International Energy Agency

Implementing Agreement on Demand-Side Management Technologies and Programmes

2001 Annual Report

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Edited by Anne Bengtson
Executive Secretary
IEA Demand-Side Management Programme

January 2002

Foreword

This report is the eighth Annual Report of the IEA Implementing Agreement on Demand-Side Management Technologies and Programmes, summarising the activities of the eighth year.

The report was published by the Executive Committee and was edited by the Executive Secretary, with contributions from the Operating Agents.

Stockholm, January 2002

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Overview of the IEA and the Demand-Side Management Agreement

International Energy Agency

The International Energy Agency, founded in November 1974, is an autonomous body within the framework of the Organisation for Economic Co-operation and Development (OECD) which carries out a comprehensive program of energy co-operation among its 26 member countries. The European Commission also participates in the work of the Agency.

The policy goal of the IEA include diversity, efficiency and flexibility within the energy sector, the ability to respond promptly and flexibly to energy emergencies, the environmentally sustainable provision and use of energy, more environmentally-acceptable energy sources, improved energy efficiency, research, development and market deployment of new and improved energy technologies, and co-operation among all energy market participants.

These goals are addresses in part through a programme of international collaboration in the research, development and demonstration of new energy technologies under the framework of over 40 Implementing Agreements. The IEA's R&D activities are headed by the Committee on Energy Research and Technology (CERT) which is supported by a small Secretariat staff in Paris. In addition, four Working Parties (in Conservation, Fossil Fuels, Renewable Energy and Fusion) are charged with monitoring the various collaborative agreements, identifying new areas for cooperation and advising the CERT on policy matters.

IEA Demand-Side Management Programme

The Demand-Side Management Programme is a new collaboration with seventeen IEA member countries working to clarify and promote opportunities for Demand-Side Management (DSM).

The members are:

Australia	Italy
Austria	Japan
Belgium	Korea
Canada	Netherlands
Denmark	Norway
European Commission	Spain
Finland	Sweden
France	United States
Greece	United Kingdom

Ten projects or "Tasks" have been undertaken since the beginning of the Demand- Side Management Programme. The overall program is monitored by an Executive Committee consisting of representatives from each of the member countries. The leadership and management of the individual Tasks are the responsibility of Operating Agents. These Tasks and their respective Operating Agents are:

Task I: International Data Base on Demand-Side Management Technologies and Programmes – Mr. Harry Vreuls, NOVEM, The Netherlands

Task II: Communications Technologies for Demand-Side Management – Mr. Richard Formby, E.A. Technology, United Kingdom

Task III: Co-operative Procurement of Innovative Technologies for Demand-Side Management – Dr. Hans Westling, Promandat AB, Sweden

Task IV: Development of Improved Methods for Integrating Demand-Side Management into Resource Planning – Dr. Grayson Heffner, EPRI, United States

Task V: Investigation of Techniques for Implementation of Demand-Side Management Technology in the Marketplace – Mr. Juan Comas, FECSA, Spain

Task VI: DSM and Energy Efficiency in Changing Electricity Businesses – Dr. David Crossley, Energy Futures Australia, Pty. Ltd., Australia

Task VII: International Collaboration on Market Transformation – Mr. Verney Ryan, BRE, United Kingdom

Task VIII: Demand Side Bidding in a Competitive Electricity Market – Ms. Linda Roberts, EA Technology Ltd, United Kingdom

Task IX: The Role of Municipalities in a Liberalised System – Martin Cahn, Energié Cités, France

Task X: Performance Contracting – Dr. Hans Westling, Promandat AB, Sweden

For more information see our web site on the Internet:
http://dsm.iea.org

CHAPTER I

Chairman´s Report

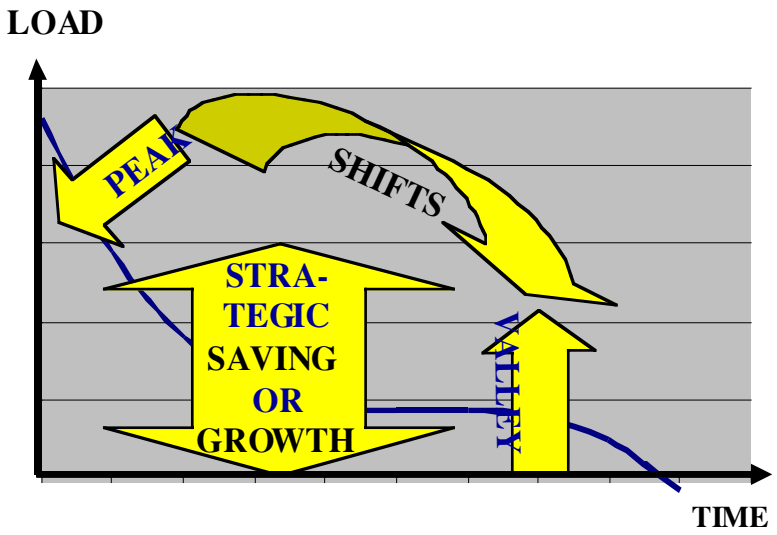
Jan Moen, Chairman
Executive Committee

Introduction

The IEA Demand-Side Management Programme is an international collaboration with 17 IEA Member countries and the European Commission, working to clarify and promote opportunities for demand-side management (DSM). For the purposes of this Programme, DSM is defined to include a variety of purposes such as load management, energy efficiency, strategic conservation and the activities related to achieve these purposes. Further, the Programme is developed to cover such needs under different regulatory regimes and market structures since the basic need to ensure an optimal function of the energy system is common throughout the world. Through co-operative activities, participants will collaborate to help DSM technologies to reach their full market potential, thereby allowing energy systems to function more effectively (see figure below) and giving energy system investments enhanced value for gas and electricity customers.

The shaping of the Programme, whose work is summarised in this Annual Report, began over nine years ago, following an IEA Conference. In October 1993, the work under this Agreement began when the Executive Committee put five Annexes into force. At that time the Executive Committee also approved five Operating Agents to manage the five Tasks.[1] Since then there have been many changes in the organisation of the energy markets in the world and the DSM Programme has been accordingly

Figure: The load curve can be actively reshaped by actions for different purposes



[1] The term Task is used to describe the work to be done under the contractual Annex to the Implementing Agreement.

adjusted to serve the actual and changing circumstances. The Programme and its Experts have thus achieved a profound knowledge and insight in management of Energy Efficiency in modern contexts.

It is with great pleasure that the IEA Demand Side Management Programme notes the European Climate Change Programme (ECCP) proposal to place new efforts on the use of Demand Management.[2] We have also noticed a growing interest from regulatory bodies and from System Operators all over the world to learn more about DSM tools and to possible implement them in their activities. The IEA Demand Side Management Programme has for many years developed tools and delivered solutions so that the DSM concept can be used under different regulatory regimes, not the least of which is in liberalized markets. Thus whoever wants to develop or use Demand Side activities or related policies and for whatever purposes, the IEA DSM Programme should be the natural first resource to consult to make use of experiences gained.

With this perspective the programme based already on its sound foundations and its ongoing activities should be able to consolidate and grow. The Executive Committee of the Programme has therefore also decided to invite several new countries to participate, among them China, EU-15 countries that have not yet joined and some EU-accession countries.

Looking ahead

It is also time to look further in terms of substance and opportunities. When the Programme started it had three main areas of work – Policy (analysis of applications), Technology and Measures. The exchange of experiences gained from these three categories is crucial if we want to make the best of our resources:

- The special workshop on certificate trading in Milan at the ExCo meeting in April 2002 provides such an opportunity. It is important that we seize this and also make the workshop an event when we can expose the DSM Implementing Agreement and formulate new Tasks.
- Relation to other so-called Building Related Implementing Agreements[3] where we can reach out with our products and find partners or shape new collaborations and for dissemination of our products.
- DSM should be examined more in terms of security of supply for energy systems since the ability to manage the system is what security requires.
- Technology development is inherent in the structure of the DSM Programme and could be a basis for development of both analytical tools and gathering of policy experiences.

[2] COM(2001) 580 "Implementation of the first phase of the European Climate Change Plan".

[3] The Seven Building Related Implementing Agreements are:
- Building and Community Systems;
- DSM;
- District Heating and Cooling;
- Energy Storage;
- Heat Pumping Technologies;
- Solar Heating and Cooling;
- Photovoltaic Power Systems.

- Energy systems balancing and control have been the subject for studies in the DSM-bidding activities and could be further generalised and dealt with in co-operation with those responsible for power systems functions.
- Green public procurement is on the agenda for both policy making and design as well as a practical reality for municipalities and for companies.
- Development of new products and services and ways to pave the way for new players is important and interesting.

Status of the Implementing Agreement

During 2001, a total of 17 countries and the European Commission were official signatories of the Implementing Agreement. The seventeenth Executive Committee meeting was held in Eskilstuna, Sweden in April 2001 and the eighteenth Executive Committee meeting was held in Barcelona, Spain in October 2001.

Programme Structure

The Programme is managed by an Executive Committee composed of two representatives from each participating country. The management of each individual Task is the responsibility of the Operating Agent.

In 2001, the ExCo initiated three new subtasks, and completed work on one Task, thereby maintaining six active Tasks at the end of the year. The work is presently focused on:

- Exchange of Programme experience in an expanding database, INDEEP, and development of guidelines for the evaluation of the impacts of demand-side management and energy efficiency programmes on greenhouse gas emission targets (Task I).
- A field trial demonstration of customer services using a gateway for communication between energy supplier and user (Task II).
- Development of skills for market transformation and use of modern marketing methods (Task VII).
- The use of demand side bidding in competitive markets in order to manage systems either for balancing purposes or for frequency response (Task VIII).
- Development and tuning of the municipalities roles in enhancement of energy efficiency in liberalised or deregulated systems with different market structures (Task IX).
- The use of performance contracting and energy services companies and how these can be used more widely and more effectively (Task X).

A brief description of these Tasks and the expected results follows in Chapters II and III.

Participation in the IEA DSM Programme as of December 2001

COUNTRY	Tasks I	Tasks II	Tasks III compl.	Tasks IV compl.	Tasks V compl.	Tasks VI compl.	Tasks VII	Tasks VIII	Tasks IX	Tasks X
Australia				✿		✿				
Austria	✿			✿						
Belgium					✿					
Canada		✿								
Denmark			✿	✿		✿				
European Commission	✿		✿							
Finland			✿	✿	✿	✿				
France		✿		✿		✿				
Greece					✿					
Italy		✿		✿						
Japan		✿		✿		✿				
Korea			✿	✿		✿				
Netherlands			✿	✿	✿	✿				
Norway		✿		✿	✿	✿				
Spain	✿	✿	✿	✿	✿	✿				
Sweden			✿	✿	✿	✿				
United Kingdom			✿	✿		✿				
United States	✿		✿	✿						

Operating Agent and participating country

Participating country

Completed Tasks

✿ Country that participated

At each of the ExCo meetings in 2001, the representatives from those countries that appear in the above table as not participating in any of the current Tasks and who were present at that meeting, expressed their willingness to explore the interest in their country to participate in one or more of the current Tasks. It is expected that they will join one or more of these Tasks during 2002.

Achievements of the Programme

The three new subtasks that were initiated this year, are responsive to the rapid changes occurring in the energy industry. From the start of this Programme the Executive Committee and Task experts have recognised the important link between energy and global environmental issues, such as climate change. It is encouraging to see that the results of this year's political events vigorously underline the importance of the work in energy efficiency. For example, the Kyoto Protocol strongly emphasises the necessity of energy efficiency and acknowledges that it is a demand side issue.

Achievements of the Programme's work during 2001 are highlighted below. The details of these and many other accomplishments are covered in the individual Task reports in Chapter III.

Task I: International Database on Demand-Side Management Technologies and Programmes

The 220 DSM and EE Programmes that are now included in the INDEEP database have been analysed and reported on. The software developed to access the data base has been finalized. Two new subtasks were proposed; one deals with maintenance of the data base which has been approved and the second one deals with evaluation of energy efficiency programmes related to Kyoto's GHG targets which has been approved for the definition phase.

Task II: Communications Technologies for Demand-Side Management

The business case assessment of the costs and benefits of the provision of energy and other services to customers was completed. A CD ROM to promote energy and bundled services for customers was completed and distributed. The field trial definition project to quantify service bundles, customer participation, technologies and trial costs, was started.

Task VII: International Collaboration on Market Transformation

Work on the development of an international market transformation model based on the experiences from the UK and the Netherlands was reviewed by the experts. A market research study identifying the differences of value patterns in participating countries was completed. A Task web site and a communications strategy were developed.

Task VIII: Demand-Side Bidding in a Competitive Electricity Market

Surveys were conducted and reported on the ways in which electricity is traded and opinions of market participants towards demand-side bidding (DSB) in participating countries. A study was launched to gather information on the potential for DSB in the domestic, commercial and industrial sectors. A Task web site was developed.

Task IX: The Role of Municipalities in a Liberalised System

The first drafts of the evaluation of municipal roles and the impacts of liberalisation were prepared and reviewed at a Task workshop. The second issue of the Task newsletter was distributed.

Task X: Performance Contracting

Draft guidelines for reports on the status of performance contracting in the participating countries were reviewed at an experts meeting. Interesting case studies and demonstration projects have been identified. A Task web site is under development.

New Collaborative Work

At the May 2001 IEA DSM Executive Committee meeting, a special session was held on "The Role of Electrical Energy Efficiency as part of National Greenhouse Gas Response Measures." The overall objective of this session was for Executive Committee members to inform one another of the role that electrical energy efficiency plays in their country to reduce greenhouse gas emissions and how the DSM Programme could contribute to their national goals. Energy efficiency, which reduces demand through technology, is not only relevant to the IEA DSM Programme because it is a means to reduce energy demand, but also to national Kyoto goals as emissions are reduced when energy consumption is reduced.

The session provided a rich overview of the national activities in 12 countries – Australia, Austria, Denmark, Finland, France, Italy, Japan, the Netherlands, Norway, Spain, Sweden, and the United Kingdom. National activities ranged from energy efficiency standards for commercial/residential buildings and product labeling programs to electricity/gas taxes and performance contracting. Despite the range in the national approaches taken to improve electrical energy efficiency and to reduce greenhouse gas (GHG) emissions, the participating countries agreed that the DSM Programme has an important role to play to support national actions as well as international initiatives.

For example, the Australian representative noted that the DSM Programme is contributing to Australia's GHG objectives through its work on demand-side bidding, performance contracting, and market transformation as well as on empowering local governments. The Japanese representative remarked that the DSM Programme's new work on the role of energy service companies to promote energy efficiency is already providing valuable information and resources. And, the representative from Spain commented that although demand-side bidding is an option in Spain, there is very little experience using this tool, and therefore, the country is participating in the Programme's demand-side bidding Task to learn from others' experiences.

At the conclusion of this special session, the members compiled and prioritised a list of potential new areas of Programme work. This list includes:

- *Utility/Energy Distributor Energy Efficiency Programs* – programs that are or could be offered by utilities or energy distribution companies.
- *Studies* – for example, on the role of high performance buildings/zero energy buildings, impact of DSM/EE on GHG emissions, cost/benefits of EE measures and actions, and what and how market-based initiatives work.
- *Barrier Removal* – identification of and ways to remove barriers to energy efficiency.
- *EE Standards* – the types and their impact on GHG emission reduction.
- *Best Practices* – documentation and promotion of best EE and DSM practices.
- *Energy Savings Certificates* – how to structure, use and evaluate the effectiveness of certificates.
- *Labels* – role of EE labeling in reducing GHG emissions.
- *Bundled Services* – ways to bundle EE services, including how to bundle EE with green power.
- *Targets and Benchmarks* – how to set, use and track energy consumption targets.
- *Role of Climate Change Taxes/Incentives* – how to initiate and structure them, and how they work.
- *Lessons Learned* – lessons from successful and unsuccessful EE and DSM actions.
- *Emissions Trading* – what it is and how to do it successfully.
- *Information* – includes education programs and public opinion of EE and renewables.

Programme Visibility

The Programme's visibility is maintained by its web site, Spotlight Newsletter and Annual Report.

At the April 2001 meeting in Sweden, the ExCo approved a new Communications Strategy for the Programme. This strategy has three major elements. The first is to

improve the image of the Programme and its Tasks. To accomplish this a new logo was designed for the Programme and will appear on all Programme products. The Programme web site has been totally redesigned to add value to the Programme and allow it to become an internationally acceptable reference site for DSM. The new site, with specialized forums and sub-sites, was opened in December 2001.

A major effort was undertaken by the ExCo at the October 2001 meeting in Spain to identify important contacts, publications and events information which will be used to establish links to expand the value of the IEA DSM web site. As before, all Task web sites, both open and secure, are linked to the Programme's home page. A new "IEA DSM Awards" page was also added. The address is http://dsm.iea.org.

Four issues of the Spotlight Newsletter were prepared in 2001. Articles in this year's issues covered current DSM issues such as the evolution of DSM, the role of EE in national greenhouse gas response measures, the relevance of DSM in the EC's European Climate Change Program and energy efficiency certificate trading. Newsletter articles also reported on the Programme's work in the areas of market transformation, demand side bidding, and advances in FlexGate technology. These were distributed to over 1200 key decision makers in the area of DSM and energy efficiency and are available on the Programmes web site.

The Programme's Annual Report was printed in January 2001 and distributed to over 300 people associated with the Programme.

Benefits of Participation

The benefits of international collaboration and co-operative activities of this Programme will be of value in a number of additional important ways. The term Programme is used to describe the work to be done under the legal contract, the Implementing Agreement, and this Programme deals with data, software, analysis, strategy development and studies A significant benefit for the participating countries is participation itself – the learning process.

- **Saves money.** Many types of activities can be carried out more economically in a collaborative mode than if conducted within one national program. Each country funds only a portion of the work, but has access to the entire results of the project.
- **Saves time.** Work can often be completed more quickly through task sharing and data sharing, accelerating the pace of technological development and application.
- **Increases the size of the technology data base.** The large number of countries included in a collaborative project enlarges the general pool of information available beyond what any one country could manage to assemble by itself.
- **Permits national specialisation.** As part of a collaborative effort, countries can specialise in certain aspects of a technology development or deployment while maintaining access to the larger pool of information from the entire project.
- **Enables complex and/or expensive projects to be undertaken.** Many countries do not have the expertise or resources to undertake every desirable research project. A collaborative project enables the strength and contribution of many countries to undertake collectively what individually would be prohibitive.
- **Enhances national R & D programmes.** National researchers involved in international projects are exposed to a multiplicity of ideas and approaches.

- **Promotes standardisation.** Collaborative work encourages the use of standard terminology, notation, units of measurement, while also encouraging the portability of computer programmes, and common methodology, procedures and reporting formats make interpretation and comparison easier.
- **Accelerates the pace of technology development.** Interaction among project participants allows cross-fertilisation of new ideas, helping to spread innovative developments rapidly, while increasing the range of technologies and approaches employed.
- **Promotes international understanding.** Collaboration promotes international goodwill, and helps participants broaden their views beyond their national perspective.

How to Participate

If your country has signed the Implementing Agreement, contact the Operating Agent of the Task(s) you are interested in, or the Executive Committee member from your country.

If your country has not signed the Implementing Agreement, and is an IEA-member country, contact the Executive Secretary, Ms Anne Bengtson, who will provide you with the name of your country's representative to the IEA/CERT. If your country has not signed the Implementing Agreement or is not an IEA-member country, contact Mr. Benoit Lebot, the IEA Secretariat, who will provide you with information on how to proceed in 2002.

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The efforts of the following people continue to be essential to the Programme's success. The Operating Agents who are identified in Chapter III, the Executive Secretary, Anne Bengtson, the Advisor, Fred Morse, the Visibility Committee Chairman, Harry Schaap, the newsletter Editor, Pamela Murphy, and the Webmaster, Verity Saunders.

CHAPTER II

TASK I: International Database on Demand-Side Management Technologies and Programmes

Description

Task I was originally divided into seven subtasks during the period 1994–2000.Two new Subtasks are prepared for 2001 onwards. The first Subtask was a pilot project to explore the feasibility and nature of an international database on DSM programmes. Participants assessed the transferability of DSM programme results, the usefulness of existing data collection instruments for databases on DSM programmes, and the level of interest among potential users of an international database on DSM programmes. The second Subtask built on the results of the first, to identify DSM programmes for an international database. Participants distributed a questionnaire – known as a data collection instrument (DCI) – to collect information on DSM programmes and analyse the responses. The outcome of the first two Subtasks resulted in the design of an international database, the third Subtask, which produced a database that is accessible to all participating countries. The programme information is entered into the database and the quality of the data is improved under Subtask 4 (finalised in 1999). This information is used for analysis and dissemination of the results, Subtask 5. Annual updates have been implemented in Subtask 6, and international promotion has been carried out as part of Subtask 7. Subtask 4 to 7 are interrelated and continue throughout the entire work plan period. This seven subtasks are finalised and the report on developing the INDEEP database is approved by the Executive Committee.

In October 2000, two additional subtasks were proposed. In Subtask 8, Maintenance of the Database, the database information will be kept up to date, expanded to include new programmes from countries around the world and the analyses will be continued. This Subtask started June 2001 and will last till June 2003. In Subtask 9, Evaluation Guidebook on the Impact of DSM and EE Programmes for Kyoto GHG Targets, a tool will be developed and tested to judge the sustainability results of national and regional energy programmes. At the end of 2001 the Executive Committee decided that this subtask will start in February 2002.

Achieved results (from the first seven subtasks)

- INDEEP Analysis Report 2000.
- Final Report on developing INDEEP 1994–2000.
- Demonstration version Multi-languages database at the IEA/DSM Website.

Expected results (from the two new subtasks) include

- Updated software for the online INDEEP Database at the IEA DSM Website.
- Additional data collection on Energy Efficiency Programmes.
- Draft Evaluation guidebook on the impact of DSM and EE programmes on Kyoto 's GHG targets.

More information about Task I can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/1/task1.asp

TASK II: Communications Technologies for Demand-Side Management

Description

This Task is to assess the best available options and strategies for applying communications to DSM and customer services programmes in the Participants' countries, develop models to carry out evaluations and specify and develop the technology and demonstration efforts which are required to bring these options to fruition. To date the assessment has covered communications technologies for load control, data transmission, data processing, load management, automated meter reading and billing, customer alarm services, customer generation management, remote diagnostics and audits. Separate subtasks have been to specify and implement in prototype form a customer, flexible gateway, through which the identified services can be provided. A business case evaluation has been completed which identified the most likely actors to provide bundles of services and infrastructure and assessed the commercial viability. The study showed that bundled services were required for financial viability. A field trial of the provision of advanced customer services is being planned with a project to define the scope and contents of co-ordinated trials and bundled services in partner countries in progress. The main criteria for evaluating these technologies is their potential to improve the efficiency of energy resource use and to provide customers with better services at lower cost.

Delivered and expected results:

- Report on communications requirements for utility/customer services.
- Report on assessment of communications technology for meeting performance criteria in pursuit of demand-side management and customer services.
- Report on assessment of harmonised standards for communications technology which would allow system compatibility across Participating countries.
- Report on key research, development and demonstration to bring emerging energy management-related communications technologies to the marketplace.
- Report on communications traffic and system costs calculation methodologies and algorithms.
- Communications and costs evaluation model – report and software.
- Report on specification for customer flexible gateway.
- Report on migration strategies from narrowband to wideband communications media.
- Development of prototype, customer flexible gateway – hardware and software.
- Report on business case assessment for the provision of customer services.

Expected results

Report on definition of field trials of bundled services.

More information about Task II can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/2/task2.asp

TASK III: Co-operative Procurement of Innovative Technologies for Demand-Side Management

Description

The work on this Task was completed in 1999 and the final reports submitted to the Executive Committee in 2000. Eight countries – Denmark, Finland, Korea, The Netherlands, Spain, Sweden, United Kingdom, United States – and the European Commission participated. A process for collaborative procurement actions for introduction of innovative, more energy-efficient products was developed and testes in a number of pilot projects. A clothes drier with the energy use cut by half (the first "Class A" drier on the market), electric motors with losses reduced by 20–40 % and "copiers of the future", where the energy use has been reduced down to 25 %, are concrete results of the Task III international procurement collaboration. After evaluation of proposals and prototypes, the suppliers of these products received the "IEA DSM Award of Excellence", introduced by Task III. The products are now commercially available. Two international workshops were organised during the years – in Paris 1994 and in London 1999 – each with about 80 participants. A list of lessons learned and recommendations have been drawn up. Creation of buyer groups, formulation of performance criteria and creation of mechanisms for recognition are some of the important elements in co-operative procurement efforts.

Achieved results

- Report on Co-operative Procurement – Market Acceptance for Innovative Energy Efficiency Technologies.
- IEA DSM Award of Excellence ceremony.
- IEA Drier Promotion Competition.
- IEA Hi-Motors Competition.
- IEA Copier of the Future Competition.
- Lessons learned summarised in the London Workshop proceedings and in the Final Management Report.

This Task is completed and therefore not included in the chapter on Task reports.

More information about Task III, the pilot projects and lessons learned can be found on the website: http://dsm.iea.org and www.stem.se/IEAProcure
http://dsm.iea.org/NewDSM/Work/Tasks/3/task3.asp

TASK IV: Development of Improved Methods for Integrating Demand-Side Options into Resource Planning

Description

This Task reviewed and documented utility structures and integrated planning approaches in IEA-member countries. Participants performed a review and comparative assessment of government and utility power sector planning priorities in IEA-member and non-member countries with a view to their implications for the integration of DSM options into resource planning. They also compiled information on the methods, techniques, and models for demand forecasting and integrated planning being used in their respective countries by utilities and government.

Based on this review, a guidebook was developed describing alternative approaches and summarising examples of how these methodologies have been incorporated. Case studies documenting successful applications from several countries were included.

Taking into consideration the factors influencing DSM in participating countries, guidelines were developed on how to transfer processes, methods, techniques, and models for incorporating DSM in resource planning from one country to another. Included in this book were issues related to differences in market conditions, supply characteristics, utility structure, regulatory environments, pricing and tariff structures and government policies.

Task IV also investigated mechanisms to promote DSM and energy efficiency in new business environments. This included a critical review mechanisms which have been used, or proposed for use, to incorporate DSM and energy efficiency into restructured electricity industries. The results were presented in three workshops and are available on the Programmes web site.

Achieved results

- Report comparing utility structures and characteristics in different countries.
- Report on existing processes, models, methods, and techniques in various electric resource planning applications.
- Recommendations for development of improved methodologies.
- Guidelines on transfer methods, techniques and models.
- Guidebook approaches and methodologies for analysis and planning of demand-side programs and integration of DSM options in utility resource planning.
- Report on existing and new mechanisms for promoting DSM and energy efficiency in new electricity business environments.

This Task is completed and therefore not included in the chapter on Task Reports.

More information about Task IV can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/4/task4.asp

TASK V: Investigation of Techniques for Implementation of Demand-Side Management Technology in the Marketplace

Description

Participants developed a common methodology for implementing DSM technology with residential small commercial and small industrial customers. This methodology modelled small customer markets in basic units with objective characteristics such as kinds of end-use equipment, cost of network equipment, family or business types, and socio-cultural values. Participants also conducted a survey in their countries of the methods that utilities and governments have successfully used to market DSM technologies in residential, small commercial and small industrial markets.

Based upon the methodology developed above, each participant carried out a pilot project for a particular small customer market. The results of the pilot programmes were measured and their success evaluated. Results in different countries were compared, and their similarities and differences were explained. Within each country, results of the pilot programme were compared with results of previous programmes in order to document improvements realised in programme effectiveness.

Achieved results

- Marketing methodology for implementing DSM technologies in small customer markets.
- Tools to analyse, follow-up and evaluate DSM programs in these markets, always from a marketing point of view.
- Analysis of previous DSM programs in the participating countries.
- Real pilot programs for effective implementation of DSM technologies in such markets and analysis and evaluation of pilot program results.
- Report on all these items.
- A better overall understanding of the actors in the small customer market for DSM technology has evolved.

This Task is completed and therefore not included in the chapter on Task Reports.

More information about Task V can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/5/task5.asp

TASK VI: Mechanisms for Promoting DSM and Energy Efficiency in Changing Electricity Businesses

Description

The objective of Task VI was to develop mechanisms for promoting the implementation of demand-side management (DSM) and energy efficiency in changing electricity businesses, such as in restructured electricity industries and competitive electricity markets.

During the Task, 99 existing mechanisms already in use in the countries participating in Task VI were identified and described. Twenty-five mechanisms were developed in detail and reviewed by practitioners who may be involved in using the mechanisms. The effectiveness of the developed mechanisms was assessed against a range of criteria.

Four types of mechanisms were developed:

Control Mechanisms – these are used to direct energy businesses to change behaviour;

Funding Mechanisms – these provide funding for other mechanisms;

Support Mechanisms – these provide support for behavioural changes by end-users and energy businesses;

Market Mechanisms – these enable the use of market forces to encourage behavioural changes by end-users and electricity businesses.

Task VI also identified the public policy goals and objectives which governments may seek to achieve through the reform and restructuring of the electricity industry. It analysed how the effectiveness of mechanisms in promoting DSM and energy efficiency is influenced by different structural models for the electricity industry. Effectiveness was judged by analysing the effects of different electricity sector structural models on the mechanisms, and by reviewing the barriers to the implementation of DSM and energy efficiency, which were addressed by the mechanisms.

The developed mechanisms were subjected to review by a range of relevant practitioners through a series of Practitioners Workshops held in Australia, France and Japan. The purpose of the Practitioners Workshops was to present preliminary summaries of the mechanisms developed in Task VI for comment by a range of practitioners who may be involved in using the mechanisms. The Practitioners Workshops were designed to provide a "reality check" on the practicality of the developed mechanisms.

The products from Task VI constitute a comprehensive catalogue of information on incorporating DSM and energy efficiency into restructured electricity industries. The products will be of immediate practical use to government policy makers, industry regulators, electricity business managers, and analysts and commentators on the electricity industry.

Achieved results

The major products from Task VI comprise:

- three Task VI Research Reports;
- two Task VI Working Papers;
- a database of 99 existing mechanisms for promoting DSM and energy efficiency;
- a database of 25 developed mechanisms for promoting DSM and energy efficiency.

This Task is completed and therefore not included in the chapter on Task Reports.

More information about Task VI can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/6/task6.asp

Task VII: International Collaboration on Market Transformation

Description

The need to meet Kyoto targets and to reduce greenhouse gas emission through greater energy efficiency provides the driving force behind the Market Transformation Task. Utilising the forces of the market and transforming those markets to better respond to energy efficient products helps to contribute to a more sustainable path whilst still maintaining a future vision of economic prosperity. In the broadest sense the Task is expected to facilitate a new approach to market transformation in order to bring about the changes that are required in international markets so that new energy efficient technologies penetrate the market and start to achieve their true potential. If successful, the Task will contribute significantly to the accelerated take up of energy efficient technologies in the market place and will assist in the conservation of energy and reduction in the emissions of greenhouses gases.

The Task will:

- Increase the market share of today's energy-saving products and practices.
- Accelerate the use of the most efficient new technologies in order to reduce the use of energy and other primary resources, thereby reducing the emission of greenhouse gases and other potentially harmful pollutants.
- Provide an on-line forum for exchange of Market Transformation information.

One important aspect will be the deeper involvement of retailers – both in the formulation of key criteria that will accelerate the acceptance of energy efficient products, and intensified targeting of the most appropriate methodology that will lead to an increase in sales. The involvement of multinational chains of distributors and retailers with business in a wide range of participating countries will be key to this process.

Expected results include

- Shared knowledge of international approaches to market transformation.
- Access to information about best practice and lessons learned in market transformation.
- Access to, and contacts with, a wide variety of participating countries from which to draw project partners.
- A conference dealing with Market Transformation and sharing international perspectives.
- Regular briefings on current practices and latest knowledge of Market Transformation practice.

More information about Task VII can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/7/task7.asp

Task VIII: Demand Side Bidding in a Competitive Electricity Market

Description

The objective of Task VIII is to evaluate and promote demand side bidding (DSB) as a means of improving the efficiency operation of the electricity supply chain. DSB is a mechanism that enables the demand side of the electricity market to participate in energy trading. More specifically, DSB allows electricity consumers to offer a specific reduction in demand, at a given time, in return for a specified income.

DSB can improve the efficiency of the operation of the electricity supply chain by increasing competition in the wholesale energy market and acting as an alternative to conventional generation. For example, DSB can be used to balance electricity supply and demand and also maintain the quality and security of supply. In addition, DSB can have important environmental and energy efficiency benefits in some situations when it is used as an alternative to conventional generation.

The Task will:

- Evaluate and promote DSB as a means of improving the efficiency of the electricity supply chain and global environment.
- Examine current DSB mechanisms and assess their strengths and weaknesses.
- Identify the main barriers to DSB and assist in their removal through the provision of practical guidelines for the development of new schemes and enhancements to existing ones.

Expected results include:

- Characteristics and role of DSB in the electricity industry in each country participating in the Task.
- Potential for DSB in each participating country.
- Guidelines on the ability of specific customer types to participate in DSB and their opinions on participation.
- Report aimed at potential demand side bidders on the different types of DSB and the necessary control and monitoring technology for participation.
- Practical guidelines on the technical rules for DSB.
- A practical guide for the development or improvement of DSB schemes.

More information about Task VIII can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/8/task8.asp

Task IX: The Role of Municipalities in a Liberalised System

Description

This Task will investigate how the roles of local authorities in demand side management are affected by a liberalised market and in the light of these changes and examples of good practice, prepare guidelines for improving the local authorities' service delivery in this field. Demand side management includes action to improve energy efficiency, load management and action to reduce CO_2 emissions by energy substitution. Local authority activities in this field will be assessed for replicability, choice of targets, its effectiveness in producing long term results, response to social and political needs, response to conditions of the liberalised market and the likelihood of resources and financing being found on a long term basis. The Task will provide an up to date view of municipal action in the participating countries and the likely results that can be expected from such action.

The Task will:

- Identify municipal roles and practices in DSM activity within the context of their national energy scene and evaluate their effectiveness.
- Evaluate the impact of liberalisation of energy markets and identify how municipalities can respond to this.
- Define priorities for municipal action on DSM.
- Make recommendations how municipalities can improve their service delivery relating to DSM both in-house and to third-parties.
- Propose an action guide relating to DSM at municipal level, presenting common factors and specific features and illustrate it with examples.

Expected results include

- Report on the roles and responsibilities of municipalities in the energy field and the participating countries role in promoting energy efficiency.
- Report on different approaches to liberalisation and their impact on energy efficiency activity in participant countries, which will form the basis of an assessment of the situation faced by municipalities.
- Report on best practice projects to promote energy efficiency which have been introduced by municipalities and action introduced in response to liberalisation.
- Recommendations for guidelines at national and local levels regarding the role of municipalities in DSM and how the current restructuring process affects the role that they can play.
- Publication of an action guide on local authority practice on energy efficiency including specific guidelines and recommendations and illustrated by practical examples.

More information about Task IX can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/9/task9.asp

Task X: Performance Contracting

Description

The objective of this new work is to facilitate the use of performance contracts and other energy service company (ESCO) contracts. Performance contracting is a well-established mechanisms for promoting the installation of energy efficient building equipment and systems. For example, facility owners and energy service contractors use this method to retrofit equipment to save money on building operations. The savings in energy bills due to the installation of this more energy efficient equipment is then shared between the facility owner and the ESCO under the terms of the agreement they entered. In this scenario, the ESCO has taken on the project's performance risk by guaranteeing a specified level of energy savings. Its compensation for this risk is directly tied to achieving savings. The financing for such a project could come from the ESCO, the equipment supplier or a third-party company.

Reasons why a property owner may enter into a performance contract vary. It could be a financial reason – a property owner may lack the money to invest in new equipment. It could be a business strategy – a property owner only wants to pay for the equipment once the value-added functions, such as reduced energy bills, are demonstrated. For an ESCO, the motivation could be that it provides another way to connect with customers and initiate new business relations. For some companies and government organisations, performance contracts can be used to inspire innovations and encourage the use of more energy efficient equipment.

Expected results

By building upon the experiences of those countries familiar with performance contracting, such as Canada, the United States and some European countries, and listening to the needs of countries that are developing such systems, the Task Experts will:

- Provide a better understanding of how performance contracts and other ESCO financial options and services can be used.
- Outline the benefits of performance contracting and their potential to promote energy efficiency and mitigate global climate change.
- Outline the regulatory and legal context for such contracts to function.
- Identify the market potential in countries that lack a mature performance contracting industry.
- Identify and share information on potential barriers and problems associated with implementing these contracts.
- Share success stories and solutions to problems that may arise.
- Formulate definitions of different types of performance contracting.
- Identify solutions and schemes on how to find suitable ESCOs and how to improve the tendering process.

More information about Task X can be found on the web site: http://dsm.iea.org
http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp

CHAPTER III

Task I: International Database on Demand-Side Management Technologies and Programmes

Operating Agent: Mr Harry Vreuls, Netherlands Agency for Energy and the Environment (Novem), the Netherlands

Objectives

The objectives of Task I are to establish and maintain an international database on demand-side management programmes, analyse the data collected, and disseminate the information resulting from the analysis. These activities should help utilities and governments in participating countries to design demand-side management (DSM) programmes, which reach more customers and save more energy at lower cost.

In the year 2001 the development of the INDEEP database was finalised and decision for two new subtasks was taken. One new subtask (subtask 8) will pertain to maintenance of the data base and the other (subtask 9) will be to develop a draft evaluation guidebook on the impact of DSM and EE programmes related to Kyoto greenhouse gas targets.

Progress

The international database on energy efficiency programmes (INDEEP) has made information available on electric and gas utility DSM programmes as well as those carried out by others (e.g. government agencies and energy service companies). The database consists of programmes implemented by the countries participating in this Task, plus as many other countries as possible. INDEEP focuses on programme descriptions and key summary data on programme costs, participation rates, energy and demand savings, market delivery designs, and evaluation methodologies. Practical information, such as programme contacts, are also included in the database. In addition, summaries of pertinent data are provided periodically in order to present the lessons learned in particular types of programmes (e.g. lighting programmes in commercial buildings, or appliance rebate programmes for energy-efficient refrigerators). General analysis is disseminated and the use of an uniformed programme information data framework is being promoted.

Two advisory groups provide guidance to INDEEP activities. The IEA DSM Executive Committee provides management oversight to the Task and advises at critical junctures during the process of designing, implementing and maintaining the database, or with dissemination strategies. The Task I Experts group includes government and utility representatives, database specialists, and DSM professionals who provide advice regarding the database design, data collection, data analysis activities, and guiding the direction of the Task.

Table 1

Subtasks for Task 1

Subtasks	Main activities	Main period	Status
1: Programme Identification	Develop survey questionnaire; Implement surveyquestionnaire; Identify programmes; workshop	Year 1	finalised
2: Design Planning	Determine data to be collected Develop Data Collection Instrument and definitions Pre-test and Evaluate DCI	Year 2	finalised
3: Design Database	Select software package Start software development	Year 3	finalised
4: Data Collection and Entry	Collect data using the DCI start software development Quality control on data Enter data	Year 2 up to 6	finalised
5: Data Analysis and Report Preparation	Analyse the first 100 entries Prepare a report including lessons learned Dissemination of information Analyse the final set of programmes	Year 2 and 3 Year 7	finalised
6: Updates to Database	Update existing data Add new data Improve software Finalise software	Year 3 up to 6 Year 7	finalised
7: Promotion and Marketing	Prepare and distribute information material	Year 1 up to 7	finalised
8: Maintenance of the database	Collect new and update data Software update Promote the database and distribute information Analysis the database Prepare a marketing for the period after 2002	2001/2002 2003	started
9: Evaluation guide-book for GHG Phase 1	Developing a common framework; Clarifying the function of scenarios and measurements for evaluation guidelines; Compile a draft international evaluation guidebook for energy efficiency programmes, focussed on GHG mitigation; Communicate and promote the guidebook.	2002/2003	started

Task I officially began May 1,1994. The first year was a pilot project to explore the feasibility and nature of an international database on DSM programmes. During the second year participants collected DSM programme data and started to compare DSM programmes among participating countries. Data analysis began during the third year, as well as software development (a prototype) and information products were published and disseminated. During the fourth year a first analysis report was produced,

and the platform for the database software was discussed and the Internet chosen. The fifth year has seen the development of the Internet software for the INDEEP database, as well as a discussion on the future of the database from 2000 onwards. In the year 2000 the development of this international database was finalised and a project management report as well as an analysis report were presented to the Executive Committee. These two reports were approved and published in 2001. In 2001 a new work plan for the maintenance of the database was approved (subtask 8). At the end of 2001 it became clear that the extension of the work with an evaluation guidebook (subtask 9) could start early 2002.

Table 1 holds two sections: the first one is finalised development phase of the INDEEP project with the seven subtasks, their main activities and periods. The second section includes the two new subtasks that started in 2001/2002.

Activities completed in 2001

- Published the INDEEP analysis report 2000.
- Published the final report developing INDEEP 1994–2000.
- A work plan for maintenance of the INDEEP database.
- An INDEEP demonstration database at the internet.
- A Task organising meeting for subtask 9 (evaluation guidebook related to Kyoto's GHG targets).

INDEEP maintenance

In June 2001 the maintenance of the INDEEP database started. This work is organised in subtask 8, in which the following countries participate: Denmark, France, Japan, The Netherlands, Norway, Republic of Korea, and Sweden. Several countries are still discussing to participate, among those are Austria, Italy and the United Kingdom. The main actions during the two years maintenance period (2001–2003) are:

1. To enlarge the INDEEP database and update data;
2. To continue to show the value of the information stored by publishing an analysis report and papers or giving presentations at national and international seminars and conferences;
3. To improve the INDEEP Internet database software;
4. To support the users of the INDEEP database;
5. Prepare the transfer of the INDEEP database to an organisation after two years.

In June 2001 the results of the INDEEP development phase were presented at the European Council for an energy efficient economy (ECEEE) summer study. The first experts meeting was also hold in combination with this summer study. At that meeting it was agreed that priority should be given to update the programme information in the INDEEP database. As several countries needed more time to nominate the expert for this subtask, the activities within the participating countries will start in 2002. In 2001 the process for data update for ongoing programmes in the INDEEP database for some countries started.

INDEEP started as a traditional type database and has evolved into an Internet database. This evolution process has seen the melding of instruments and functions into new technologies. Actions started to realise the database as a web product by improving the 'user-friendliness' of the web-interface and to streamline the collection and processing of data electronically. There are three groups of actions. Firstly by adapting navigation and terminology of web technology. Secondly by creating a new INDEEP procedure of collecting and processing data for the Experts, Consultants and Operating Agent to use that make use of the benefits of electronic data exchange. And thirdly by building electronic information exchange partnerships between INDEEP, its users and the programme implementers.

Evaluation guidebook on the impact of DSM and EE programmes for Kyoto's GHG targets

The general objective of the subtask is: to develop, test, and promote an evaluation guidebook for governmental and non-governmental Energy Efficiency Programmes and also for (utility) DSM programmes targeted towards energy end-users and focussed on GHG reductions to meet Kyoto's targets.

The guidebook should, in the first place, be used in all IEA countries and should be a tool in the judgements for the results by national and regional energy programmes for sustainability and for limiting greenhouse gas emissions as well as the future role for such programmes in policies. So the Task will develop a useful methodology – documented in the form of a guidebook – to evaluate the impact of DSM an EE programmes. This would aid policy makers and would allow programmes to be improved (i.e. made more cost effective). The guidebook should also been used in developing countries and countries in economic transition. Participation in this Task from associated IEA member countries or developing countries (e.g. by assistance from the World Bank, the Energy Efficiency Initiative or the Climate Technology Initiative) should be promoted.

The main approach is to use national and international expertise to collect and judge the information on EE and DSM project- and programme evaluations. This national expertise should include experiences in programme evaluation, in the (inter) national standards for GHG emissions related to energy use, and in programme costs.

The Operating Agent facilitates this process. He is responsible for the drafts, the final draft and the modified (final) versions of the guidebook, as well as the promotion of this subtask.

Four tools will be used to structure this process:

1. Reports by national experts (as input to meetings and Task reports);
2. Draft and final international reports by the Operating Agent;
3. Experts' meeting to discuss the work (evaluation approaches, scenarios, concepts etc.), national reports and draft Task reports;
4. Discussions with future users and policy makers at national and international level.

The subtask holds two phases. The first phase is to develop a common framework, to clarify the function of scenarios and measurements for evaluation guidelines, to compile a draft international evaluation guidebook for energy efficiency programmes, focussed on GHG mitigation and also to communicate and promote the guidebook. The second phase holds activities to test, modify and finalise the evaluation guidebook. Only the first phase is included in the work plan.

The Task organising meeting is held on 13 June in Mandelieu (France). A flyer was produced to attend participants at the ECEEE summer study to this subtask and the meeting. The experts at the meeting (from Denmark, Finland, Italy, the Netherlands, Norway, Sweden and UK) concluded:

- The proposed work is important for the continued development of national evaluations.
- A common action to make the relation between evaluation knowledge and methods for energy programmes on one hand, and the progress in policy impact on GHG emissions on the other hand, is supported.
- More co-operation and communication between evaluators should be stimulated.

This subtask was also presented at the International Evaluation of Energy Programme Conference (IEEPC), Salt Lake City (USA), August 2001. It was concluded that this subtask could make good use of the IPMVP (international performance measurement and verification protocol), that was published in 1997 and recently updated. In the IPMVP publication the relation with emission(trade) and UNFCCC are indicated, but not included.

Activities planned for 2002

In 2002 the collection of new programme data for the INDEEP database will start and the update of ongoing programmes in the database will be finalised. The software improvements will continue as well as the promotion of the database. A draft marketing strategy will be developed for the future use of the database.

Each country experts will prepare reports on the evaluation methods, models and scenarios that are used for energy efficiency programmes and the relation to GHG emissions. A draft general framework for programme evaluation will be developed and discussed with the experts. A catalogue of available databases and models, costs and usefulness for evaluation will be drafted for comments.

Involvement of industry and other organisations

Each national expert is responsible for contacting utilities and governmental agencies within their country, to assess general DSM information needs and the specific need for (and usefulness of) an international database on energy efficiency programmes. For the evaluation guidebook more involvement from departments dealing with environment and GHG emissions is essential. Involvement from the UNFCCC secretary and related organisations is pursued.

Reports

Reports produced in 2001

1. INDEEP database demonstration version.
2. Poster "The INDEEP database".
3. Work plan Maintenance INDEEP database.

Meeting schedule

Meetings in 2001

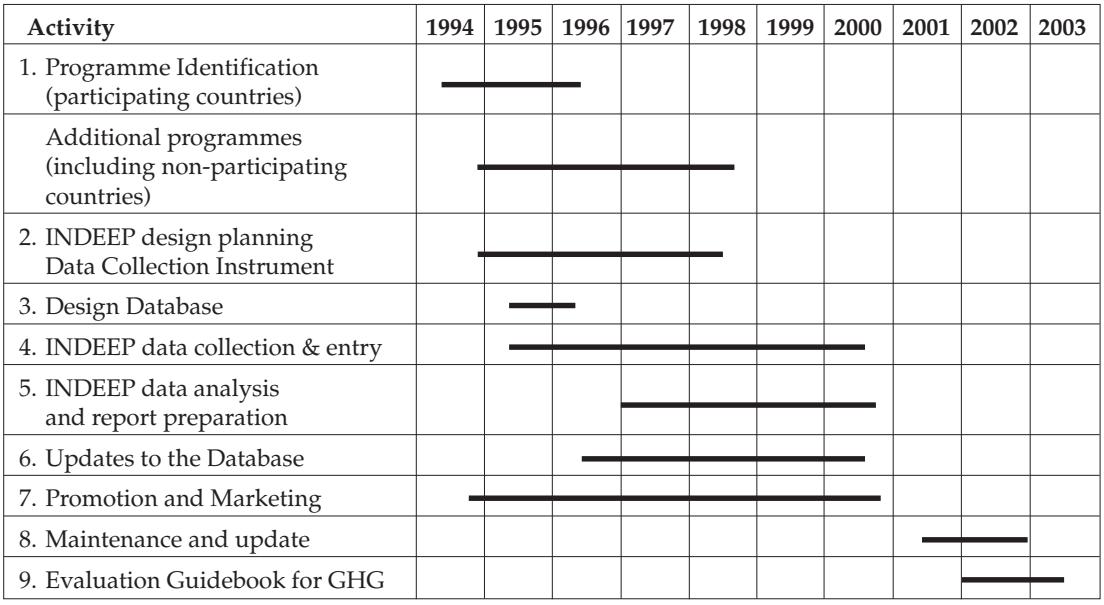
13 June 2001, Mandelieu, France (Task organising meeting evaluation subtask).
15 June 2001, Mandelieu, France (maintenance subtask).

Meetings planned for 2002

February 2002 (subtask 9 Evaluation).
March 2002 (subtask 8 Maintenance), the Netherlands.
June 2002 combined meeting subtask 8 and 9.
November 2002 Experts meeting.

Activity time schedule

Task I came into force on 1 May 1994 and will continue until 1 October 2003.



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Several countries have to nominate new Experts for subtasks 8 and 9.

Task II: Communications Technologies for Demand Side Management

Operating Agent: Mr Richard Formby, EA Technology, United Kingdom

Objectives

This Task is to assess the best available options and strategies for applying communications to DSM and customer services programmes in the Participants' countries, develop models to carry out evaluations, and specify and develop the technology and demonstration efforts which are required to bring these options to fruition. To date the assessment has covered communications technologies for load control, data transmission, data processing, load management, automated meter reading and billing, customer alarm services, customer generation management, remote diagnostics and audits. Separate subtasks have been to specify and implement in prototype form a customer, flexible gateway through which the identified services can be provided. A business case evaluation has been completed which quantified bundles of services for financial viability and identified the most likely actors to provide services and infrastructure in the services market. A field trial of the provision of advanced customer services is being developed with definition of the bundles of services, business architecture, technical architectures and trial costs in progress.

The main purpose for field trials of bundled services is to evaluate their potential to improve the efficiency of energy resource use and to provide customers with better services at lower cost.

Progress

Different countries and different parts of a country have different requirements, different criteria and different stages of development in the application of energy related services and other services in competitive markets. The level of sophistication of the available and developing communications technologies is also important in these differences. This Task has examined available standards and codes of practice for software, hardware, communication protocols and interfaces, as well as relevant international standards. The Task has developed and promoted best practice in meeting different national needs and derived value judgements on communications systems and technologies that offer cost effective solutions to energy management and services deployment.

The Task has defined the climate for the application of energy management and services which could use Customer/Service Provider communications within each participating country. It has also defined Customer services which are seen as being the most attractive and necessary in each country and converted them into information flows and data rates for communication between Customers, Utilities, and Services Providers. The study has collected information from each participating country and defined the Utility/Customer communications environment and technological developments which are taking place and planned for all the potentially usable communications

media. The media particularly include radio, telephone and power line communications, as well as wideband media. Descriptions of performance of trials and field trials have also been included and channel capacity, error performance and overall suitability of the different media quantified in supplying a developing services market.

The Task has developed methodologies and models to link the data exchange need in order to implement bundles of services to the communications media capabilities to transfer the information for a population of customers. This has enabled multiple media communications hierarchies such as telephone, power line and radio communication to be constructed which utilise the potential of each medium in the most efficient and effective way from the point of view of complexity, reliability and security. The models have also enabled the costs of technically viable communication solutions to be quantified. Field trial evaluations using the models have been carried out by four participating countries.

The results of these communication architecture studies are being used as inputs to standards forming organisations to assist with the tasks of defining protocols, signalling, interfacing standards and gateways for customer/Services Provider communications systems on an international basis.

An important requirement in order to assist in the development of a dynamic market for the provision of customer services is a multi media and multi protocol communication gateway. This will future proof investment in communications at customer premises. A subtask to specify the flexible gateway through which to provide identified customer DSM and other services has been completed with the participation of six countries.

The flexible gateway has been implemented in prototype form to the agreed specification and demonstrated using two applications. The demonstration prototype uses the telephone network as the external to the premises communication medium. The media used inside the customer premises are power line and twisted pair which use LON and Mbus protocols. Expansion to other media and protocols both inside and outside customer premises can be readily accommodated.

Before any wide scale implementation and roll-out of customer services and communication infrastructure can be considered, the business case must be positive. An evaluation of the business case for providing bundles of services has been completed. This showed that a 7 % return on investment can be achieved from the provision of correctly targeted bundles of services.

A business architecture for the provision of bundles of services is shown in Fig 1.

A CD ROM illustrating the provision of energy related and other bundled services has been produced to advertise and promote the future services scenario.

In order to prime the market and develop routes for providing customer services, a field trial of services, technology and customer reactions has been proposed. The DSM Agreement Executive Committee have approved a project to define the field trials in partner countries. Consortia comprising manufacturers, service providers, service aggregators, communication providers and other agencies have been established in partner countries.

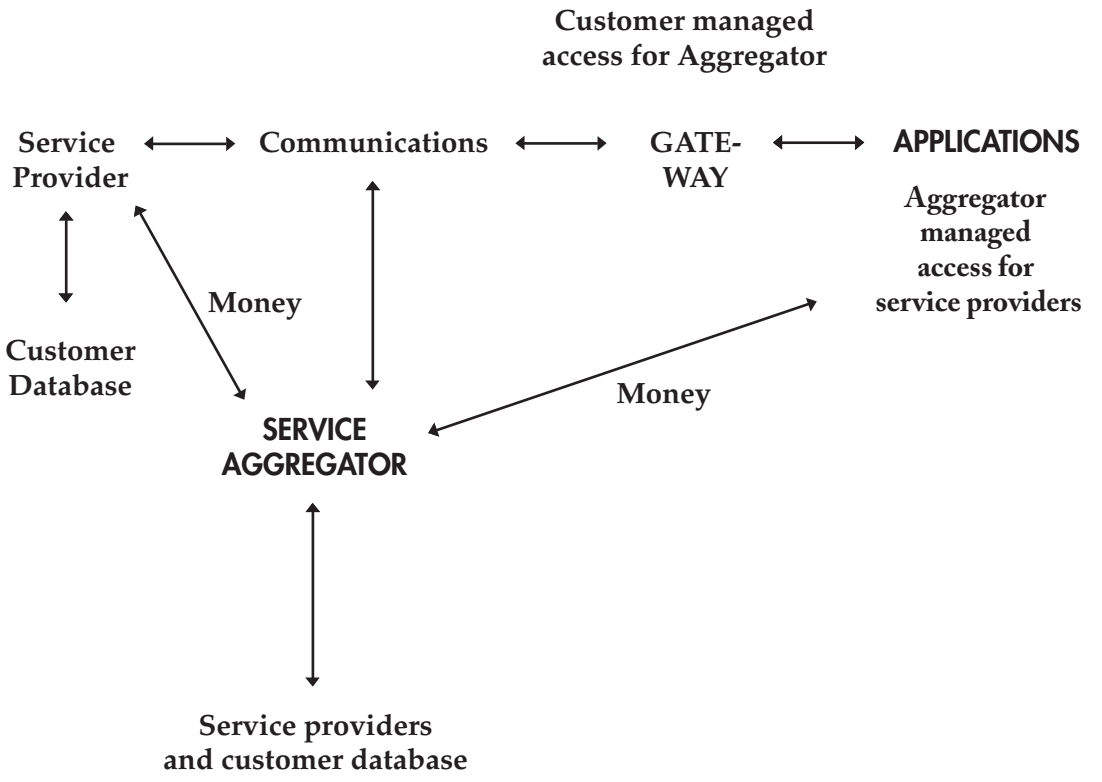
The Task will define the objectives and benefits of the trial in each country and coordinate all the trial definitions in order to obtain maximum value from the overall

investment. This involves defining numbers and types of customers, the services to be developed and offered and the methodology and technology to be employed in the trials. The results and information required from the trials, particularly customer reactions, potential business opportunities and technology and service performance, are being defined and routes to obtaining them agreed. Common services and technologies required among partner trials are being identified and routes to obtaining them agreed. Resources needed to implement the trials are being estimated.

All customers are potential users of energy related and other service bundles using communication. Bundles of services will be targeted at specific customer groups using the most appropriate communication infrastructure and managed by a service provider company.

An outline proposal to implement field trials in partner countries has also been developed with initial input from the Field Trial Definition project. The proposal is to carry out major field trial demonstrations, testing and evaluation of optimally bundled services, communications technologies and flexible gateways in customer buildings. The trial will demonstrate the most viable markets and services from the perspectives of energy, customers and buildings owners, as well as customer acceptance and business viability. It will also evaluate suitable, advanced communication technologies such as satellite, cable, radio and ADSL, and strategies for providing cost-effective services. A major objective will be to prime the markets for energy related services through promotions, demonstrations and publicity.

Figure 1



Activities completed in 2001

- Business case assessment of the costs and benefits of the provision of energy and other services to customers.
- CD ROM to promote energy and bundled services for customers and implementation business architecture.
- Commencement of the Field Trial definition project to quantify service bundles, customer participation, technologies and trial costs.

Activities planned for 2002

- The Field Trial Definition project started in November 2001 and will be completed by May 2002.
- A proposal to implement trials of bundled services will be submitted to the Executive Committee in April 2002.

Involvement of industry and other organisations

The collection of information about Customer Services and the communication technologies and protocols in participating countries has involved a great deal of interaction with organisations in each country. Much of the work has been carried out through detailed dialogue with utilities and hardware manufacturers. Customer groups and Government organisations have also been involved in consultations to assess national needs and Customer/Utility service motivators. The Gateway implementation project directly involved manufacturers from several countries. Exploitation of the technology and implementation and development of services will involve many industrial and service provider partners. The Field Trial Definition project involves consortia in participating countries collaborating to quantify all the parameters. Some of these consortia include manufacturers, government agencies, service providers, utilities and others.

Reports

Reports produced in 2001

Report on Business Case Assessment for the Provision of Customer Services using Flexible Gateways.
Completion of CD ROM of Customer Bundled Services.

Reports planned for 2002

Report on Definition of Field Trials of Bundled Services.

Meeting Schedule

Meetings during 2001

5–6 March, Chester, UK
30 November, Helsinki, Finland

Planned meetings for 2002

February 2002 (to be confirmed)

Activity time schedule

Task II was entered into force on 1 October 1993, and was extended by the addition of two new subtasks to a total duration of three and a half years i.e. 31 March 1997. A new subtask commenced in January 1998, to specify a Customer Gateway for delivering value added services. An additional subtask to define strategies for using wideband communication channels for Customer services commenced in March 1998. A subtask to implement the design of a flexible customer gateway, specified earlier, started in July 1999. A business evaluation of the provision of customer services was completed in 2001. A project to define a field trial of customer services provision commenced in November 2001.

Activity	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Customer/Utility needs										
Communications Technologies										
Relate needs and Communications										
International Standards										
R&D Priorities										
Costing Model										
Communications Model										
Customer Gateway Specification										
Wideband Communi-cation Strategy										
Customer Gateway Implementation										
Business Evaluation of Services										
CD Rom of Customer Services										
Definition of Field Trial										

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Task VII: International Collaboration on Market Transformation

Operating Agent: Mr Verney Ryan, Building Research Establishment, United Kingdom

Objectives

The need to meet Kyoto targets and to reduce greenhouse gas emissions through greater energy efficiency provides the driving force behind the new Market Transformation Task. Utilising the forces of the market and transforming those markets to better respond to energy efficient products helps to contribute to a more sustainable path whilst still maintaining a future vision of economic prosperity.

Specific objectives of this Task are to:

- Increase the market share of today's energy-saving products and practices.
- Accelerate the use of the most efficient new technologies in order to reduce the use of energy and other primary resources, thereby reducing the emission of greenhouse gases and other potentially harmful pollutants.

One important aspect is the deeper involvement of retailers and marketing – both in the accelerated acceptance of energy efficient products, and intensified targeting of the most appropriate methodology that will lead to an increase in sales.

Scope

The Market Transformation Task has three main areas of work as follows:

1. Market Transformation integrated Policy and Programmes development – developing a co-ordinated international approach to Market Transformation.
2. Market Transformation Marketing - developing marketing based actions to deliver Market Transformation.
3. Promoting Advanced Products Approach – using procurement, requirements, specifications and other tools in a targeted way to deliver Market Transformation.

Progress

A brief synopsis of developments in the subtasks is outlined below:

Subtask A – Defining the Market Transformation programme

Work on the development of an international Market Transformation model based on some of the experiences from the UK and the Netherlands has moved forward with a first review meeting held in September in The Hague to discuss shared approaches and resolve a work plan. This was followed by a second formal meeting in London in December with an emphasis on prioritising issues and actions. The MTPIF website has

been developed with the addition of 'Policy Briefs' and 'Briefing Notes' from UK and the Netherlands. It is hoped that over the coming months more countries will be encouraged to join the initiative thereby creating a co-ordinated international policy approach to Market Transformation for various sectors (For more details please see www.mtpif.com).

Subtask B – International Market Research

Fieldwork on a common market research study identifying the differences of value patterns in participating countries has been carried out and results analysed. The results have conclusively proved that a cross-country analysis of public attitudes to energy efficiency is possible; and the research will provide invaluable information needed for talking to the market actors about 'selling' energy efficiency as a concept.

The main research report will be published shortly, including wide dissemination to the press and industry. A list of key companies to contact has been drawn up, and meetings are currently being held to disseminate the findings to industry contacts. It is hoped that the research will stimulate new methods of targeted marketing amongst energy efficiency product manufacturers. In this way, Task VII hopes to provide part the key to unlock the potential of these products in the marketplace.

The scope and potential applications of the research into energy efficient behaviour in the populations of Finland, Sweden, Denmark, Holland, UK and Norway are almost without limitations. To the best of our knowledge, no such investigation has ever been undertaken, with emphasis on analysing attitudes, habits, and use of energy efficient products correlated with the individuals' belongings to specific socio-cultural clusters.

It is important to stress that other actors throughout industry will use the data to develop their own communication strategy. MT7 is the conduit between consumers and the product manufacturers/marketing people. The research gives them the arguments for the production and marketing of the next wave of energy efficiency products and provides the raw data to help market them. The research will act as the basis for companies to do the marketing themselves – this will be the first time that these companies will have access to this information about international energy efficiency attitudes. To date the reaction to the research has been very positive.

Subtask C – Market Transformation Forum & Market Transformation Workshop

The workshops

Workshops are currently being held in all participating countries in order to market the activities of the Annex and showcase the results of the research. The market research results are being used as a tool to spark discussion as to the barriers and potentials of marketing energy efficiency products. Each country is providing a summary report outlining the findings of the workshops. This will be drawn together as a report to be published by the Annex in 2002.

The Forum

The first of its kind ever held for energy efficiency, the Forum will involve major industry players, marketing specialists and government policy makers in a two day discussion highlighting the critical success factors required for a step change in energy efficiency promotion and popular culture. This Forum is aimed at the highest level,

involving the top influential marketers and politicians in a unique meeting that will highlight the importance of a radical new approach in energy efficiency policy, marketing and delivery. The first stage of the Forum is underway with a steering committee being drawn together to develop the concept and provide the support and contacts necessary in the execution of such a high level activity.

Subtask D – Website and Communication

The Operating Agent and the IEA DSM webmaster have collaborated on a more cohesive communication strategy for the Task incorporating enhanced PR and marketing materials/graphics/logos /report formats etc. Example logos have been produced and approved by the participating experts. The preparation of an MT7 e-newsletter has been discussed and considered an important promotional tool. This will be especially worthwhile when the results from the research, workshops and forum start to come through.

Subtask E – Promoting Advanced Products

Interest in subtask E still remains high although a single action project related to the promotion of advanced products has not yet been identified. This may be pursued in 2002.

Activities completed in 2001

- International Market Transformation approach through the MTPIF programme developed with a draft structure, approach and encouraging new participants on the project – two MTPIF meetings held in September and December.
- International market research conducted in six of the seven participating countries under subtask B – analysis of results complete and publication of results imminent.
- Development of phase two of market research subtask underway including provision of a detailed list of international manufacturers of energy efficiency products and industry to approach with the market research results.
- Synergy Workshop concept developed and several workshops held (Finland, Norway, Sweden).
- Subtask work plan for MT Forum defined and work underway in setting up steering committee
- New logo designed and communication strategy developed including design of 'e-newsletter' concept.
- Possible interest in Task VII from other countries including Australia and USA encouraged by synergy workshop delivery.
- MT7 Presentations made at IEA workshop on standby power in Tokyo and ECEEE conference in France.

Activities planned for 2002

- Pursue an International Policy framework on Market Transformation through the MTPIF programme, developing the network of countries taking part and encouraging new participants to the project.
- Advance the market research subtask in participating countries including a programme of work for utilising the research results for dialogue with international manufacturers of energy efficiency products and industry.

- Seek additional participating countries for Annex VII through the MTPIF approach and the invitation to countries outside of MT7 to hold Market Transformation Synergy workshops.
- Set in place a detailed work plan for the MT Forum and set date and venue. Pursue IEA high-level support for Forum and seek additional sponsorship.

Work plan for next year

Following the last experts meeting a list of tasks for next year were developed. These will form the basis of the work plan for 2003. They include:

- Contact and relationship building with industry utilising the results of the research.
- Building profile as 'marketing advisory panel' to industry including advisors on energy efficiency promotional campaigns.
- Replying to call for papers and co-ordination of presentations of Market Transformation research results.
- Work with press and media to disseminate market research (including conducting interviews with companies that use the results).
- Choose a single product to 'transform' and use as a pilot study through a single company (possibly an IEA DSM award winner).
- Examine applicability of MT7 approach to 'professional consumers' – either conduct new research or remould results to promote energy efficiency to professional decision makers/procurement people.
- Conduct IEA DSM award interviews and build on IEA DSM award with effective PR campaign.
- Present market research and other activities to the IEA.

Involvement of industry and other organisations

Several opportunities for industry involvement are developing within the work of Annex VII. In the main these stem from the market research, the workshops and the forum. All explicitly involve manufacturers/retailers and multinational chains of distributors.

In addition, the experience from the UK suggests that the MTPIF Policy Information approach (linked in subtask A) also engages industry in dialogue as various policy options are discussed at government level. Policies can be outlined, based on shared international information about the current state of the market place regarding energy efficiency products and projections of Carbon targets. The approach in the UK and the Netherlands indicates that this generates a greater dialogue with multinational chains of distributors and retailers and involves them in the goals and objectives of Market Transformation.

Reports

Reports produced in 2001

Task Status Report April 2001
Task Status Report October 2001
Market Transformation Annex VII Annual Report 2001

Reports planned for 2002

Task Status Report April 2002
Task Status Report October 2002
Market Transformation Annex VII Annual Report 2002
Results of the Market Transformation Synergy Workshops
Results of the Market Transformation Market Research

Meeting schedule

Meetings held in 2001

23 April, London, United Kingdom
25 June, Helsinki, Finland
4 September, Oslo, Norway
23 November, Stockholm, Sweden

Meetings planned for 2002

January/February Korea (provisional)
April/May Netherlands (provisional)

Activity time schedule

Task VII came into force in January 2000 and has a nominal date for ending on December 2002. An extension to the Task may be required to take advantage of the projects already underway, particularly the market research. A comprehensive work plan is currently being developed in collaboration with the Task Experts.

Subtask	1999	2000	2001	2002
Subtask A: Developing a unified policy approach to Market Transformation and integration with MTPIF				
Subtask B: Market Transformation Market Research				
Subtask C: Market Transformation Workshop and Forum				
Subtask D: Market Transformation Website				
Subtask E: Promoting Advanced Products				
Subtasks G - [...X,Y,Z]: Additional Subtasks (to be confirmed)				

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Task VIII: Demand Side Bidding in a Competitive Electricity Market

Operating Agent: Ms Linda Roberts, EA Technology, United Kingdom

Objectives

The objective of Task VIII is to evaluate and promote Demand Side Bidding (DSB) as a means of improving the efficiency of the operation of the electricity supply chain. This aim will be fulfilled by evaluating the characteristics, strengths and weaknesses of existing DSB schemes and creating guidelines for the development and enhancement of new schemes.

Progress

DSB has several important implications for the efficient operation of any electricity network. For example, maintaining the balance between electricity supply and demand, and maintaining the quality and security of supply are the responsibility of the System Operator. Generally, this is achieved by calling upon generators to bring additional plant on-line at times of difficulties. DSB provides an alternative solution by calling on consumers to make load reductions. Therefore, DSB is a way of rewarding consumers for having the flexibility to make short-term, discrete changes in demand to help deliver a secure and reliable electricity supply system.

Having identified the current state of play regarding DSB in each participating country, the work programme during 2001 turned towards an analysis of the potential scope for DSB in each country. In particular, information has been gathered on the potential for DSB in the domestic, commercial and industrial sectors. This includes data on the electrical loads available for DSB in the different sectors and the level of load reductions that might be feasible. This work was complemented by a consumer survey aimed at gathering information from individual consumers on their ability to participate in DSB and their perception of DSB.

Many different parties are involved in DSB; the demand side bidders who effectively sell the 'non-consumption' of electricity they have the option to consume, the aggregators who co-ordinate the DSB activities of a group of consumers, and the buyers of the DSB services such as the System Operator or network companies. The role of different DSB products within the electricity supply chain, particularly within liberalised electricity markets and the interaction between the different parties has been analysed.

It is important to distinguish those for which a load reduction would save energy, those which defer the energy consumption with no overall change in total consumption, and those for which total energy consumption might be increased. This information could be linked to the structure of the electricity markets so as to confirm the extent to which the load reductions of a DSB scheme might be expected to lead to the use of lower-cost or more-efficient generation. For example, contingency needs to be available in case of unexpected changes to the level of demand on the network or in the capacity of generation available. DSB has the potential to offer a more efficient solution to

conventional generation for this purpose by avoiding the need to maintain generation plant in a state of readiness in case it is needed.

The characteristics and benefits of different DSB products were evaluated from the point of view of electricity consumers and suppliers. A number of practical examples of DSB provide an insight into how DSB can be implemented, and highlight the benefits from the point of view of the customer.

There remains a number of challenges to overcome before DSB can be regarded as a success, and before liberalised electricity markets can be regarded as achieving all of the possible benefits attributed to them, both in terms of energy and economic efficiency. In particular, DSB products that facilitate greater access to market prices on the part of the consumer should be encouraged.

Most of the successful areas of DSB activity work within a well-defined set of rules imposed by the System Operator. There is a clear need for a better and wider understanding of the rules for all DSB products. This applies equally to those DSB products that are already working well, and to those falling into the more difficult areas, particularly where there is a need to encourage smaller consumers to participate.

Activities completed in 2001

- Market surveys were conducted by the Task Experts in their own country to obtain information on the electricity consumption and load profiles of different categories of consumers, with a view to identifying the consumers and loads that should be targeted in the consumer survey.
- The information collected during the market surveys was then used to focus on consumers' reactions to current or possible DSB products.
- A practical guide for both electricity consumers and suppliers about the characteristics and benefits of Demand Side Bidding was produced.

Activities planned for 2002

- The successful development of any DSB scheme is dependent on the involvement of both the Market and System Operator, who are responsible for balancing electricity supply and demand and maintaining supply quality and security. Therefore, a workshop is planned to allow a co-ordinated, international approach to the development of practical technical rules for DSB, with due consideration given to encouraging a wide range of market participants.
- Information on the technical rules associated with different DSB products will be gathered. This will apply to both those products that are currently in use, and those that are not. Examples will be the presented to the Market and System Operator(s) in each country by the Task Experts to ascertain how they could be accommodated in the electricity market.
- Using the information collected during the first two activities of 2002, a practical guide for all participants in DSB will be produced.

Involvement of industry and other organisations

The collection of information for the consumer surveys and the survey of technologies has relied on the involvement of several organisations within the participating coun-

tries. Much of the information used in evaluating the current status of DSB, and the opinions and perception towards DSB was gathered through dialogue with many organisations throughout the electricity supply chain, particularly System Operators and customers.

Reports

Reports produced in 2001

Report on technologies for Demand Side Bidding

Reports planned for 2002

Update report on market participants' views and experiences with Demand Side Bidding
Report evaluating existing DSB schemes
Report providing a practical guide for DSB

Meetings

Meetings held in 2001

8–9 March, Chester, UK
8–6 June, Eskilstuna, Sweden
22–23 November, Palma de Mallorca, Spain

Meetings planned for 2002

International Workshop for System Operators, planned for early 2002

Activity time schedule

Task VIII was entered into force in January 1999 and shall remain active until December 2002 unless an extension to the Task activities is required.

Activity	1999	2000	2001	2002
Stage 1				
Subtask 1: General definitions and project commencement	—			
Subtask 2: Survey of DSB participants (excluding consumers)		—	—	
Stage 2				
Subtask 3: Market and customer surveys		—	—	
Subtask 4: Survey of technologies		—	—	
Subtask 5: Evaluation of DSB			—	—
Stage 3				
Subtask 6: International workshop			—	—
Subtask 7: Identification of technical rules for DSB				—
Subtask 8: Produce a practical guide for DSB				—

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Task IX: Municipalities and Energy Efficiency in a Liberalised System

Operating Agent: Mr Martin Cahn, Energie-Cités, France

Objectives

Local authorities have a key role in promoting energy efficiency. This applies in particular to their own stock of buildings and equipment which provides approximately 2–4 % of energy demand, depending on the country. Certain activities have a significant demand and at the same time provide major opportunities for improved efficiency.

Energy efficiency activity has been identified as one of the main potential casualties of market liberalisation and this is felt to be a key problem by local authorities and others. There is a tendency for energy producers, traders and distributors to concentrate into large conglomerates which compete with traditional local authority utilities. While profitable energy efficiency activity is integrated into the services offered, there is a retreat from promoting energy efficiency to the small consumer which is less profitable in the short term. This makes the public service roles, including energy efficiency activity, more difficult to maintain.

The Task's main role is to investigate energy efficiency activity by local authorities in markets affected by liberalisation to:

- discover how those impacts of liberalisation discouraging energy efficiency activity can be circumvented,
- recommend how the action of local authorities in this field can be made more effective and
- disseminate this information to local authorities and those arms of government responsible for supervising municipal activity in this field.

The people involved in the project are of two types. Firstly there are representatives of participant local authorities – normally two per country, that act as a source of information on the local authority context and the practicability of proposed solutions – effectively a sounding board for consultation. Secondly there is a consultant input from each country, the experts who will actually prepare the project reports, that will gather together information and prepare each country's input to reports. Local authorities themselves are not generally fulfilling this role, however in Spain and Austria local authority agencies act as the consultant. In addition to the operating agent, some of the organisations representing the participant countries on the Executive Committee are also directly involved.

Progress

Action by municipalities is critically dependent on the powers and responsibilities given to them by the legal framework in their country.

The Task is looking at responsibilities under all local authority roles, as an energy consumer, as an energy producer or distributor, as a regulator and planner and as an awareness raiser. It is identifying how local authority action to fulfil them can promote energy efficiency and will propose management and administrative mechanisms to improve the response to the challenge of liberalisation. The areas where action to reduce the demand for energy is most likely to be significant lie in their roles as an energy consumer and as an awareness raiser.

This detailed investigation of the roles and the responsibilities of municipalities (and where relevant municipal energy companies) has been delayed because of delays in confirming the participation of some of the participant countries. One the three original partners, Sweden, has been reviewing its participation in IEA projects and has not been able to progress its participation and the two remaining partners, France and The Netherlands have been waiting for two further partners, Austria and Spain, to join the Task. While a decision was still awaited from Sweden at the time of going to press, both Austria and Spain confirmed their participation in October 2001.

The Task has been designed as a partnership in which the participants each carry out studies of the same issues in parallel to enable lessons on good practice to be exchanged. Therefore it is vital that the programme proceeds with all the partners at the same stage and at the same time. While it had been hoped that further countries would join the Task, the delays induced by the slow completion of the participation procedures meant that the difficult decision had to be taken in October 2001 to close the Task to new participants as from 31st December 2001. It became evident that the addition of further participant countries would now cause too many problems if the different partners were proceeding at different speeds and from different starting points.

It was also apparent that the fact that the United Kingdom and USA were not participating was a distinct handicap and it decided to organise short visits to these two countries to analyse the situation on the ground.

The Task is proceeding through seven subtasks. These include:

Subtask 1	A launch meeting to bring the partners together and discuss the framework of the project.
Subtask 2–3	Studies of the roles of municipalities in the partner countries and the impacts of liberalisation on them.
Subtask 4	Detailed case studies of best practice in the participant countries and others.
Subtask 5	Evaluation of these to prepare recommendations for governments.
Subtask 6	Preparation of an Action Guide and web site.
Subtask 7	A dissemination phase to ensure that the conclusions reach their intended targets.

The project will produce five reports and a regular Task newsletter.

An analysis of municipal roles and the impacts of liberalisation in France and the Netherlands has already been made. The Operating Agent has also made a similar

analysis of the UK. Work is being carried out on completing such an analysis for the newly participating countries, Spain and Austria.

A workshop was held in Barcelona in September 2001 which reviewed the analyses already made in order to define the key areas where changes are expected and where international best practice information will be most useful.

Conclusions of the Workshop in Barcelona, 27th–28th September 2001

It was apparent from the meeting in Barcelona that a number of issues are of critical importance to local authorities in the participant countries. These include the following:

Energy purchase

One of the first impacts of liberalisation is the opportunity to purchase energy in free competition. Local authorities have virtually no experience of this and purchasing energy is a complex and specialist business. It imposes the need to have accurate information on consumption and consumption patterns – one of the benefits of liberalisation. In addition the benefits of scale are particularly evident and experience from the UK suggests that very large consortia of local authorities are likely to be able to have a significant weight in the bargaining process. In a world where one's industrial muscle is proportional to size, local authorities have to adapt. But given a willingness to adapt, there are real influences that one can have on the supply side (e.g. energy efficiency benefits, support for awareness raising organisations, competitive prices for green energy).

There is a change in the attitude found in relationships with the supplier. In a monopoly situation one was dealing with a colleague from whom one got the best deal by being friendly. In a liberalised market the supplier is an adversary from whom one tries to negotiate the best deal (and to whom one shouldn't be too close). This requires a change in mentality from cooperative behaviour to position taking skills, i.e. skills in negotiation. In the long term, with the opening of the market on an international scale, there may be opportunities for inter-national consortia.

All this concentration on the purchase of energy and low price has made *reducing consumption* less interesting in itself. However competitive purchasing has made information a vital consideration and this is also a vital first step in energy saving. The key is to see how these two trends can be combined so that one can feed off the information gathered for the other.

With the introduction of competition, local authorities have tended to abandon their role as a *utility* to those specialising in business affairs. Even when the municipality retains the ownership of the utility, (as is usually the case in Scandinavia for instance), the utility is then operating on purely business principles. Production has become a minor role linked to the management of energy use in their own stock. The role of local authorities as distributors has been questioned in those countries where the municipal role in energy has been important in the past. In The Netherlands municipalities have been abandoning distribution as a risky business although political pressure has ensured that they retain the "legal" ownership of the networks (what this will mean in practice remains to be seen). Some municipalities in other countries (e.g. in Germany)

have also sold off their distribution networks. Other formerly purely municipal companies are busy expanding into powerful players. There is a wariness of large capital intensive development because of the insecurity of future income streams, which may pose threats to district heating systems. Cogeneration too is made more fragile, dependent as it is on two markets, that for electricity and that for heat. However this field is very individual to the countries concerned and it may prove difficult to propose generalisations.

The *Regulatory roles* of local authorities do not appear to have significantly changed, however the local authority may be able to take a much more independent view of their role where they are not directly financially interested in the income of energy enterprises. However there appears to be a withdrawal of the utility from the regulatory framework which is now placed firmly on the local authority. For instance the Dutch Milieu Action Plans (MAPs) in which the utility took a very active role are being replaced by Climate Covenants run directly by local and regional authorities. Without the power to tap into the massive turnover of the energy businesses, it is difficult to see where the necessary public resources will come from.

Awareness raising is the other area which is most dramatically affected. From being a partner in activities, the local authority may take a main role in due course Key questions are whether a voluntary approach will work and will resources raised by, e.g. selling their public energy companies be used for further investment in energy saving.

New laws are more positive but rarely provide additional funds, e.g. the French law which gives local authorities the right to promote demand side management of electricity. The awareness raising role of local authorities is clearly increasing. The change is from a role of partner to the utility to being the main player. In the past the collection and application of money from consumers to be used to promote energy efficiency advice etc. has tended to pass via the utilities. British experience has not been good -there is a tendency to use this to bribe the consumer and influence them in favour of the energy they supply. Local authority utilities are not exempt from this generalisation when related to their own district heating network.

It is clearly desirable to isolate the application of energy advice and incentives from the collection of resources. Utilities might simply be a conduit to collect the money to be then channelled to users via local authorities or other public structures which actually provide the service.

A meeting was held in Milton Keynes in December 2001 which examined the experience of British local authorities of liberalisation. A range of UK municipalities were present and presented their experience of the impact of liberalisation on their main roles and the opportunities that have arisen and in addition an overview was obtained from some of the main players.

Activities completed in 2001

The first drafts of the evaluation of municipal roles and the impacts of liberalisation were prepared in March 2001. A workshop was held to evaluate those for France, The Netherlands in Barcelona in September 2001. The elements for the remaining three

countries (Spain, Austria and Sweden) will not be completed before early 2002. A study workshop was being held in the United Kingdom in December 2001.

Activities planned for 2002

- Completion of studies of the roles of local authorities and the impacts of liberalisation in Austria, Sweden and Spain.
- Study visit to California.
- Preparation of detailed case studies of good practice.

Involvement of industry and other organisations

The main organisations that are participating in this project are local authorities in the participant countries. To date two French local authorities and one French association of local authorities, three Dutch local authorities and one Swedish local authority are participating. In Spain it is planned that one local authority promoted energy agency and one other local authority participate. The Catalan Institute for Energy will provide funding for the participation. In Austria the consultant expert works for a city energy agency and will liaise with four other municipalities or municipal utilities. Support is being obtained from the Austrian Government. The meeting in the United Kingdom was hosted by Energie-Cités member Milton Keynes.

Reports

Reports produced in 2001

No reports have yet been produced although the minutes of the Barcelona Workshop have been prepared and circulated. Proceedings will be prepared for the Milton Keynes Workshop.

The second Task newsletter was published in October 2001. A third is planned following the Milton Keynes workshop in January or February 2002.

Reports planned for 2001

March 2002 – Reports on the Roles of Municipalities in the participant countries and the impacts of liberalisation on them.

October 2002 – Best Practice examples in municipalities in the participant countries.

Evaluation of Best Practice and Recommendations.

Meeting Schedule

Meetings held in 2001

March 2001, Brussels, Belgium
September 2001, Barcelona, Spain
December 2001, Milton Keynes, UK

Meetings planned for 2002

March/April 2002, California USA
June 2002, Arnhem, The Netherlands
October/November 2002, Graz, Austria

Activity time schedule

The Task began on 1 January 2000 it has been extended and will now be completed by 31 December 2003.

Activity	2000	2001	2002	2003
1 A Launch Seminar				
B Survey of municipal roles				
C Survey of context of Liberalisation				
2 D Best Practice Studies				
3 E Evaluation Analysis of Municipal Roles and Projects				
Prepare Recommendations				
4 F Prepare Action Guide				
G Final Seminar Disseminate reports				

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Task X: Performance Contracting

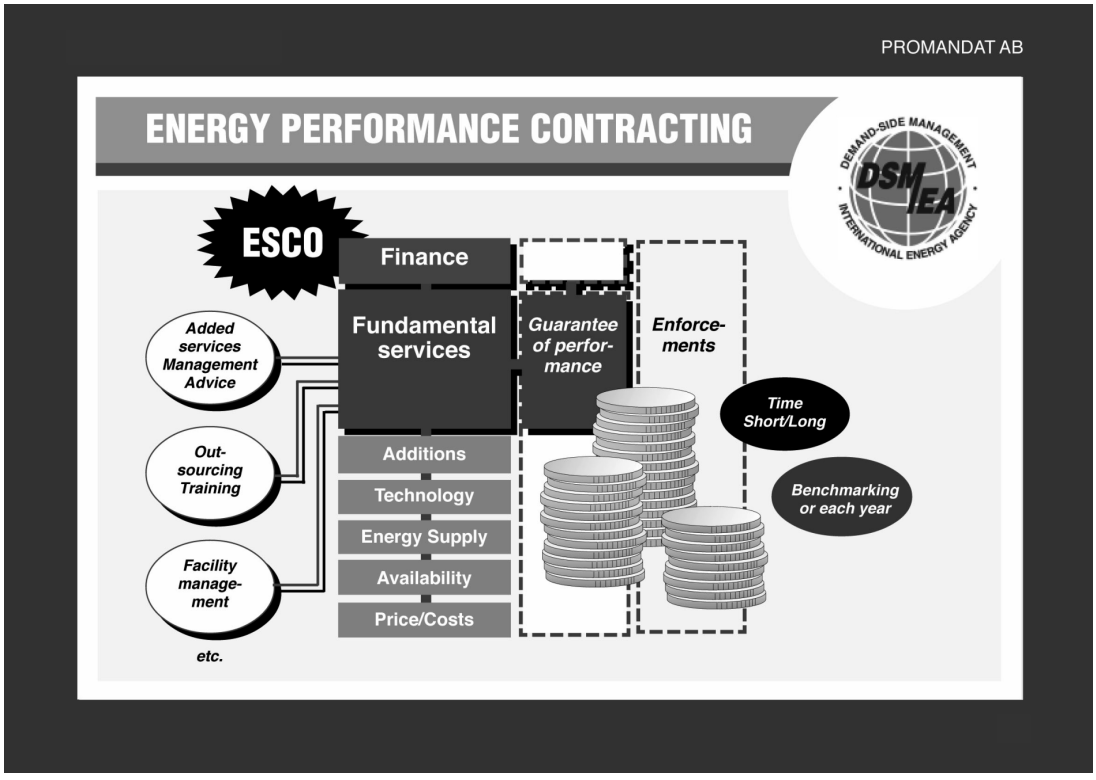
Operating Agent: Dr. Hans Westling, Promandat AB, Sweden

Objectives

The overall objective of Task X is to facilitate the greater use of performance contracts and other Energy Service Company (ESCO) financial options and services in the participating countries. It is a business-to-business Task, limited to efforts involving the performance contracting arrangements and other ESCO-related financial options and services between client, businesses and all types of companies offering these services.

Energy service contracting, or performance contracting, is an established mechanism for promoting the installation of energy efficient building equipment and systems. Energy service contractors, or ESCOs, enter into agreements with facility owners to perform retrofit installations of equipment that can save money on building operations. The savings in energy bills due to the more efficient equipment are shared between the facility owner and the ESCO under terms of the agreement. Most importantly, the ESCO takes on the project's performance risk by guaranteeing a specified level of energy savings. The ESCO's compensation is directly tied to achieving these savings. The financing can either be by the ESCO, by the suppliers of the system or components, or by an outside third-party company – or a combination. ESCOs can also employ other financial options and services in support of their clients.

Figure 1: Overview of fundamental and additional services in Energy Performance Contracting



The performance contracting industry (an industry employing performance contracts and other financial options and services) is well established in the U.S. and Canada, and some European countries. The success of an ESCO industry depends on energy sector regulations, contracting law, and an awareness of building owners of the benefits of performance contracting.

The Task will:

- Promote an understanding of the benefits of performance contracting and other ESCO financial options and services and the potential contribution of these financial options and services to promoting energy efficiency and mitigating global climate change.
- Identify the market potential in countries for which no mature performance contracting industry currently exists.
- Identify and share information concerning potential problems and solutions associated with implementing performance contracting and other ESCO financial options and services.

The Task is divided into 4 Subtasks

- Subtask A - Initial Workshop
- Subtask B - Country Reports
- Subtask C - Interactive Workshop comparing Country Reports and Ideas
- Subtask D - Country Plans and Lessons Learned

Figure 2: Shared savings – The ESCO takes the performance and credit risk

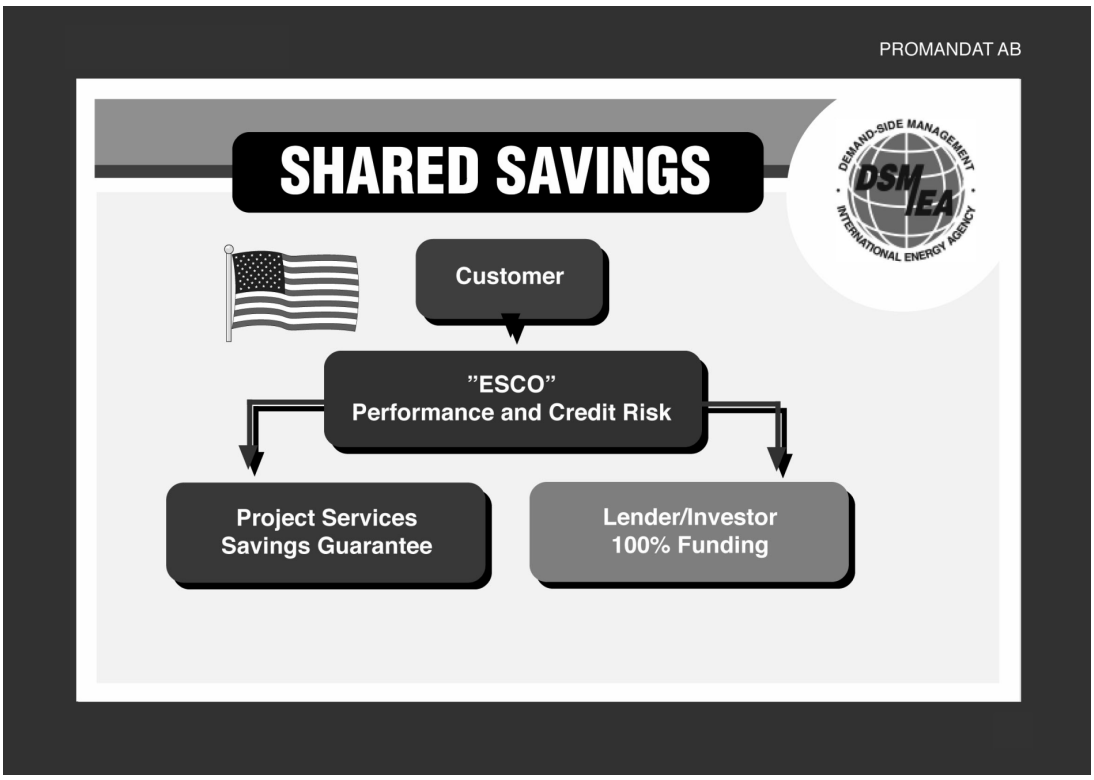


Figure 3: Guaranteed savings – The ESCO takes the performance risk and the owner the credit risk

Progress

After the Task definition and preparation phase, Task X started officially on the 1st of December 2000. The Initial Workshop/First Experts Meeting in Task X (Subtask A) was held in February 2001 in France. During this meeting, the work to be carried out in the Task was discussed and agreed upon, and the Task legal documents, i.e. the Annex Text, Work Plan and Information Plan, were finalised. The Annex Text was then reviewed by the International Energy Agency Legal Office, after which the final version was sent out on ballot to the DSM Executive Committee members of Task X participating countries, who all of them approved the text.

Much of the work in Task X during 2001 has been spent on preparing and drawing up draft Country Reports (Subtask B). Draft guidelines for the contents in the reports were drawn up in order to get similarities in the reports and to facilitate comparisons. In order to facilitate the presentation of the reports, a matrix for the editing and layout has also been set up.

Before the second Experts Meeting, which was held in Helsinki in June, the first drafts of the Country Reports had been drawn up by the majority of the participating countries. These drafts were presented and discussed at the meeting. Australia, interested in Task X, but not yet a member, had also submitted a report. It was noted that excellent material had already been produced. Some countries had concentrated on certain parts of the suggested contents, while others had made a broader overview, which will be further refined during the work. Some preliminary findings after comparing the drafts were presented. The findings included preliminary problems,

main issues identified by the countries to include in the reports, barriers, and some questions to further penetrate. After the meeting, comments on the reports and suggestions were sent to the expert responsible for the report in each country.

In connection with the Helsinki Experts Meeting, the Finnish hosting organisation arranged a Special ESCO Seminar with presentations about ongoing performance contracting arrangements in Finland. There were also presentations by the Task X experts from the United States and a presentation by the Operating Agent about the ongoing work in Task X. The Seminar attracted great attention and was attended by some 100 persons from Finnish organisations, industrial companies, facilities, etc.

A new way of distributing material was used for the second draft versions of the Country Reports. At the beginning of the year, a home page had been set up for Task X. It included a secure web-site, 'Experts Forum'. Each task participant had been given a personal password for access to the site and a "User Information Document" had also been drawn up. After some initial problems, all experts have had the opportunity of using this way of uploading their reports, and most of them have found it most efficient. Material uploaded by one country will be available to all the other countries at the same time, which will speed up the process. This way of working will be used also in the future.

The second drafts of the Country Reports had been uploaded at the secure web-site before the third Experts Meeting – the Interactive Workshop for comparing the draft Country Reports (Subtask C) – which was held in Coral Gables, Florida, United States, 5–6 November, in connection with the NAESCO Annual Conference 7–9 November, in which some of the experts participated. Representatives from five of the Task X countries were present at the Experts Meeting, but due to the unfavourable circumstances after the September events in the United States, the experts from the other countries were unable to participate. Because of these events, preparations had been made for a telephone conference with the Task experts in Europe, who could not attend the meeting. Unfortunately, the local time differences made it impossible for the experts from Japan to take part in telephone conference. During the meeting and during the telephone conference, the second drafts of the Country Reports were presented and discussed. There were also presentations from and discussions with some U.S. experts on financial and purchasing issues. The first preparations for the Country Plans were also dealt with at the meeting.

The Task experts have stated that it is important to include, in one way or another, some Central European countries, such as the Czech Republic, Poland and Hungary. At the workshop "Regulatory Framework for Energy Third Party Financing in Central Europe", which was jointly organised by the International Energy Agency and the Climate Technology Initiative and which was held on 29 November in Budapest, Hungary, the Operating Agent made a presentation about Task X and one of the French Task experts participated as a moderator.

It would also be important to include Australia, Austria, Germany and the United Kingdom in the Task work, as they have very interesting experiences from performance contracting activities. Contacts have been taken with Germany and some meetings were held in December with the newly established national energy agency, Deutsche Energie Agentur, in Berlin.

Activities completed in 2001

- The Initial Workshop/First Experts Meeting (Subtask A) was held in February in Valbonne, France.
- The Task legal documents were finalised.
- The Annex Text was sent out on ballot and approved by all the Executive Committee members of Task X participating countries.
- Formal Notices of Participation were sent in to the IEA by all Task X participating countries.
- A home-page for Task X (including a secure 'Experts Forum' site) was prepared and opened.
- Draft guidelines for the contents in the Country Reports and a matrix for the layout and editing of the reports were drawn up.
- First and second draft versions of the Country Reports (Subtask B) have been drawn up and discussed. The second drafts were uploaded on the Task X secure web-site.
- An ESCO Seminar was held in Helsinki, Finland, in June in connection with the second Task X Experts Meeting.
- Possible case studies and demonstration projects were identified in most of the countries.
- The Interactive Workshop/Experts Meeting for comparing the draft Country Reports (Subtask C) was held in November in Coral Gables, Florida, United States.
- A presentation about Task X was made at the IEA/CTI Workshop in Hungary in December.
- Meetings to interest Germany in the Task work were held in December with the newly established national energy agency in Berlin.

Activities planned for 2002

- Finalisation of the Country Reports.
- Formulation of Country Plans for expanded use of performance contracting and preparation of analysis of ongoing cases and planned demonstration projects.
- Involvement of additional specialists in legal issues, model contracts, financing and verification methods.
- In addition to the three Experts Meetings to be held during the year, meetings in each country with national groups.
- Efforts to include countries which have valuable experience in performance contracting in the Task work, such as Australia, Austria, Germany (not yet a member of the IEA DSM Agreement) and the United Kingdom for example.
- Spreading of the experience of the Task work to other countries through participation with presentations or posters at suitable conferences, or by inviting representatives from other countries to Task meetings.

- Articles in journals and magazines, and possibly also a two-page brochure about Task X.
- Collection/exchange of lessons learned about a suitable process, model, etc.
- Formulation of the draft Final Management Report.
- Closing of the Task (December 2002).

Involvement of industry and other organisations

The collection of background information for the Country Reports has involved contacts and a great deal of interaction with organisations (government, federal, municipal and others), industrial companies, utilities and energy service companies in each country.

Setting up of national reference groups and/or organising regular exchanges of ideas with representatives from energy companies, facility managing companies and suitable industrial companies with experience of performance contracting work has taken place in most of the countries. The intention is to include also legal and financial specialists in the groups. The Task X experts agree that these groups should include as many players as possible for giving inspiration to the national experts and for finding possible demonstration projects.

Meeting Schedule

Meetings held in 2001

- 1–2 February, Valbonne, France
- 19–20 June, Helsinki, Finland
- 5–6 November, Coral Gables, Florida, United States

Meetings planned for 2002

- 13–15 March, Norway
- 12–14 June, Italy
- Autumn (September–November), Japan

Activity Time Schedule

Task X came into force on 1 December 2000 and will continue until 31 December 2002.

Activity Time Schedule	2000	2001	2002	2003
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Subtask B: Country Reports				
Subtask C: Interactive Workshop comparing Country Reports and Ideas				
Subtask D: Country Plans				

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