

## **Achievements**

The major accomplishments of the Tasks that were ongoing in 2009 are summarised below. Additional details can be found in Chapter II:

### **Task XVI - Competitive Energy Services (Phase II).**

Task XVI Phase II, started in July 2009 and will be finalised in June 2012. Phase II will build on some of the Subtasks from Phase I.

In order to contribute to the future market development of Energy Contracting the objectives of the Task are:

- To establish an IEA DSM energy services Expert platform
- To design, elaborate and test innovative energy services and financing models (published as manuals or publications)
- To support and follow up country specific activities to disseminate and implement energy services in the market; and
- To position the expert platform as a competence centre for energy services for international and national dissemination and assistance services (e.g. coaching, training courses, publications) and to contribute to an “IEA DSM Centre of Excellence”.

The underlying goal is to increase understanding of Energy Contracting as a tool to implement energy efficiency projects: pros and cons, potentials, limits and added values of ESCo products in comparison to in-house implementation.

Benefits for the participating countries and the DSM Agreement will be:

- Enlarging the market for energy services;
- Participation in the IEA DSM energy services expert platform and communicating with external stakeholders;
- Mutual feedback, coaching and experience exchange for country specific market development activities (NIA's);
- Know-how and capacity building on innovative and competitive energy services and financing models from the Think Tank;
- EU countries can prepare for the EU-Directive on “energy end-use efficiency and energy services” and help closing the gap between policy targets and the “real world”;
- Task XVI will play an active role in the international dissemination of competitive ES and offer assistance services for the market development in other countries, and
- Developing business opportunities for internationally acting ESCOs

## **Task XVII – Integration of Demand Side Management Energy Efficiency, Distributed Generation and Renewable Energy Sources – Phase II.**

The main objective of the Task is to study how to achieve the optimal integration of flexible demand (Demand Response, Demand Side Management) with Distributed Generation, Energy Storages and Smart Grids, and thus increase the value of Demand Response, Demand Side Management and Distributed Generation and decrease problems caused by intermittent distributed generation (mainly based on RES) in the physical electricity systems and at the electricity market. The Task deals with integration aspects both at local (distribution network and customer) level and at transmission system level where large wind farms are connected.

The first phase of the Task defined the state of the art of integration. This phase was finished in 2008. On the basis of the results of this phase, the second phase has been planned in 2009. The second phase will start in January 2010.

The main target of the second phase of the Task (Task extension) is to assess the effects of the penetration of emerging DER technologies to different stakeholders and to the whole electricity system. The emerging DER technologies to be discussed include:

- plug-in electric and hybrid electric vehicles (PEV/PHEV)
- different types of heat pumps for heating and cooling
- photovoltaic at customer premises
- micro-CHP at customer premises
- energy storages (thermal/electricity) in the connection of previous technologies
- Other technologies seen feasible in 10 – 20 years period, especially by 2020.

The main Subtasks are (in addition to Subtasks 1 – 4 in Phase one):

- (b) Subtask 5: Assessment of technologies and their penetration in participating countries
- (c) Subtask 6: Stakeholders involved in the penetration and effects on the stakeholders
- (d) Subtask 7: Assessment of the quantitative effects on the power systems and stakeholders
- (e) Subtask 8: Conclusions and recommendations

## **Task XVIII: DSM and Climate Change**

This Task was declared in force in March 2008. Task work started in October 2008 and will be finalised in October 2010.

On a global basis, electricity production is estimated to contribute about 25% of the human-induced increase in greenhouse gas emissions. However, the IEA DSM Programme has not so far carried out any work on possible interactions between electricity DSM and GHG emissions.

Currently, DSM and emission mitigation measures are usually implemented quite independently.

- DSM measures are implemented primarily to assist and improve the operation of electricity systems. Any impacts (positive or negative) of DSM measures on climate change are very much a minor consideration, if they are considered at all;
- Efforts to mitigate GHG from electricity production have focussed on improving the efficiency of both electricity generation and end-use. However, emission mitigation measures focussed on increasing end-use efficiency, have usually not considered any benefits to the electricity system (e.g. peak load reduction) that might be gained through implementing the measures.

The overall aim of the Task will be to reconcile these two different approaches so as to identify areas and circumstances in which DSM can contribute to mitigating GHG emissions and emission mitigation measures can achieve benefits for electricity systems. The Task will then determine what is required to maximise the emissions reductions and electricity system benefits from these two types of measures

Key accomplishments in 2009:

- Development of two on-line case study databases, to store data for DSM projects and emissions mitigation projects;
- Completion of an extensive review of carbon accounting methodologies from around the world
- Completion of an initial analysis of the possible impacts of emissions reduction projects on electricity demand curves and the consequent benefits for the electricity systems; and
- Completion of reviews of three energy efficiency certificate trading schemes currently implemented in Australia and the long-running United Kingdom scheme under which electricity suppliers are obligated to carry out energy efficiency improvements in the residential sector.

## **Task XIX: Demand Side Management - Micro Demand Response & Energy Saving**

Task XIX was initiated in January 2009 and will be completed in March 2010.

The Task will:

Investigate the implementation of TOU pricing, remote/automatic demand switching and energy use monitoring to define specific Demand Response and Energy Saving products. The Task will identify how these products can be delivered into the residential and SME sectors on a commercial basis, with a focus on the business case from the perspective of Energy Saving Service Providers and Demand Aggregators. Funding mechanisms and the provision of information and control(s) infrastructure will be studied and evaluated. The potential for Demand Response measures to contribute towards Supplier targets for energy savings and/or be viable for inclusion within White Certificate or Energy Saving Certificate trading schemes is an important consideration and will also be evaluated.

Task objectives are to:

- Define DR and Energy Saving products to meet System Operator, Supplier, Government and Customer requirements;
- Identify, develop and define packages of DR and energy saving service products for residential and SME customers, based on EUMF, TOU pricing and demand control to meet the above requirements;
- Develop mechanisms to deliver DR and energy saving service products;
- Evaluate how ESSP/DAG businesses can provide DR and energy saving service products for residential and SME customers;
- Develop ESSP/DAG routes to market for residential and SME customers;
- Make an overall assessment of common ground and technologies to be shared with smart metering infrastructure;
- Estimate incremental costs of implementation of product delivery systems; and
- Quantify the business case for the provision of DR and Energy Saving products.

During 2009 the following accomplishments have been achieved.

- In **Subtask 1** a data collection questionnaire was produced to collate background information on how the market structure in the participating countries affects the incentives for demand response and energy saving products to develop. Data collection sheets were completed by the participating countries and an analysis of the results shows significant different incentives between the participating countries, indicated that there will be no 'one size fits all' solution.
- In **Subtask 2** a data collection questionnaire was produced to collate information on energy end use consumption in the participating countries. Data collection sheets were completed in the participating countries and an analysis of results highlights a general shortage of data on end-uses of energy, particularly with regards to the pattern of electricity use by time of day and time of year. This

makes it difficult to assess how much load is available for demand response programs on any given occasion.

- In **Subtask 3** a range of delivery mechanisms that can be used as part of demand response and energy saving schemes with small consumers were considered. The schemes considered are broken down into two main categories: Energy Saving and Demand Response schemes. The study highlights that different stakeholders have different drivers for implementing demand response and energy saving programs, which could impact on other stakeholders. The extent to which there is commonality between different industry stakeholders depends on the market structure and the participants' drivers.

## **Task XX - Branding of Energy Efficiency Services**

The Task was initiated in January 2009 and an Experts meeting was held in December 2009, to launch the Task.

The primary motivation for undertaking a Task on this topic is to:

**“Develop a cogent and comprehensive framework for promotion of branding of energy efficiency in electricity markets at different levels of maturity”.**

The Task will:

- Identify knowledge and attitude of private households in developing electricity markets;
- Identify best practices in definition of suppliers of energy efficiency products and services;
- Identify the potential for energy efficiency products and services in other energy consuming sectors such as agricultural, industrial & commercial, etc.;
- Identify the potential for a programmatic approach towards energy efficiency, and
- Identify the barriers to branding of energy efficiency.

Work will focus on three levels of branding: (1) products/services and suppliers; (2) consumers; and (3) strategies.

Expected results will include:

- Analysis of energy efficiency products and important aspects of the energy efficiency value chain.
- Knowledge of possible products and services most suitable for branding based on the market segment from the consumers' perspective.
- Understanding of the relationship between energy efficiency products pricing and maturity of the electricity market and also between electricity price and energy efficiency pricing.
- Branding strategies deployed by the products and services similar in nature to energy efficiency based on the research carried out in the various participating countries
- Access to information about best practices in branding of energy efficiency in four aspects (products, services, programs and companies)
- Regular briefings on dealing with branding strategies and sharing international perspectives

## **Task XXI – Standardisation of Energy Savings Calculations**

The Task was initiated in April 2009 and will be finalised in April 2011. The Task is currently being established and is open for participation.

The overall aim of Task XXI is to identify basic concepts, calculation rules and systems for Energy Savings Calculations (ESC) standards. Additionally a methodology will be developed to nominate and describe the several Demand Response products. Within this framework of basic concept and calculation rules, the relationship to reduction of the environmental impacts in greenhouse gas emissions from energy savings will also be incorporated. The Task will also explore how and by what type of organisations these standards could be used and improved to increase international comparable evaluation of policies and measures.

Three primary objectives for the Task are:

- Summarise and compare the current methods and standards used for determining energy use, energy demand and energy and emissions savings from energy efficiency actions and policies;
- Identify the organisations that are and could be responsible for use and maintenance of such methods and standards; and
- Recommend how existing methods, standards and resources can be expanded and/or used for comparing different countries' and international efficiency policies and actions.

While this project may recommend future efforts to develop international energy efficiency EM & V standards and/or resources, this Task does not involve efforts to produce harmonised standards among the countries involved with this Task.

## **Work in preparation**

### **Task XXII – Energy Efficiency Portfolio Standards**

Task XXII was initiated in October 2009 and is open for participation.

Energy Efficiency is continually being acknowledged as an important tool to address the issue of climate change by reduction in GHG emissions. As a result, many countries have set policy targets for reducing emissions and have identified energy efficiency as one of the measures. To achieve these targets for energy efficiency, the countries have introduced various policies and programmes targeting different sectors such as appliances, buildings, industries, etc. These include a wide range of instruments such as regulatory directives, voluntary agreements, incentives or subsidies, financing options, education and outreach, etc. Such policies and programmes have evolved over a period of time to cater needs as and when these arise. As a result, these programmes tend to have their own objectives and implementation mechanisms. While a number of these programmes have been successful in realising their objectives, in the absence of unified approach, their full potential is often not realised. Further, as these programmes respond to their own incentive mechanisms and subsequently adhere to their own monitoring and verification protocols, it is difficult to quantify total energy efficiency savings which is crucial from the Government's perspective. In order to overcome the existing barriers for energy efficiency programmes and realise its true potential, it is important that a coherent approach that encompasses all the efforts to implement these measures is undertaken.

To address this issue, several states in the United States and European countries have adopted Energy Efficiency Portfolio Standards (EEPS) like programmes as part of their efforts to mobilise energy efficiency improvements. While these programmes have gain momentum in the recent past, wide differences exists in their design and implementation. As a result, these programmes have also met with varying degree of success. Further, there exists tremendous potential for implementation of such programmes in many participating countries.

Most recently, the European Commission has proposed to set binding energy efficiency targets for Member States. In its draft, entitled "7 Measures for 2 Million New EU Jobs", it is acknowledged that the member States won't be able to achieve the 20% goal of cut energy usage set for 2020, but only 11%. The Commission has expressed its intention to propose a directive providing for a binding obligation on Member States in line with the agreed 20% energy savings objective, subject to further assessment of its impacts and in particular the need to ensure that such obligations are designed in a manner that are compatible with the effective operation of the EU's ETS scheme and the Effort Sharing Decision for the non-ETS sector. The focus of Commission's impact assessment is on the following aspects:

- Such a legally binding target might be sector specific or be general in scope, covering all aspects of the economy
- The nature of a possible general energy efficiency target i.e. physical limit on the energy that each Member State could emit by 2020, or a target based on savings compared to projected energy consumption
- The need for burden sharing measures adapting the target to each Member State

In view of the above, the *primary objective of Task XXII is ‘Development of a Best Practices Guide for Design, Development, Implementation and Monitoring of Energy Efficiency Portfolio Standards’*.

### **Advanced Lighting**

Lighting programmes have been a focus for DSM activities for a long time. In climate related work and in work related to rural electrification in the third world, it has been observed that the DSM-programmes for lighting could serve as models both for new work on lighting and for dissemination of other technologies. Work continues to identify an appropriate Task on Advanced Lighting.

### **Visibility**

Maintaining and increasing visibility of the Programme among its key audiences continues to be a major activity of the Executive Committee. The principal tools available at present are the website, the Annual Report, the Spotlight Newsletter, the Programme Brochure and Task flyers.

The Annual Report for 2008 was produced and distributed to approximately 350 recipients in January 2009. It pulled together in one substantial document overviews of the Programme’s activities and details on each of the individual Tasks.

Beginning in 2004, the Spotlight Newsletter was produced in electronic format only, designed as a printable newsletter. It is distributed by e-mail to a wide list of contacts. Executive Committee members forward the newsletter to those national contacts that used to receive the printed version or they print and distribute hard copies. Four issues were produced in 2009 which included articles on:

#### **Issue 32 – January 2009**

- White Certificates. Italy: What’s new after four years of operation?.
- Australia: States take the lead.
- Task XV: Reports are bestsellers.
- Proposed work: Preparing the carbon future.
- Task XVI: Comprehensive refurbishment of buildings with energy services
- New Task: Standardisation of energy savings calculations

### **Issue 33 – April 2009**

- Standardisation of energy savings calculations: Higher on the IEA agenda.
- Case study: Automated demand response system pilot – California, USA.
- Energy efficiency first! – Integration of demand side measures into energy supply contracting models.

### **Issue 34 – July 2009**

- Task XIX: DSM for small consumers.
- Case study: ETSA utilities air conditioner direct load control program Australia.
- Task XVII: Integration of demand side management, distributed generation, renewable energy sources and energy storages.
- Note from the Chairman: Timing is never right

### **Issue 35 – December 2009**

- Note from the Chairman: Wonderful Copenhagen?
- Task XX: DSM starts work on energy efficiency branding.
- Task XXII: Energy efficiency portfolio standards.
- DSM: Programme covers a lot of ground.
- Case study: Agricultural pump set efficiency improvement programme – India.

At the start of a new Task, a flyer is produced to stimulate interest in participating in the Task. When the work is completed, a flyer is produced highlighting the results and directing the reader to the Task products.

The website ([www.ieadsm.org](http://www.ieadsm.org)) continues to serve as a vital window on the Programme's activities. Analysis of visits to the site shows a worldwide readership. In 2006 a complete new layout of the DSM website was put in place. During 2007, 2008 and 2009 additional developments have been made to the website and further improvements on the content have been made. The website has a "shop front" in which the Programme's principal outputs can be displayed in a manner relevant to non-participants.