is somewhat more complicated.

Flexible Electricity (referring to IEA ETP 2012)

David Elzinga (our former desk officer) delivered a presentation to this topic. The basic message from this, and the WEO, is that YES – we can handle the 2 degrees climate warming, but NO – we are not heading in that direction. We need to 1) unlock the potential for energy efficiency, 2) create an investment climate for clean energy and 3) accelerate innovation and deployment.

The need for flexibility should be better communicated since we will engage more variable resources. The system will be more complex but the grid will be a redeeming factor.

(Some of) ISGANs own conclusions

- ISGAN has the ambition to improve peer-to-peer communication in many ways both workshops and webinars.
- A regrouping of the drivers (see above) shows that they addresses several stakeholders, TSO/DSOs, Governments and Customers.
- KPIs could be developed for different purposes, e.g. "build-KPIs" for regulators and "Impact-KPIs" for the companies.
- ISGAN will try to find also "negative" lessons.
- On customer involvement segmentation was mentioned as a method to address the issues.
- There is a problem in terms of the institutional setting of markets. In particular where energy supply and distribution is parted. (The Salzburg example however showed that such can be overcome by redefinition of the business-model).

smart grids http://ses.jrc.ec.europa.eu/sites/ses/files/documents/guidelines_for_conducting_a_cost-benefit_analysis_of_smart_grid_projects.pdf

STRATEGIC PLAN FOR THE IEA DEMAND-SIDE MANAGEMENT PROGRAMME 2008-2012.

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STRATEGIC PLAN FOR THE IEA DEMAND-SIDE MANAGEMENT PROGRAMME 2008-2012.

INTRODUCTION

Demand Side Management (DSM) was widely discussed in the 1980's as the alternative to supply side "overspending" in energy systems. In the US DSM was carefully regulated with detailed procedures for investigating cost-effectiveness, rate-impact, programme deliveries, availability for different groups of customers. Public Utility Commissions had hearings with advocates from both sides. Outside the US the application was in most countries less formal but the basic idea was the same; that the least-cost option for the energy system performance should be chosen when more supply or less demand were compared on equal terms.

The "Negawatthour" (NWh) was made the conceptual alternative to the Megawatthour (MWh).The solutions were focusing on two issues, one was to reduce the demand for energy (conservation) and the other was to shift demand from peak periods to off-peak periods (load-management). Both measures motivated by a concern for resource optimisation.

Energy economics is no longer the only market or policy driver that it was when the IEA DSM Programme began. Environmental concerns, global climate change and grid/system reliability and security have become even more important market and policy issues Awareness and concern among business-actors, decision-makers and in the public has grown tremendously. In addition technology opportunities are developing and allow more sophisticated means to apply intelligence and communication in the power systems and also to make use of small scale renewable resources in solutions integrated with DSM.

Market liberalisation has also changed the conditions and DSM has developed accordingly. Subject to the circumstances of market and regulatory regime this change has been different in the different countries of the world. The basic idea and its implementation, however, is evolving due to new technological possibilities and to requirements regarding energy security and environmental sustainability of systems.

Energy Efficiency remains and grows in importance, having the most economic and greatest potential to reduce costs and environmental impact, but also "cursed" with being invisible and delivered in small packages. To overcome these problems, ***DSM is a deployment concept*** for energy efficiency whereby the small resources are aggregated into larger programmes to make the needed impact and to make the "product" visible and attractive both to governments, industry and customers.

In the 21st century, with the imperative demand to create sustainable energy systems in order to prevent climate change and at the same time to provide for more welfare to more people, DSM has to be re-invented as a tool. In doing so, we will certainly also find that wide application of DSM fosters more efficient and more innovative energy technologies for global markets.

THE IEA DSM-PROGRAMME, RAISON D'ÊTRE.

Demand Side Management (DSM)[1] refers to all changes that originates from the demand side of the market in order to achieve ***large scale energy efficiency improvements by deployment*** of improved technologies. Depending on market organisation in each country such changes ***involves different actors.*** In many cases the utilities play an active role.

The IEA Demand-side Management (DSM) Programme is responsive to the energy policies, programs and market needs of the participating countries, and as they continue to change, so must the Programme change. Since the DSM Programme began in the early 1990s, the energy sector has changed dramatically in many participating countries but ***the vast potential for improvement on the demand side remains largely untapped***. The IEA DSM Programme is neutral to the structure of the energy sector and remains prepared to deliver the research requested to suit the needs and interests of participants. To do this the Programme must closely follow the ***developments of the market from both a government and business perspective*** as well as track the changing stakeholder situation.

Working on the demand side is more important than ever. Deployment of the technologies is a key issue for success. There is a definite need to consider with whom and how in order to address ***more appropriately*** the ***stakeholders that can make a difference, be they governments, agencies, industry, end-users, utilities or NGOs***.

A global exchange of experiences is of great importance in order for countries to develop both models for implementation that facilitates trade across borders and create a base for facilitating/enabling technologies to be developed, produced, shipped and used in a way that improves their performance and makes the cost for the applications acceptable. **The IEA DSM-Programme can provide such a global platform for development.**

VISION

The main issues for countries participating in the DSM Programme are:

1. **Security of supply**
   For security of supply, it is important to have measures, such as "demand response", to reduce peaks and/or level loads over a time period. Reducing energy demand is also a means to diversify supply since it is easier to find alternative supply for a lower level of demand and thereby being less dependent on large generation and distribution systems. Distributed generation could be a solution to a "demand side problem" and should be considered in achieving the goals of a Least-Cost system.
2. **Reduction of green house gas emissions**
   Reducing the demand and/or shifting demand from a system supplied with a carbon-intensive fuel to a "carbon-lean" system is a way of achieving environmental targets notably the climate targets that are codified in the Kyoto Agreement.

[1] Countries have different terminology for DSM-measures and the IEA DSM-Programme tries to cover them and address them correctly. We work with both Energy Efficiency measures that affect the load level and with Load Management measures that motivates and requires Demand Response to affect the load shape and especially the peak load. See also Appendix 4.

The DSM toolbox holds the necessary tools for both these issues and can:

- **Reduce the demand peaks**, especially when utilisation of power comes close to its limits of availability
- **Shift the loads** between times of day or even seasons
- **Fill the demand valleys** to better utilise existing power resources
- **Reduce overall demand (strategic saving)** in the context of delivering the required energy services by use of less energy (and not a reduction in services).
- **Provide strategic growth** especially to shift between one type of supply to another with more favourable characteristics, for example, in terms of the environment

Accordingly, the vision of the IEA DSM Programme during the period 2008-2012 is that:

Demand side activities should be active elements and the first choice in all energy policy decisions designed to create more reliable and more sustainable energy systems[2].

MISSION

The DSM-Programme should deliver appropriate and enabling tools for its participants to fulfil the vision.

Countries have chosen different ways to organize their energy markets. Market and actors are nowadays more fragmented, and in many cases with a less defined responsibility for the complex whole. The execution of DSM-activities must involve new actors and make use of new technologies. In many countries there is a wish to make use of DSM in more commercial terms and to ensure that delivery of services can be commercially adapted.

Regardless of the organisational structure there is a need for **countries to develop a regulatory regime that appoints responsibility for resource adequacy**.[3] Such control of the ability to handle systems may deliver the following benefits:

- **Less Price Volatility** by improving short term price elasticity
- Improved **System Reliability** by reducing peaks and adding to safety margins
- Enhanced **System security** by reducing dependency on vulnerable supply resources
- Improved **Restoration capacity** by dispatching in/after emergency situations
- **Less costly network reinforcements** since energy efficiency measures will be active alternatives
- **Distributed generation** as alternative to transmission lines.
- Improved **operation and use of flowing renewable** sources
- **Elastic response** as complement to competition

Countries should also be able to **make assessment of the least-cost delivery of energy**

[2] Explanatory note: ***Demand side options have to be expressed in terms of, and made available as, equal to supply side options in order to facilitate a comparison. An energy system with a low demand requires less energy and facilitates the expanded use of renewable energy. The lower demand and the greater use of renewable resources should be promoted as a way to arrive at sustainable supply.***

[3] The Load Shape perspective

services that includes both the demand and supply side[4], which may deliver the following benefits:

- Clear market conditions for **energy service companies** and performance contracting
- **Allocation of commitments and obligations** that mobilises the appropriate set of tools, e.g. "White Certificates"
- **Organisation and targeting of support programmes** for energy efficient products
- Improved allocation of **obligations for reduction of GHG emissions** between sectors and countries
- Improved use of **market communication mechanisms**, e.g. standards and labels
- Input to how further **research and support** mechanisms should be distributed among actors.

Closely linked to the issue of how DSM should be used, and by whom, is the overriding question: "How can DSM-measures be designed to deliver the substantial amounts of improvements necessary for fulfilment of the policy goals?"

Large scale energy efficiency requires well co-ordinated deployment measures and programmes. Therefore, some of the issues to be considered are then:

- **Impact. The capacity for DSM measures to deliver** what they promise.
- **Actors and actor relations**. Who are the new actors and what are their roles, including utilities, municipalities, agencies, regulators, ESCOs and of traditional companies working with installations and buildings.
- **Marketability of DSM**. Can DSM measures be a commodity?
- **Customer response. How to** design attractive incentives.
- **Portfolios of measures**. What measures, such as standards, labels, tariffs, fiscal measures, information, and audits should be used, when and in what combinations?
- **Technologies.** How suitable are DSM technologies and how do they apply in different situations.
- Other forms of energy. Is DSM applicable for **energy supplies** other than electricity? Should distributed generation be covered as a DSM measure?
- **Endurance of DSM measures**. Will DSM measures last and will the market change towards use of more efficient technology.
- **Capacity Building** to make use of experiences and "best practice" achievements

Therefore, it is the Mission of the DSM Programme to:

Deliver to its stakeholders, materials that are readily applicable for them in crafting and implementing policies and measures. The Programme should also deliver technology and applications that either facilitate operations of energy systems or facilitate necessary market transformations.

[4] The Load Level perspective

OBJECTIVES

The Programme has two major objectives directed at its two major stakeholder groups. The Programme will provide to:

(a) ***governments*** *of the participating countries, increased capabilities to develop policies and programs for more effective use of DSM and energy efficient products*[5] *and to*

(b) ***energy businesses,*** *the information and tools necessary to create new cost-effective products and services in response to domestic and global opportunities.*[6]

But the Programme should also enable access to information to

(c) ***stakeholders*** *that advocate energy efficiency and sustainable energy systems arguments and knowledge about the opportunities.*

ORGANISATION OF THE PROGRAMME

To promote synergy and increase impact, the Programme will structure its activities into two clusters, depending on the potential or desired impact on the load curve of the energy system (see also appendix 1 for further details and views on the cluster organisation).

- **Load Shape Cluster**
  This cluster will include Tasks that seek to impact the shape of the load curve over very short (minutes-hours-day) to longer (days-week-season) time periods. Work within this cluster primarily increases the reliability of systems. See Appendix I.

- **Load Level Cluster**
  This cluster will include Tasks that seek to shift the load curve to lower demand levels or shift between loads from one energy system to another. Work within this cluster primarily targets the reduction of emissions. See Appendix I.

The Tasks in each of the clusters will be managed by the Programme's Executive Committee as a group. Tasks within each cluster will be closely coordinated to build upon the relationships in sharing their results and in addressing similar target groups. It will also be possible for the ExCo to concentrate its management attention on each cluster at subsequent ExCo meetings.

It should also be possible to handle the financing for new work more rationally with the better overview provided by this clustering and with the synergies between the Tasks in each cluster made clear.

PROGRAMME PRODUCTS

With the aim that the Programme should deliver more readily available products to be used and

[5] Government includes administrations, authorities, regulators etc and their associations.
[6] Energy businesses include system operators, transmission and distribution companies, brokers, wholesalers, utilities and their associations. Suppliers of "enabling hardware and software technologies" are included in this category.

implemented, it is necessary to develop a range of products that could suit several categories of users and that could be developed and delivered in sequence during the work of a Task. The Programme's products will include:

- Reports from the ongoing work (Minutes from Experts meetings, compilations of presentations, questionnaires, etc)
- Publications of results (analysis, overviews and conclusions that might be accompanied by background material, etc.)
- Articles for professional journals
- Workshops and presentations at workshops and conferences
- Forums for dissemination and/or discussion with possible users, customers, decision-makers, etc.
- Growing pool of individuals and organisations in each country that develops new expertise in DSM issues and solutions
- Databases
- Software for calculations, simulations, etc.
- Training seminars and courses
- Award of Excellence to be delivered once a year to a company or a product that facilitates DSM.

Each of the Tasks must carefully plan how their work can be made available to their stakeholders by integrating several of these products and also by continuously reviewing how dissemination can be improved. The Operating Agents should explicitly state what products they intend to deliver and preferably do so in a special dissemination subtask that will be an integral part of their work.

NATIONAL BASE AND DISSEMINATION OF PRODUCTS

The new business structure that has emerged in the energy sectors in the participating countries makes it more difficult to formulate priorities and to target results. Many actors in the energy arena today have a new business, new objectives and new structure. It is therefore highly recommended that each participating country form a **DSM-user group** and involve them in the work of the IEA DSM Programme. Who actually should participate and in what form is highly dependent on each country's specific situation.

The following stakeholders could participate in these national groups:

- Utilities
- Regulators
- National, Local and Regional Administrations and Agencies
- Industry and Trade Associations
- System Operators
- Customer Organisations and larger Customers
- Universities
- Research Bodies
- Journalists.

The DSM-user groups should be used to provide input during the Task definition phase, to review work in progress and to disseminate the Task results. These groups could also provide their priorities to the ExCo when new Strategic Plans are developed. They could also assist in providing experts and possibly providing or finding funding or sponsorship. They could also propose nominations to the Award of Excellence.

EXCO members and their national experts in each country are asked to form such a user group and consult with it on a regular basis in preparation for EXCO meetings.

MANAGEMENT AND RESOURCES

The Programme's work will continue to be based on traditional approaches where resources are provided by cost-sharing and/or task-sharing.

FINANCIAL STRUCTURE

As before, the work to be done in this Programme must be financed by the participating countries. There is still a need for common funding of activities such as preparation of ExCo meetings, administration of the Programme, and for the dissemination of Task results. Over the years, this administrative burden has grown since the IEA Secretariat requires more and more products (strategies, reports, etc) and delivers less and less support (such as legal advice, desk-officer support etc). The common fund increasingly has to be directed to operations rather than adding value to the programme itself.

Sponsors: Trade associations and companies from both participating and non-participating countries should, if appropriate, be encouraged to become sponsors of the Programme based on the new IEA-principles for Sponsoring Organizations. These sponsors will be expected to participate in the Tasks of the Programme. The sponsors should have an equal right to define the Task work plan, to assess the progress and to review and approve Task reports. The common fund payment for a sponsor should be the same as that of a participating country. Sponsors will also be expected to provide cost sharing funds and task sharing experts the same as any participating country. It is also proposed that if sponsors so wish and it is within the capacity of the Task work, they should have the right to special presentations e.g. for their staff or any other group that they want to target, provided they cover the associated costs.

The recruitment of sponsors is an ongoing process where we are aiming for specifically four categories:

- Industry that manufactures and market specific technologies for DSM, such as metering and related enabling technologies
- Industry that has an intermediary role to make DSM-work, such as transmission companies but also regulators and System operators

- Utility associations that gathers information and promotes utility business including DSM activites
- Utilities that undertake DSM programmes in their countries

OTHER RESOURCES, ALLIANCES

Activities all over the world to improve energy efficiency and to have large scale deployment of technologies have increased notably. The DSM-Programme is therefore seeking collaboration with entities that have similar ambitions and where our comparative advantages could complement each other. This may not have to be countries but also organizations such as REEEP, CIGRE, the World Bank, IFC, ELI etc.

Co-operation on basis of recognition: If the benefits justify the effort and mutual interest exists, specific co-operation with other interested parties, based on Memorandum of Understanding (MOU) and in-kind contributions will be encouraged. This could add to the networking and dissemination capacity of the Programme.

Co-operation within the IEA: There will also be a need to develop a closer co-operation with the IEA Building Related Programmes gathered within the Buildings Coordination Group (BCG) as well as with other relevant Programmes.

It is also important to improve co-operation with the IEA secretariat. The Programme can thereby bring its expertise together with the convening power and dissemination capacity of the Secretariat. This co-operation should be based upon the following principles:

- The Programme has access to experts in the DSM area that could, if desired, make recommendations to the Secretariat on technology development and policy action matters.
- The Secretariat has dissemination capacity to government policy levels both on a regular basis and at certain specific occasions as well as a dissemination capability for products. This can be accessed for mutual interest of the Programme and the Secretariat to highlight important issues.
- The IEA as a body has a “convening power” in its status and its name that can be used to gather parties from different communities to discuss solutions to special problems.

The DSM-Programme has suggested several topics for the IEA secretariat for gathering of conferences and/or workshops and also for producing common publications and papers.

APPENDIX 1; CLUSTERS AND POSSIBLE FUTURE WORK

LOAD SHAPE AND LOAD LEVEL

There is a need to change the load shape (peaks and valleys) and to change the load level (conservation and growth).

Whereas in the old days the objectives were formulated from the utilities need (and wish) to get a more flat and predictable load curve, the task today is to serve both the supplier and the societal needs. The task is to keep the energy system working and to prevent black-outs by reducing energy demand growth, ***but also*** to shift from carbon-fat to carbon-lean systems, as illustrated in the figures below

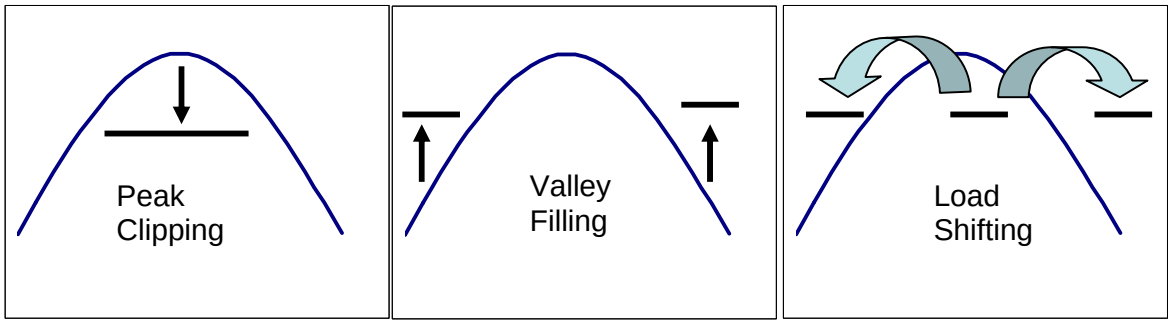

Figure: Load Shape changes. (Adapted from Clark Gelling, speech made 1982)

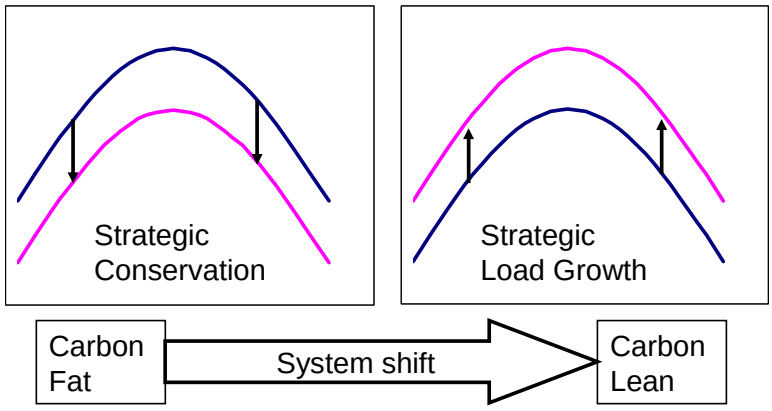

Figure. Load Level changes (Adapted from Clark Gelling, speech made 1982)

<u>The load shape</u>

This cluster will include Tasks that seek to impact the shape of the load curve over very short (minutes-hours-day) to longer (days-week-season) time periods. The interest in load shaping activities should be most important to:

1. **Policy makers and regulators**, since it will increase system security, improve economic efficiency and possibly also have positive impacts on the environment,
2. **Market operators**, because of effects on market prices (with a clear customer benefit) and the reduction of the influence (power) of the big actors,
3. **System operators**, because of system balancing and the handling of disturbances in generation and transmission. It could also have the potential of preventing blackouts and certainly the restoration of systems after a blackout. Bottlenecks in transmission will be easier to deal with and there will be a better use of existing generation and transmission capacity,
4. **Distribution network operator** who will find a tool to handle bottlenecks under peak periods and to utilise network capacity better. They will find it easier to handle distributed generation capacities and to increase the quality of supply,
5. **Traders/suppliers /retailers** for their risk management and also to find new businesses e.g. acting as "aggregators" of demand response, and to
6. **Customers** who will have an economic benefit with the ability to react to prices and even trading of loads. And certainly from an improved reliability of the system.

There are several ways to influence the load shape:

a) Tariffs and pricing, which could be undertaken through network pricing and/or retail pricing but will probably need more innovative metering and communication systems to reach full effect,
b) Direct load control based on agreement between the parties and mostly applicable to standard type of loads such as air-condition and heating,
c) Marketing of demand side bidding (see Task VIII) and by
d) Information-feedback.

The load level

This cluster will include Tasks that seek to shift the load curve to lower demand levels or shift loads from one energy system to another.

Liberalised markets have made it more difficult to find actors that reach out and promote demand side actions and energy efficiency in the eyes of the customers is still too unknown/insecure or insignificant to get their attention. There is still a need to find supportive policy instruments to release the energy efficiency potential. New actors have however emerged and may be animated to a more profound role - energy agencies, ESCOs, regulators etc. Energy efficiency and demand management is important not only "per se" or for electricity systems, but for all fuels and as instruments to get fuel switching in systems with combined power-heat-cold and distributed generation.

POSSIBLE FUTURE WORK

a) GENERAL
The Intellectual Property developed in earlier work should be safeguarded, developed and disseminated, e,g, by considering:

Access and availability of results from completed tasks is still an important issue. The ongoing change of the web-site improves the availability but there is still a need to consider how some of the reports should be both easier to access by e.g. editing of the material.

Training and capacity building is an aspect of the availability of results and that is more important with new participants.

Demonstration.

- An integral part of each task as an information and dissemination task
- A separate task collecting case studies
- A separate task to undertake demonstrations (very expensive and rather involve industry for this)

Task reformation

- Extension: (meaning) that the task could be reassessed and continued.
- Joint Activity: that the task could be developed together with other interested parties
- Transformation: that the task could use its IP and be applied on other issues/technologies, e.g. starting on technology procurements again.
- Service: that the task (and its output) could be formed as a service to be marketed to other parties

Cooperation with other Implementing Agreements

- Consider a coordinated load levelling activity with the Energy Storage Programme.
- BCG-IAs; Buildings Co-ordination Group (Storage, Buildings and Community Systems, Heat Pump, District Heating and Cooling, Solar Heating and Cooling, Photovoltaics)
- ENARD (Electricity Networks Analysis, Research & Development)
- 4E (End-Use Equipment Energy Efficiency)
- CTI (Climate Technology Initiative)

b) SPECIFIC

These are suggestions that have been raised and discussed at meetings during the last years

#	Issue	Cluster		Remark
		Shape	Level	
1	**Increasing Energy prices (and Market Design issues)** ***Problem*** *- Large share of electric heating in homes and they do not like growing prices; energy intensive industry does not like high energy prices; high bills for homeowners (fuel poverty);* ***Objective*** *– Explore how EE and DSM can mitigate energy price increases* ***Approach*** *– Workshop.* *In February 2003 there was a workshop held in Paris "Demand Response in Liberalised Energy Markets", which also was the trigger for a work within the DSM-Programme called "Demand Response Resources" (Task XIII). This should be followed up with a widening of the concept and also cover other measures. "Market Re-design Options" and cover also White Certificates from our Task XIV.*	X	X	
2a	**Smart meters (remote response capability)** Study smart technologies to advance DSM/EE, including communication technologies. ***Problem*** *- improved billing and metering with feedback needed; direct load control needed; need communication capabilities for LV systems (for management; need techniques and protocols for information exchange); how to reduce demand by telling customers what it really costs; need hourly metering;are smart meters smart enough and linked to time of use rates; use of interval metering*	X		

	Objective *– To review broad field of metering and recommend best ways to use meters to reduce demand and level peaks* ***Approach*** *– New Task*			
2b	**Smart meters in Energy Services**		X	Concept paper from Task XI and XVI
4	**Security of supply** Study how energy systems respond to crisis - What happens during a crisis; what do users actually do, do they do load levelling and what impact does this have on reliability and security	X		
5	**Portfolio development - Impact study** Study how economies can reduce electricity growth by 10 or 20 percent in 10 years by energy efficiency and DSM measures. How can governments put up targets and meet them	X	X	
6	**Models and initiatives for boosting technologies** Aggregated Procurements, Dynamic top-focused standards, Clearinghouses for programmes and projects e.g. CDM/JI related		X	
7	**Energy Efficiency ownership (new aggregators)** **New aggregators and need for aggregators**	X	X	
8	**Networking and initiatives to reinforce services and promotions** (ESCOs, Marketing, Municipality involvement) Address a wider aspect of local responses to energy system problems aside from demand side activities, energy and end use activities			C.f. Task IX
9	**Rate-design** Perform a comprehensive analysis of various economic incentives and fiscal measures, including pricing systems, tariffs and levies. Develop new tools for international comparison of the impact of different tariff systems and energy labels on GHG emission reduction. ***Problem*** *- Rate designs do not encourage EE; need to use time of day tariffs; electric prices could be good signal, need to incorporate externalities and incentives for EE* ***Objective*** *– Study various rate design strategies and recommend best practices for designing rates to reduce demand and peaks* ***Approach*** *– New Task*	X	X	
10	**Advanced Lighting Programmes.** We have to do something for lighting programmes such as e.g. the utility-sponsored roll-out programmes in many developing countries, but also for new lighting technologies that may also be more important for Demand Response and/or more useful in connection with distributed generation. Possible partners: ELI	(X)	X	
11	**Climate Change – Energy Efficiency in the CDM-projects** Quantify and document the impact of EE on climate change Fungible Instruments		X	In prepara-tion
12	**Directive on energy services (EU)** Regulatory matters related to energy efficiency - What areas of energy efficiency is best regulated and what should be purely market-based		X	
13	**Lack of Awareness of DSM** – Link with Ownership and Aggregators. The IEA DSM-Programme award of excellence could be taken up again. The "State of DSM in the world" also. Another idea was to create a DSM clearinghouse	X	X	The NL will propose
14	**Bottom up evaluation**	X	X	The NL will

				propose
15	**Monitoring and Verfication** – Workshop	X	X	
16	**Energy Efficiency (low) impact** – Link with M&V		X	See 14
17	**Transmission needs**	X		ENARD
18	**Standards and labelling** It was suggested that the development of the suggested new IA should be observed and then possibly discussed with them.	X	X	4E
19	**Growing demand**	X	X	
20	**White Certificates** (follow up practices)		X	
21	**Tax policies**	X	X	
22	**Planning tools**	X	X	
23	**Optimizing Investments**	X	X	
24	**Distribution needs**	X		
25	**Windfall profits**		X	
26	**Demand response (legal property right) certificates**	X		
27	**Financing related to ESCOs**		X	Task XVI
28	**Branding of Energy Efficiency**		X	India will propose

APPENDIX 2 – TAKS OVERVIEW

		Cluster		
Annex		**Load Shape**	**Load Level**	**Crosscutting General aspect**
I	Database and Evaluation			
II	Communication Technologies			
III	Technology Procurement			
IV	Integrated Resource Planning			
V	Marketing			
VI	DSM on Liberalised Markets			
VII	Market Transformation			
VIII	Demand Side Bidding			
IX	Municipalities Role			
X	Performance Contracting			
XI	Metering and Pricing			
XII	Energy Standards			
XIII	Demand Response			
XIV	White Certificates			
XV	Network-Driven DSM			
XVI	Competitive Energy Services			
XVII	Integration of DSM, EE, DG and RES			
In Preparation				
Advanced Lighting Programmes				
DSM and Climate Change				
DSM Participation in System Operations				

APPENDIX 3 – MARKET OPPORTUNITIES AND BARRIERS VS PROGRAMMES STRENGTHS AND WEAKNESSES

Market Opportunities

Need to meet Kyoto targets
Growing focus on market-based mechanisms
Liberalised markets create new players, new services and new opportunities
The ESCO market is growing
DSM and EE in line with local environmental concerns and goals
Energy demand must be reduced in many countries
Price risks are increasing thus emphasising real-time pricing and load responses
New (EU) directive on Demand management and energy services
Grid security requires demand response

Market Barriers

Link between EE/DSM and liberalised energy markets is unclear
Market and actors are fragmented and no one takes responsibility for the complex whole
Insulation of customers from location and time of use cost signals
Energy market reform (liberalisation) and abrogation of government responsibility for supply and efficient use of resources
Little interest by utilities and regulators in DSM
Customer driven DSM/EE programs are minimal

Programme Strengths

Excellent potential to share what works and what does not
Ability to conduct collaborative and/or innovative studies
Capability to contribute to or influence policies in participating countries
Ability to assemble excellent study teams
ExCo and Experts have intellectual capability to use tools developed in Tasks
ExCo members are committed to work collaboratively
Strong network of Experts
Programme addresses the key issues of interest in the participating countries

Programme Weaknesses

Program funding is limited and getting harder to secure
Significant effort is required to fund each new Task
Difficult to involve and fund Experts with necessary time and skills
Difficult to ensure commitment from Experts
Countries unable or unwilling to cover their OAs costs
Tasks take too long to complete
ExCo members do not seem to consult with their Experts and organisations prior to the meetings
Considerable time required to start new Task and process is complicated

Task XIV

Market Mechanisms for White Certificates Trading

An Annex of the Demand-Side Management Programme
of IEA – International Energy Agency

Attendance of Central European University to the task works as observer

Memorandum of Understanding

Memorandum of Understanding

Between:

International Energy Agency – Implementing Agreement on Demand Side Management
An international Organisation with headquarters located in ..... - represented by Mr. Hans Nilsson, Chairman, (hereinafter called "**IEA-DSM**");

and

Central European University, an academic Institute with headquarters located in Budapest (Hungary), ... - represented by Mr. ....., in quality of ....., (hereinafter called "**CEU**"); Ruben Mnatsakanian, Head of Department of Environmental Sciences & Policy

which are individually or collectively referred to as "a Party" or "the Parties".

It has been agreed as follows:

PREAMBLE

IEA-DSM launched during his ExCo meeting of 15-16 April 2004 a cooperative international activity, named:

Task XIV - Market Mechanisms for White Certificates Trading

(hereinafter called Task XIV) headed by Italy and involving at present France, Norway, Sweden and United Kingdom as participants.
CEU is currently working on the White Certificates Trading matter, also through the activities of his Students for their Doctoral Theses. CEU is interested in the participation to the task XIV works with purposes of exchange of knowledge and cross fertilisation of the two organisations on the subject.

ARTICLE 1 - OBJECT OF THE COOPERATION

The object of this MOU is to define the rules for the participation of CEU to IEA-DSM Task XIV activities .

ARTICLE 2 - ORGANISATION OF THE COOPERATION

CEU is allowed to send one observer to attend the activities performed within the Task XIV.
The name of the observer is Silvia Rezessy
The participation will be under the supervision of the Operating Agent appointed by IEA-DSM to chair the Task XIV activities: Mr Antonio Capozza.
The observer may participate in experts meetings and open workshops planned in the Task XIV workplan.
The observer will receive full documentation of the above experts meetings and open workshops.

ARTICLE 3 - COSTS

No participation costs will be required to CEU by IEA-DSM for the cooperation of the above art. 2.
The observer organisation will have to pay in full their own costs for travels, board and lodging.

ARTICLE 4 - CONFIDENTIAL INFORMATION

Documents, drawings and other confidential information that CEU receives from IEA-DSM in connection with this MOU, may not be used for documents as papers, Doctoral Theses etc, unless explicitly authorised by the OA.
IEA-DSM is not responsible of the use that CEU will make of the information they obtained attending the activities of Task XIV

ARTICLE 5 - DURATION OF THE AGREEMENT

This Agreement shall become effective upon the signature by all Parties.
This Agreement shall terminate when at least one of the following conditions occurs:

- when the Task XIV has been completed
- when the Parties have unanimously so decided.

ARTICLE 14 - NOTICE

All legal and administrative communications or notices provided for herein shall be delivered, mailed or faxed addressed as follows:

to IEA-DSM:

Attention to: Hans NILSSON / Antonio CAPOZZA

to CEU: Ruben Mnatsakanian
Attention to: ..... / Silvia Rezessy

In witness whereof the Parties have duly executed this Agreement in 2 (two) originals

for and on behalf of
IEA-DSM

2004-07-22
(date)

(signature)

Hans Nilsson, chairman
(name/title)

for and on behalf of
CEU

13 July 2004
(date)

(signature)

R Mnatsakanian, Head of Dept.
(name/title)