



**IEA Implementing Agreement on Demand-Side Management
Technologies and Programmes**

FINAL MANAGEMENT REPORT

Task X Performance Contracting

Subtasks A-E, 2001 - 2004

International Energy Agency
Implementing Agreement on Demand-Side Management
Technologies and Programmes

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Subtasks A-E, 2001 - 2004

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(including Conclusions, Chapter 18)

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PREFACE

Overview of the International Energy Agency (IEA) and the IEA Demand-Side Management Programme

The International Energy Agency

The International Energy Agency (IEA), established in 1974, is an intergovernmental body committed to advancing security of energy supply, economic growth, and environmental sustainability. The policy goals of the IEA include:

- diversity, efficiency, and flexibility within the energy sector,
- the ability to respond promptly and flexibly to energy emergencies,
- environmentally-sustainable provision and use of energy
- development and use of more environmentally-acceptable energy sources,
- improved energy-efficiency,
- research, development and market deployment of new and improved energy technologies, and
- undistorted energy prices
- free and open trade
- cooperation among all energy market participants.

To achieve those goals, the IEA carries out a comprehensive programme of energy cooperation and serves as an energy forum for its 26 member countries.

Based in Paris, the IEA is an autonomous entity linked with the Organization for Economic Cooperation and Development (OECD). The main decision-making body is the Governing Board, composed of senior energy officials from each Member Country. A Secretariat, with a staff of energy experts drawn from member countries and headed by an Executive Director, supports the work of the Governing Board and subordinate bodies.

As part of its programme, the IEA provides a framework for more than 40 international collaborative energy research, development and demonstration projects, known as Implementing Agreements, of which the DSM Programme is one. These operate under the IEA's Energy Technology Collaboration Programme which is guided by the Committee on Energy Research and Technology (CERT). In addition, five Working Parties (in Energy Efficiency, End Use, Fossil Fuels, Renewable Energy and Fusion Power) monitor the various collaborative energy agreements, identify new areas for cooperation and advise the CERT on policy matters.

IEA Demand Side Management Programme

The Demand-Side Management (DSM) Programme, which was initiated in 1993, deals with a variety of strategies to reduce energy demand. The following 17 member countries and the European Commission have been working to identify and promote opportunities for DSM:

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

Programme Vision: In order to create more reliable and more sustainable energy systems and markets, demand side measures should be the first considered and actively incorporated into energy policies and business strategies.

Programme Mission: To deliver to our stakeholders useful information and effective guidance for crafting and implementing DSM policies and measures, as well as technologies and applications that facilitate energy system operations or needed market transformations.

The Programme’s work is organized into two clusters:

- The load shape cluster, and
- The load level cluster.

The ‘load shape’ cluster includes Tasks that seek to impact the shape of the load curve over very short (minutes-hours-day) to longer (days-week-season) time periods. The ‘load level’ cluster includes Tasks that seek to shift the load curve to lower demand levels or shift loads from one energy system to another.

A total of 15 projects or “Tasks” have been initiated since the beginning of the DSM Programme. The overall programme is monitored by an Executive Committee consisting of representatives from each contracting party to the Implementing Agreement. The leadership and management of the individual Tasks are the responsibility of Operating Agents. These Tasks and their respective Operating Agents are:

Task 1	International Database on Demand-Side Management & Evaluation Guidebook on the Impact of DSM and EE for Kyoto’s GHG Targets Harry Vreuls, NOVEM, the Netherlands
Task 2	Communications Technologies for Demand-Side Management - <i>Completed</i> Richard Formby, EA Technology, United Kingdom
Task 3	Cooperative Procurement of Innovative Technologies for Demand-Side Management – <i>Completed</i> Hans Westling, Promandat AB, Sweden
Task 4	Development of Improved Methods for Integrating Demand-Side Management into Resource Planning - <i>Completed</i> Grayson Heffner, EPRI, United States

- Task 5 Techniques for Implementation of Demand-Side Management Technology in the Marketplace - *Completed*
Juan Comas, FECSA, Spain
- Task 6 DSM and Energy Efficiency in Changing Electricity Business Environments – *Completed*
David Crossley, Energy Futures, Australia Pty. Ltd., Australia
- Task 7 International Collaboration on Market Transformation
Verney Ryan, BRE, United Kingdom
- Task 8 Demand-Side Bidding in a Competitive Electricity Market - *Completed*
Linda Hull, EA Technology Ltd, United Kingdom
- Task 9 The Role of Municipalities in a Liberalised System - *Completed*
Martin Cahn, Energie Cites, France
- Task 10 Performance Contracting - *Completed*
Hans Westling, Promandat AB, Sweden
- Task 11 Time of Use Pricing and Energy Use for Demand Management Delivery
Richard Formby, EA Technology Ltd, United Kingdom
- Task 12 Energy Standards
Frank Pool, New Zealand
- Task 13 Demand Response Resources
Ross Malme, RETX, United States
- Task 14 White Certificates
Antonio Capozza, CESI, Italy
- Task 15 Network-Driven DSM
David Crossley, Energy Futures Australia Pty Ltd, Australia

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Complete Task material with the Summary Report and the Country Reports is available on the Task X website, address: <http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp>

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Task X – Performance Contracting FINAL MANAGEMENT REPORT

1 EXECUTIVE SUMMARY

Energy performance contracting (EPC) is a wide variety of mechanisms, which, by rationally using the knowledge of energy professionals, opens up opportunities for property owners to install more energy-efficient equipment and systems in their buildings without tying up their own capital. Projects performed give examples of energy savings in buildings by 20 to 40 per cent even if some of the savings could be reached also with other energy-efficiency activities. Estimates indicate that the market in some countries could be up to ten times larger than at present. Greater use of these mechanisms could substantially contribute to lowering emissions of greenhouse gases and reducing the risks of a climate change. EPC includes financing alternatives to lower the financial burden for the property owner and, at the same time, reduce the yearly operational costs for energy (alternatively giving more services at the same cost, or using more environmentally friendly sources within the same cost). Better performance is guaranteed by the contractor – the energy service company (ESCO).

The objectives of Task X have been to facilitate the greater use of performance contracts between professional building owners and all types of companies offering these services. There have been problems to introduce and increase the diffusion of the EPC concept. ESCOs have met hesitation from prospective clients, and policy makers have been slow in launching EPC marketing programmes.

Ten countries have participated in Task X during its duration 1st December 2000 – 31st March 2004: Austria, Finland, France, Greece, Italy, Japan, The Netherlands, Norway, Sweden and the United States. Together with the Operating Agent, the countries have identified problems and opportunities and have suggested a number of concrete actions in order to facilitate the greater use of energy performance contracting and related mechanisms (see Figure 2, page 7 “Introduction and diffusion of EPC: Problems – Actions – Results” from the Summary Report). The most important actions are: raising the general credibility of EPC through aimed information, demonstration projects, accreditation of ESCOs, special performance guarantees and process and procurement guidelines. These actions will enlarge the market for all stakeholders working within this area, and EPC will offer an interesting alternative for facility owners.

During the final part of Task X, Subtask E, the countries have together with the Operating Agent organised three Workshops on important topics in accordance with the Work Plan for this Subtask.

Information about the Task has been given at international and regional energy conferences during the whole duration of Task X.

2 TASK X OF THE IEA DSM AGREEMENT

Task X “Performance Contracting” is one of fifteen different Tasks within the International Energy Agency (IEA) Demand-Side Management (DSM) Agreement, which has seventeen IEA member countries and collaboration with international organisations like the European Commission and The World Bank.

Task X has been in force from 1st December 2000 to 31st March 2004. The work has been fulfilled in accordance with the “Task X Performance Contracting Work Plan” of April 2001 and the Work Plan formulated later for the additional work in Subtask E. The Work Plans were the result of discussions at meetings in Stockholm, Sweden, in September 2000 and January 2003.

3 OBJECTIVES

The objectives of Task X have been to facilitate the greater use of performance contracts between professional building owners and all types of companies offering these services. Different motives have been formulated for choosing a performance contract or other ESCO financial arrangements:

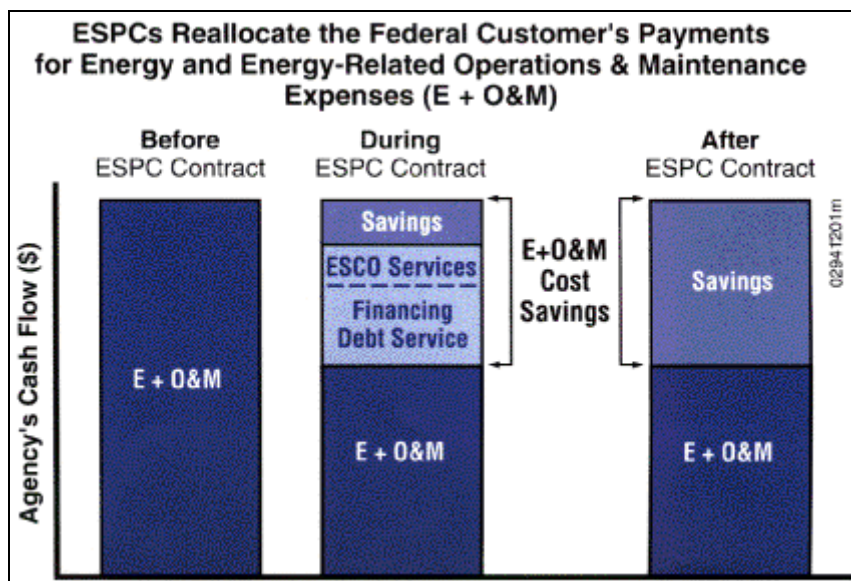
- For some facility owners and users, the main reason can be lack of investment capital.
- For others, it is simply a very economical business strategy. We pay only when we see value-added functions, such as reduced energy bills.
- For the ESCOs, it can be a good business argument and a way of connecting with customers and starting new business relations.
- For some companies and government organisations, it can be a very efficient way of inspiring innovations, giving incentives and facilitating the introduction of more efficient solutions.
- Additional work in some priority areas in accordance with the Work Plan for Subtask E.

4 NEED FOR PERFORMANCE CONTRACTING

Energy service contracting, or *energy performance contracting (EPC)*, is an established range of mechanisms for promoting the installation of energy-efficient building equipment and systems. Facility owners and energy service contractors, or ESCOs, enter into agreements 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 the terms of the agreement. Most importantly, the ESCO can take on the project's performance risk by guaranteeing a specified level of energy savings. The ESCO's compensation can then be directly tied to achieving these savings. The financing can either be by the ESCO, by the suppliers of the system or components, by financial institutions, or by an outside party – or in different combinations. The situation before, during and after an *EPC contract arrange-*

ment is illustrated in Figure 1. The cost for energy (E) + operation (O) and maintenance (M) is illustrated *before* a contract, *during* a contract, where the total savings are used for financing and debt service of the new equipment and the remainder shared by the owner and the ESCO, and *after* the contract when the total savings go to the owner. EPC is a mechanism that introduces "payment in relation to performance" (see also Chapter 5 Definitions and Acronyms). Leasing arrangements can also be considered. Different problems and barriers have slowed the introduction and wider spread of this method.

Figure 1. Illustration of cash flow for EPC (or ESPC) contract
 (From brochure "Super Energy-Saving Performance Contracts",
 Federal Energy Management Program (FEMP), Washington D.C., USA, 2001)



During its first part, 2001 - 2002, Task X consisted of *four subtasks*:

Subtask A – Initial Workshop.

This was started during the Experts Meeting in Sophia Antipolis, France in February 2001, and was partly followed up at the next Experts Meeting in June 2001, in Helsinki, Finland.

Subtask B – Country Reports.

Some guidelines for the contents of the Country Reports were agreed upon at the first Experts Meeting in France. Work on the reports was then started and proceeded during the rest of the year 2001.

Subtask C – Interactive Workshop comparing Country Reports and ideas.

This was planned to take place during the Experts Meeting in Coral Gables, United States, at the beginning of November 2001. Unfortunately, because of the September 11th events, only half of the countries could attend the meeting. This caused some delay of the work, and the actual workshop was not held until March 2002, in Oslo, Norway.

Subtask D – Country Plans and Lessons Learned.

The contents of the Country Plans were partly presented already at the Meeting in Norway in March 2002, and then during the following Meetings: in June, in Milan, Italy, and in October, in Tokyo, Japan. The countries have had different approaches, since some of the experts did not represent Government. For some of the experts this task was considered to be more like a “Tool Box for National Activities”, at least as far as Lessons Learned were concerned. It was also agreed to include some of the contents of the Country Plans/Tool Boxes in the Final Management Report. Since the Country Reports were delayed, some of the material for the Country Plans/Tool Boxes and Lessons Learned were included at the end of the Country Reports.

A *fifth subtask* was added for the second part of Task X:

Subtask E – Follow-up of Country Actions for Market Acceleration

Additional work was executed in some priority areas during the last part of Task X 2003-2004. Initiation of EPC-projects, EPC Process and Procurement, Performance Guarantees, EPC and General Refurbishment of Buildings, and EPC and Government Policy were chosen areas of the highest priority. Some work was also included in Certificate Trading and Measurement & Verification. The areas were analysed at three Workshops hosted by some of the member countries.

5 DEFINITIONS AND ACRONYMS

One chapter in the Summary Report deals with definitions and acronyms. Here reference is only made to a couple of the definitions, namely *Energy Performance Contracting (EPC)* and *Energy Service Company (ESCO)*.

Energy Performance Contracting (EPC) is a contractual agreement for the obligations of owner and ESCO, where refurbishment of energy equipment and systems in buildings is paid for in relation to actual performance. EPC is also called *Energy Savings Performance Contract (ESPC)* in U.S. federal programmes.

An *Energy Service Company (ESCO)* is defined by the U.S. organisation NAESCO as a company engaged in developing, installing and financing comprehensive, performance-based facility improvement projects, typically 7-10 years in duration, centred around improving the energy efficiency and reducing maintenance costs for facilities owned or operated by customers. The cost savings achieved as a result of the energy efficiency measures installed are used to pay for the project. Performance requirements distinguish ESCOs from consulting engineers specialising in efficiency improvements. The latter are typically paid a fee for technical advice, and do not assume the risk. Their recommendations are intended to yield actual cost savings or energy consumption reductions.

Third Party Financing (TPF) should also be mentioned, which, in this work, is regarded as being principally the same as Energy Performance Contracting.

Near the closing of Task X, the definitions issue came up again, caused by the planned new EU Directive on Energy Services. Some of the experts in the Task X participating countries have *suggested the following definition of EPC to the European Commission* based on the experiences during the Task X work:

“Energy Performance Contracting is a contractual agreement between the owner and/or user of a facility and the ESCO to improve the energy efficiency of energy systems as a result of investments, services or complete energy services. The ESCO offers guarantees for the performance of the building or the energy systems and the ESCO is paid in relation to the actual performance.”

Further discussions about definitions should however slow down the process to take actions for promoting EPC.

6 ACCOMPLISHMENTS AND UNIQUE CONTRIBUTIONS - SUBTASKS A-D, 2001 - 2002

Energy performance contracting (EPC) is a wide variety of mechanisms, which, by rationally using the knowledge of energy professionals, opens up opportunities for property owners to install more energy-efficient equipment and systems in their buildings without tying up their own capital. Projects performed give examples of energy savings in buildings by 20-40 per cent even if some of the savings could be reached also with other energy-efficiency activities. Estimates indicate that the market in some countries could be up to ten times larger than at present. Greater use of these mechanisms could substantially contribute to lowering emissions of greenhouse gases and reducing the risks of a climate change. EPC includes financing alternatives to lower the financial burden for the property owner and, at the same time, reduce the yearly operational costs for energy (alternatively giving more services at the same cost, or using more environmentally friendly sources within the same cost). Better performance is guaranteed by the contractor – the energy service company (ESCO).

The objectives of Task X have been to facilitate the greater use of performance contracts between professional building owners and all types of companies offering these services. There have been problems to introduce and increase the diffusion of the EPC concept. ESCOs have met hesitation from prospective clients, and policy makers have been slow in launching EPC marketing programmes.

In the *Country Reports* and the *Summary Report*, the eight countries participating in Task X during Subtasks A-D, 2001–2002 - Finland, France, Italy, Japan, The Netherlands, Norway, Sweden, and the United States – identified together with the Operating Agent many problems and barriers, but also many good examples and large opportunities. Suggestions of a number of concrete actions have been given in order to facilitate the greater use of energy performance contracting and related mechanisms. The most important actions are: raising the general credibility of EPC through aimed information, demonstration projects, accreditation of ESCOs, special performance guarantees and process and procurement guidelines. These actions will enlarge the

market for all stakeholders working within this area, and EPC will offer an interesting alternative for facility owners.

Savings in energy usage are used to pay for upgrading equipment and/or investing in new efficient systems, and the remaining savings are shared between the facility owner and the ESCO under the terms of the agreement. Different alternative solutions are presented. The ESCO takes the project performance risk by guaranteeing a specified level of energy savings and/or energy services. The ESCO may also take the responsibility for the financing of the project, either totally or partly, or offer different financing arrangements for the facility owner.

The participating countries represent very different energy situations. Some countries are still very dependent on fossil fuel, resulting in large CO₂ emissions *per se*. Liberalisation and deregulation of the energy market have proceeded at different speed in the Task X participating countries, and experience in EPC-related fields differs. The countries have identified EPC solutions that exist in their country. With the help of national reference groups, which include stakeholders in this area, the national experts have presented different ways of initiating projects through facility owners, government and ESCOs, and have pointed out combinations of obtaining energy savings and offering services and alternative procedures for implementation. A more international market will open new business opportunities. The main barriers and issues for enlarging the market have been identified, including clarification of procurement rules and contract arrangements, guarantees and securities, financing alternatives, and measurement and verification. Experience from countries with EPC programmes and a mature market has been combined with findings in countries with emerging markets when formulating the actions suggested. Substantial activities in the information and educational fields have been proposed in order to create credibility and a positive environment for using the performance contracting mechanism. Incentives and clarifications regarding regulations, accreditation of companies involved in performance contracting and also the measurement and verification process have been suggested, together with model projects in the current Country Plans.

In the Country Reports, the experts have pointed out interesting market segments for energy performance contracting, and they have also referred to Government EPC programmes and policies. Further development of the EPC process and procurement has been pointed out in different alternatives as essential, and this was one of the areas suggested for continued work.

Introduction and diffusion of EPC is illustrated in an overview, [Figure 2](#) (from the Summary Report), with problems, short-term actions and long-term results. They relate to the areas: Credibility and Trust; Process & Procurement; Contracts; Financing; Measurement & Verification; and Market.

Figure 2. Introduction and diffusion of EPC: Problems – Actions – Results
(From the IEA DSM Task X Summary Report, 2003)

Problems	Short term actions	Long term results
1. Credibility and Trust	Information SAVE, Best Practice Creation of networks Demo projects World EPC Conference "Success stories"	World EPC network established "ISO 18000" Energy management Accreditation Intern. ESCO Association
2. Process & Procurement	Network of skills created Energy Agency, FEMP Clarification of rules Guidelines Alt. with energy audits and feasibility study Prequalification & two-stage tender Conditional Award of Contract	Different alternatives for initiation of EPC-projects accepted by all stakeholders Both Owner, Energy Agency and EPC-initiated
3. Contracts	Public Property Owners establish national standards as FEMP in USA EC, WTO	"FIDIC" Energy perform. contract conditions finalised Manuals (web & printed) for EPC-projects generally available
4. Financing	Bank awareness Local government allowed to enter multiyearcontracts EBRD & World Bank National economic incentives Government guarantees Warrantee formulations Insurance arrangements	White and Green Certificates Trading an accepted mechanism for Climate Actions EPC Performance Bonds established
5. Measurement & Verification	Analysis of existing protocols Pilot projects Simple benchmark-alternatives Yearly measuring	Simplified benchmarking and repeated measuring routines established
6. Market <i>Only limited in most countries but increased interest</i>	Start of breakthrough for EPC in many OECD-countries Public bodies launch EPC comp. - both large projects & parts of smaller	EPC-solutions have penetrated OECD-countries and are increasing in transition & developing countries

7 ACCOMPLISHMENTS AND UNIQUE CONTRIBUTIONS - SUBTASK E, JANUARY 2003 – MARCH 2004

7.1 Introduction

Valuable additional information was presented by the new countries Austria and Greece participating in the Task during *Subtask E*, January 2003 – March 2004. Three workshops were held, each of them concentrating on topics specifically important for EPC. EPC and Government Policy was a topic discussed at all the three workshops. Guidelines for the preparation of all the workshops were elaborated by the Operating Agent and distributed before the workshops. Documentation from the workshops has been edited by the Operating Agent together with the minutes.

An overview of the areas analysed in Subtask E is presented in [Appendix 1](#) and a more detailed description of the work during the workshops is given below.

7.2 Workshop in Milan, Italy

The first workshop – in Milan, Italy, May 2003 - included two parts: *Part A: EPC Project Initiation and EPC Process and Procurement*; and *Part B: EPC and Government Policy*. An expert from Canada, invited to the workshop, also presented work on *Measurement & Verification* carried out in Canada, including also different ASHRAE standards. As an introduction, presentations were given by important Italian companies, including AGESI, ELYO, the COFATHEC and INGEST groups of companies, Johnson Controls and the government procurement organisation CONSIP, which is now working in energy management in particular.

During the *workshop session on EPC Project Initiation*, the following issues were stressed: the important role of intermediary organisations, and giving a strong role to energy agencies in order to persuade prospective building owners to use EPC. It is important to formulate the needs in a feasibility study, and to have two sets of solutions: one for the public sector and one for the private. Bundling of several small projects has been used in some countries.

Concerning the *EPC Process, Procurement and Government Policy*, it is now possible in the *United States* for government organisations to enter into long-term contracts. At federal level, contracts can be concluded for up to 25 years. Some States have changed their procurement rules, and guidelines have been drawn up, as for example by FEMP and by different States. A two-step proposal can be used; the first step being the request for qualification, and the second request for proposals from the selected candidates (limited in number to three to five).

A Swedish legal expert on procurement has drafted alternatives for simple and complex projects, which are included in the Summary Report.

A manual has been drawn up in *Canada*. In the request for proposals normally four to six areas are pointed out, which are given certain weights and which are to be considered when evaluating the proposals submitted.

Examples of procedures during procurement were also given by *Japan* and *Italy*.

Steps in the process of Thermoprofit projects were presented by *Austria*. Thermoprofit is a quality label with defined procedures and quality criteria for EPC projects. In a first stage a pre-selection of three to four qualified ESCOs is made, whose technological capabilities and references are studied. In some cases also a Europe-wide call for tenders is issued. Thermoprofit projects are going on in Styria, in Upper Austria and Lower Austria. Besides the Thermoprofit programme in Styria there is another regional EPC promotion programme in Upper Austria. On the federal level a comprehensive programme for governmental buildings has been launched. Some 300 buildings are to be placed into 12-15 pools of buildings for EPC activities. These activities are run by the Federal Building Agency in co-operation with the ministry for economy and labour and the ministry for the environment.

In *Japan*, the *audit* as an introduction to the process has been stressed. An *insurance* company has also been founded in Japan for insurance of guaranteed energy savings. A manual for introducing ESCO business has been elaborated. There is also an organisation of ESCOs in Japan, with about 100 member companies.

In the *United States*, work has been going on in the housing area with public housing companies and local housing authorities, for example in Chicago, where a model EPC process has been developed, involving HUD, the Housing and Urban Development Department. About 70 projects have been carried out. A combination of work on environment and energy efficiency issues is now taking place. There are some “top ten” EPC States, where very good results have been achieved. On the other hand, there are other States where there have been very few actions. Documents on “Model State Performance Contracting Regulations” and “Model Performance Contracting Legislation” have been drawn up.

Decrees on compulsive work will be presented in *Italy*.

Regarding *subsidies*, the Task X experts agreed that it may be possible to use them at the very beginning of a project. However, when there is a mature market, they are not important.

It was stressed concerning *Measurement & Verification (M&V)* to include in the contract an agreement on M&V. The guidelines have to be transparent in order to make it understandable for how long and to what accuracy follow-up measurements have to be carried out. In Japan, different levels of complexity for M&V have been introduced.

7.3 Workshop in Graz, Austria

The second Workshop – in Graz, Austria, October 2003 – concentrated on *EPC and General Refurbishment Projects*. Graz Energy Agency had drawn up an overview based on their experience and a national project on that subject. Two different models were pointed out: Model I with a holistic approach with one single contract with one organisation in a sort of turn-key project; and Model II, a consortium consisting of an

EPC company, a co-ordinator and a building company. Examples of realised projects were given, which also included the incentive mechanisms used. The energy reduction in one office and research building achieved 45 per cent for heat consumption and also included power and water saving measures. This also resulted in winning a special award, the Contracting-Award “Energy Professional 2003”, provided by the Federal Minister for the Environment and the association for environment and technology (ÖGUT). This award is given every year to outstanding EPC-projects and initiatives as an instrument to promote EPC.

Presentations were also given by Japan, United States, Finland, Italy and Sweden. In *Japan*, the guarantee of long-term energy savings is not the main subject. The savings performance of equipment and systems is verified with their initial performance. From the *United States* examples were given from public buildings, schools, colleges and government facilities. When EPC is combined with refurbishment, there is a trend to have longer contract periods, 15–20 years. Then more measures could be included in the contract, as for example new roof, windows, insulation. General building improvements can be included, for example when project economics permit and when the customer is willing to accept less saving or to put in additional own capital.

It is also important to stimulate smaller ESCOs to participate as a part of a team to keep a good market.

The *Italian* “Ten Holy Principles” were pointed out, which may make a project qualified for reduced VAT by 10 per cent. There are financial provisions to favour EPC.

In *Italy*, invitations for proposals to produce an indoor temperature of +20°C have been drafted for some simplified model buildings in a 5-year project. An open bidding process has been planned.

From *Finland* energy-auditing ideas were presented. Energy-auditing is the typical starting-point of an EPC project. During the period 1992–2001, energy savings of 10-25 per cent have been shown in about 4,000 projects. Government subsidies of 15–20 per cent are available for conventional energy savings investments for clients who have joined the Energy Conservation Agreement. However, higher subsidies are possible for EPC projects at least during 2004.

The discussion included the suggested changes in the accounting principles and whether an EPC arrangement has to be included in the companies’ official financial reports and whether this would be a hindrance to further work on increasing EPC projects.

7.4 Workshop in Athens, Greece

At the third Workshop – in Athens, Greece, February 2004 - it was stressed during the session on *EPC and Government Policy* by the *United States* that the State Energy Offices are important for the stimulation of project investments by ESCOs. Public procurement rules adapted for EPC projects have been introduced in 40 States. The main problem is however the different budgets; one for capital costs and another for yearly energy costs.

The turnover of EPC in *Finland* has doubled in the last three years. There is a need in the future to inspire the formation of many more ESCOs.

An EPC programme will be in force in *Sweden* during a couple of years. About fifteen interested building owners, public as well as private, will take part in the programme. They are mainly working in the commercial, office and hospital sectors. The goal is to present the EPC state-of-the-art, draw up specification templates for procurement verification methods and to carry out at least two demonstration projects.

In *Austria*, EPC is a widely recognised instrument now. About 500–600 buildings have already been optimised by EPC. Main target groups have been the public buildings on the federal and the municipal level due to the lack of capital money. There are specific models also for small buildings, which are put together in pools to form a bigger project (project GECON). In this way, transaction costs have been reduced, which otherwise would be a hindrance for small projects. Concerning the EPC initiative for federal public buildings, contracts for two pools of schools have been signed and two more are already in process. A focused initiative has started for commercial buildings (eco:facility). Activities include the establishment of a network of qualified and independent advisors, qualification, seminars, working out written material, networking, pilot projects, etc.

Pilot actions were presented by *Greece*. It is important to see how temporary subsidy programmes should be organised and to work out information and training activities.

Concerning *EPC and Public Procurement*, the contents in pre-audits and audits were discussed. It now seems that loans for EPC projects have to be included in the owner's balance sheet, which may influence the interest of using EPC solutions.

A presentation was also given about the final version of the new *European Union Public Procurement Directive*. It includes a new process for particularly complex projects – the competitive dialogue – which could be used for EPC projects with financing. After contract notice, the procedure goes from selection of candidates to having dialogues in stages with the selected candidates. It is pointed out that it is important to maintain fair competition and equal treatment. However, the competitive dialogue may come into conflict with traditions for central administrations in some countries. The Task experts found it important to further analyse how EPC contracts may be procured in the public sector.

The new proposal for an *Energy Service Directive* by the European Commission was presented. The implications for EPC in Europe were discussed.

Presentations on *EPC and Certificate Trading* were given by Italy and the United States. “Green Certificates” have already been introduced in *Italy* for renewable energy and “White Certificates” are now being introduced for energy efficiency. An “Energy Efficiency Certificates Exchanges” is to be established. Validation of energy efficiency projects is very important and ESCOs may play a major role. Also in the *United Kingdom* a similar trading scheme has been established for energy efficiency. Another trading mechanism on emissions is starting now, the “Carbon Trading”, originated by the Kyoto Protocol and the related “Black Certificates”. A new Task in the IEA DSM Agreement, “Market Mechanism for White Certificates Trading”, has recently been suggested by *Italy*.

8 COUNTRY PLANS / TOOL BOXES FOR NATIONAL ACTIVITIES

In accordance with the Task X Work Plans and as confirmed at experts meetings, a summary of the Country Plans/Tool Boxes is to be included in the Final Management Report. Some of these Plans have been summarised in the Summary Report (Chapter 9, Government Policy).

Some of the experts have stressed that, formally speaking, they do not represent their governments, and consequently they prefer seeing the suggestions more as an inventory of possible tools for use by governments and other stakeholders in order to facilitate a broader use of EPC.

The overview in Table 1 (updated from the Summary Report) illustrates which types of *Government EPC programmes and policies* the experts have considered being of most interest in their respective countries. It can be seen that *information* has been mentioned by all the countries and the European Union. *Public buying, standard contracts and energy agencies* as intermediaries are also often mentioned. It should also be pointed out that *procurement adaptation* has been mentioned by most of the countries, however as an action for the European Union in line with how actions for free trade are handled, namely through directives and initiatives by the European Commission. Task X has also initiated contacts with the European Commission DG Market. Very few of the countries have introduced or are planning *compulsory regulations* in the EPC area. However, it is being discussed within the European Union to set up rules in one of the Energy and Environment Directives. In Italy, *decrees* will be introduced. *Subsidies* to facilitate the introduction of EPC are also planned in some of the countries, whereas others do not intend to introduce such subsidies.

Table 1. Overview of national government EPC programmes & policies

	<i>Aus- tria</i> ¹⁾	<i>Fin- land</i>	<i>France</i>	<i>Greece</i>	<i>Italy</i>	<i>Japan</i>	<i>Nether- lands</i>	<i>Nor- way</i>	<i>Swe- den</i>	<i>USA</i>	<i>EU</i>
<i>Government programmes & policies:</i>											
- Procurement adaptation				X						X	X
- Public buying	X	X	X	X	X	X		X	X	X	
- Work out standard contracts	X	X	X	X	X				X	X	X
- Energy audits	X	X	X	X		X	X	X			
- Energy agency or equal facilitating	X	X		X		X	X	X	X	X	
- Compulsory regulations					X						X
- Financial mechanisms			X	X		X	X		X		
- Subsidies	X	X	X	X	X	X	X				
- Tax benefits					X						
- M & V				X						X	X
- Changes in laws				X	X	X	X			X	
- Information	X	X	X	X	X	X	X	X	X	X	X
1) Austrian policy programmes on national <u>or</u> regional level.											

Energy Audits have also been used or will be introduced in some of the countries. This is a sensitive issue in respect of how detailed an audit should be, and whether it could cause double work, since the ESCOs anyhow have to perform their own checking analysis or audit in order to assume full responsibility for the performance.

An overview of the *policy mechanisms* mentioned in the Country Plans is presented in [Appendix 2](#). These mechanisms are in the traditional areas: *Information, Regulation, Financing/Economy* and *Other/Voluntary Actions/Combined Measures*. Some of the actions belong to more than one of these areas. For promoting innovation (since EPC is a kind of innovative process), the traditional discussion concerns whether the supply and/or the demand side should primarily be used. Task X has established that already identified EPC actions belong to both of these sides. A public agency, taking the lead as a buyer and inviting tenders for EPC, is definitely an action on the demand side. This is also the case as regards standardising of procurement rules, contracts and rules for measurement and verification. On the other hand, EPC promotions also include research work in order to develop good methods for measurement and verification. Indirectly, EPC will be an inspiration for ESCOs and manufacturers to come up with innovative and more efficient solutions, which will definitely also need many long-term research and development activities.

Greece has introduced the TPF/EPC option in the public building sector using a mandatory, well-defined energy management procedure with complete energy auditing, monitoring and targeting actions. A guidebook has also been worked out. *Greece* has also participated with full reports in two European Commission SAVE and ALTENER

projects, especially for public buildings. Demonstration projects have been carried out, and laws concerning Third Party Financing of Energy Investments have been drafted.

In *Austria*, a number of activities have been going on for some years. An impressive number of projects have been initiated, both on the national and regional level. Certain regions and municipalities have been very active starting projects. Also the combination of EPC and general refurbishment has been used to a large extent. EPC is recognised as an important instrument in the Austrian Kyoto implementation plan. Thus, two programmes have been started on the federal level; one for federal public buildings and the other for commercial buildings (eco:facility). Austria has also co-ordinated a number of European Commission SAVE projects, which e.g. have resulted in the “Energy Pro Net” information package with an EPC manual.

In *Sweden*, a multiyear project supported by the Swedish Energy Agency, called “Funktionsupphandling med fastighetsägarkrav” /Performance Contracting based on Property Owner-Requirements/, is going on for drafting model documents for procurement of EPC work. Ten to fifteen large property owners are working together, and demonstration projects have been identified for concrete realisation during the coming years. A group of stakeholders is also being formed based on a network of interested parties earlier identified.

9 INVOLVEMENT OF INDUSTRY AND END-USERS

Most of the Task X countries have established reference groups in their respective countries and/or have worked together with existing organisations, representing large building owners and ESCOs.

Organisations for ESCOs, which have existed in the United States for many years, have also been introduced some years ago for example in Japan and Austria. In Austria there exists the Thermoprofit network, a voluntary group of ESCOs which co-operate on market development activities. It has been proposed to set up similar organisations in other European countries too.

In the countries, meetings have been held and material distributed to interested national stakeholders. Since the situation varies very much between the countries, and since there are only very few ESCOs in some of them, various methods have been used to interact with the stakeholders. Some countries have also taken the opportunity to have a special presentation to national stakeholders (including ESCOs, utilities, general contractors, equipment manufacturers and building owners) in connection with a Task X experts meeting (for example those held in Austria, Finland, Greece, Italy, Sweden and United States). The Task X Operating Agent and experts have been invited to participate at international conferences with presentations (for example at the “CEPSI 2002” conference in Fukuoka, Japan, in November 2002) or to chair sessions (for example at the “NAESCO International Energy Efficiency Financing Roundtable” in Los Angeles, United States, in October 2002).

Additional input during Subtask E

In conjunction with the Subtask E workshops, special sessions were organised, to which different stakeholders were invited. In Stockholm in January 2003, an international workshop on Performance Contracting was arranged, with about 40 participants representing ESCOs, property owners and government and municipal organisations. At the Milan Workshop in May 2003 presentations were given by major ESCOs, in Graz in October 2003 there was a session called “Thermoprofit Workshop – International Experiences and Perspectives for Austria”, and at the Athens Workshop in February 2004, a public workshop, “EPC Procedures and Partnerships for Upgrading Building Environmental Quality in Cities”, was held at the Hellenic Ministry of Development. At all these events, presentations were given by experts from the participating countries and by the Operating Agent.

The IEA work has also facilitated preparations for regional work, as in the EU with the proposed new Energy Service Directive, and also work on the new Directive on Public Procurement.

10 INFORMATION AND DISSEMINATION

The Operating Agent and the experts have frequently given presentations about the on-going work at international as well as national events. Some examples are given in [Appendix 3](#).

Substantially increased interest in EPC has been noted in recent years. The European Union draft Energy Service Directive specifically mentions the use of Energy Performance Contracting as a valuable tool.

The communiqué from the International Energy Agency Meeting of the Government Board at ministerial level in April 2003 stressed the continued need for reducing the energy use in national as well as international work, in particular concerning the transport sector, buildings and equipment. It also pointed out the importance of strengthening the forces of the market place. Important work is now also going on to reduce the risks of Climate Change under the UN Framework Convention of Climate Change and to stimulate the development of new market-oriented instruments, essential to reaching the sustainable development goals at lower costs.

Contacts have also been extended to other interested countries, such as Australia and Canada. As mentioned earlier, an expert from Canada was invited to a Task X workshop and presented his long-standing experience in Measurement & Verification and supplied valuable documentation. He stressed the importance of establishing good partnerships between property owners and very experienced ESCOs and pointed out the importance of evaluating the ESCOs’ knowledge through prequalification.

Experts from the Czech Republic have also participated as observers in some Task X meetings. However, it was not possible for them to come to a final decision to join the Task.

The Task X project is presented at the IEA DSM website: <http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp>. The experts have also used a closed, secure part of this website for distribution of draft material and documents.

11 ACTIVITIES COMPLETED AND ACTIVITIES YET TO BE COMPLETED

All the Country Reports from the countries participating in the Task during its first part, 2001-2002, have been uploaded in their final versions to the public section of the Task X website. The Summary Report has been finalised and approved after a ballot among the Executive Committee Members from the countries participating in the Task. The Summary Report has been printed in a black/white version and, after decision by the Executive Committee, it has also been uploaded to the Task X public website, thus being available also for a wider group of readers.

The Country Reports from the new countries participating in the Task from 2003 have been uploaded to the closed section of the website. After decision by the Executive Committee, they will, together with this final version of the Task X Final Management Report, be uploaded to the public section of the website.

12 UNRESOLVED ISSUES AND RECOMMENDATIONS FOR FUTURE WORK

Some of the topics decided to be further analysed have not been possible to enter deeper into during the time period of Subtask E. A voluntary additional meeting was planned to take place at the end of May 2004. Unfortunately, the date for the meeting came into conflict with many other important activities and the meeting had to be postponed to a later date. Important topics for such a meeting are:

- New draft proposal for a new *EU Energy Services Directive* - very important for the EPC and TPF methods. Suggestions for clarifications.
- *Certificate Trading and EPC*.
- Further issues of interest to EPC, such as: *Measurement & Verification* and *Insurance Arrangements*.
- *EPC Process Guidelines* in order to facilitate the work and reduce the transaction costs.
- A follow-up of the EU Programme *Energy Intelligent Europe (EIE)*.
- *Public Procurement and EPC* - important especially now that there is a final version of the new *EU Public Procurement Directive*.

Facilitating the Public Procurement Process within the framework of the EU Procurement Directive is important, since public organisations can take important steps to increase the interest in and credibility for the EPC Process. This is especially important when the countries intensify the striving for fulfilling the Kyoto Climate obligations with both national and joint actions. EPC and Certificate Trading may in some countries be a very important policy measure.

13 MANAGERIAL RECOMMENDATIONS

1. It is *difficult to form wide general recommendations* for many types of various DSM projects.
2. It is recommended that *an international project should not be shorter than three years*. The *formal decisions take time*, and it also *takes time to find suitable experts* and to arrange the financing (one reason being that the countries may have different fiscal years).
3. As in many projects, the *continuity of high-level support* is important. Organisational changes in the countries, not only at government level, but also changes in other organisations that are responsible for the work, could cause delays. In some cases, new organisations have a different opinion on which are the most important parts of the ongoing project. This could also cause *changing of experts*, which could contribute to a delay.
4. Very early in the projects it is *important to agree on the detailed goals and work procedures*.
5. It is important that the countries *nominate experts*, who have *time and resources* to go on working and *take an active part in the continuous work*. Of course, sudden and unforeseen events, such as the September 11th event, could cause considerable delays and changes in the time-schedule, as international meetings have to be planned very far in advance.
6. From the beginning, *specialists should be appointed* and *budget set aside* for the work on *information activities, including the website*.
7. Agreements should be made and *funding set aside for the updating of the website and information to be supplied after the end of a Task*. After a project has been finalised, many questions will be received from other interested countries and persons. These questions have to be dealt with, and funding should therefore be set aside for this.
8. Early in a project, the participating countries should *set aside financing for the cost-sharing* so that there is no interruption.

14 BUDGET FOLLOW-UP

For the years 2001 - 2002, the total cost-sharing was USD 130,000 per year and the task-sharing 6 person-months per participating country and year. For the period January 2003 - March 2004, the total cost-sharing was also USD 130,000 and the task-sharing 3-6 person-months per country.

The cost-sharing has been USD 15,000 per participating country and year, with a larger part from the Operating Agent country in accordance with the special guarantee declared by Sweden. During the last two years (2002-2003) the decreasing exchange rate of the US Dollar compared to many other currencies resulted in larger contribution from Sweden. Part of the task-sharing could, to some extent, consist of already planned national programmes in the specific area of performance contracting. The total funding has been in the magnitude of USD 2.3 million, part of which from already planned performance contracting projects.

15 PARTICIPATING EXPERTS

Experts from ten countries altogether have participated in Task X. A list of their names is given in Appendix 4.

16 MEETINGS

During the years, there have been a number of Task experts meetings/workshops and national and international workshops, seminars and conferences, in which experts from Task X have participated. Lists can be seen in Appendix 3.

17 REPORTS AND OTHER MATERIAL

Extensive documentation has been compiled in Task X, including material before meetings and minutes with appendices after meetings. The work material, draft documents for national reports, and other material of interest have been uploaded to the closed section of the Task website. After approval in ballot by the Executive Committee members of the countries participating in Task X during 2001-2002, the Summary Report was printed and also uploaded to the website. After decision in the Executive Committee by the representatives of the Task participating countries, the whole Task X material for the years 2001-2002 has been made available at the Task X open website: <http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp>

This Final Management Report and the two new Country Reports will be made public after decision by the Executive Committee representatives from the countries participating in Subtask E.

A Task X archives will be kept. It includes all the Task Status Reports, documentation before experts meetings/workshops, minutes and documentation after experts meetings/workshops, material produced for the Country Reports, and the Summary Report. These archives will be kept by the Swedish Energy Agency as well as by the acting Operating Agent, Hans Westling, Promandat AB.

Some material can also be found in the Mid-term Evaluation Report and in the End of Term Report of the DSM Agreement, published in 2002.

18 CONCLUSIONS

- Energy performance contracting (EPC) opens up opportunities for property owners to install more energy-efficient equipment and systems in their buildings without tying up their own capital.
- Better performance is guaranteed by the contractor – the energy service company (ESCO).
- Projects performed give examples of energy savings in buildings by 20 to 40 per cent.
- Estimates indicate that the market in some countries could be up to ten times larger than at present.
- Greater use of EPC could substantially contribute to lowering emissions of greenhouse gases and reducing the risks of a climate change.
- Task X has identified problems and opportunities and suggested a number of concrete actions including raising the general credibility of EPC through aimed information, demonstration projects, accreditation of ESCOs, special performance guarantees and process and procurement guidelines.

APPENDICES

1. IEA DSM Task X Performance Contracting – Overview of areas analysed during Subtask E Workshops.
2. IEA DSM Task X Performance Contracting - Overview of Policy Mechanisms mentioned in the Country Plans, updated August 2004.
3. IEA DSM Task X Performance Contracting – Lists of meetings/workshops, seminars and conferences, updated August 2004.
4. IEA DSM Task X Performance Contracting – List of experts, updated August 2004.

Appendix 1. IEA DSM Task X Performance Contracting - Overview of areas analysed during Subtask E Workshops

Activity	Mechanisms	Examples from participating countries
Project Initiation	Important with intermediary organisations. Feasibility study with owner/user needs. Audits as starting points. Financial Grade Audits. Bundling of small projects.	Energy agencies as in Austria, Greece, State organisations in USA. Austria, Italy, Finland, Sweden. Finland, Japan. Examples of contents. USA by ESCOs. Examples in USA, Austria and Germany.
EPC Process	Manuals.	Examples from USA (FEMP and States), Canada, Austria and Japan The EU Energy ProNet project and the Austrian Thermoprofit process.
Procurement	Prequalification. Model documents. Ranking of tenders. New EU Public Procurement Directives.	3-5 selected candidates: USA, Austria, Japan. Swedish legal Expert has drafted simple and complex projects. Italy, Canada and Japan. Introducing a competitive dialogue which can be used for EPC projects with financing.
Government Policy	Legal to enter into long-term agreements. Insurance. Subsidy programmes. EU Energy Service Directive suggested.	Possible in USA and Japan after law amendments. Model EPC Legislations drafted in USA New company formed in Japan. Examples from Finland, Greece, Japan and Italy.
Measurement & Verification	Standards.	Presentation of ASHRAY and Canadian standards. Important to agree on time length and measurement method. Different levels presented by Japan.
EPC and General Refurbishment Projects	Models for turn-key and consortium solutions.	Austrian experiences formed the background. Presentations of examples by USA, Japan, Finland, Italy and Sweden. Tendency for longer contract periods or part-financing.
EPC and Certificate Trading	Green Certificates. White Certificates. Environment Certificates.	Already introduced in Italy Now planned for energy efficiency. Used in some parts of USA.
Stakeholder involvement at Subtask E workshops	Contractors, Property Owners and Government participation	<u>Italy</u> : AGESI, ELYO, COFATHEC, INGEST, Johnson Controls, CONSIP government procurement body. <u>Austria</u> : Austrian and international experts. Local and regional ESCOs and energy agencies presentations. <u>Greece</u> : National and international presentations and discussions with local, regional and central agencies and companies.
Miscellaneous	International accounting principles.	This may change the possibilities of not including EPC loans in the balance sheet.

Appendix 2. IEA DSM Task X Performance Contracting - Overview of Policy Mechanisms mentioned in the Country Plans

Updated August 2004

Information	Regulation	Financing/Economy	Other/Voluntary actions/Combined measures
<p>Raising general awareness. Using TV and other media. Collecting/publishing success stories. Initiating demonstration projects. Training programmes. Guidelines and checklists. Workshops. Establishing networks (internationally, regionally, and nationally) and trade organisations. EU Programmes & SAVE projects. Different levels for Measurement & Verification. Newsletters. Manuals for EPC. Awards and labels for outstanding EPC achievements.</p>	<p>Changes in federal and regional laws. Framework for accreditation and certification. Standardisation for Energy Management. EU Directives and Programmes. Officially regulated ESCO organisations. General contract conditions issued by government for public organisations. Emissions & Certificate Trading. European Commission and WTO Procurement Rules. Directives for energy efficiency in existing and new buildings. Certification of buildings. Energy efficiency targets. Global Warming Action Plan. Compulsory energy efficiency programmes. Compulsory Energy Management.</p>	<p>Tax incentives for energy efficiency investments, and specifically for EPC projects. Government subsidies for investments in EPC. Subsidies for audits. New rules for banks for “soft loans”. Introduction of special insurance companies, e.g. SOMPO, Japan. Rules for what has to be included in balance sheets for companies. Small & medium-sized business programmes. Facilitating bundling of many small projects in order to reduce transaction costs. Facilitating multi-year or very long contracts. Rules for leasing and fixed assets.</p>	<p>Measurement & Verification: Introducing guidelines (such as in Japan) on four levels, using benchmarking, measurement, estimation, and simulation. Procurement programmes as demand-side initiatives. Voluntary agreements with large stakeholders.</p>

Appendix 3

1 IEA DSM Task X Performance Contracting: List of Meetings/Workshops/Seminars

Updated August 2004

Year	DSM Executive Committee Meetings	Task X Experts Meetings/Workshops	Special Workshops/Seminars in connection with Task X Meetings
2000	Ankara, Turkey 2-5 April Athens, Greece 11-13 October	Preparatory Workshop, Stockholm, Sweden, 19-20 September	
2001	Eskilstuna, Sweden 3-4 May Barcelona, Spain 4-5 October	Sophia Antipolis, France, 1-2 February Helsinki, Finland, 18-20 June Coral Gables, Florida, United States, 5-6 November	Special ESCO Seminar Helsinki, Finland, 18 June Special Session with U.S. EPC and financing specialists, Coral Gables, USA, 5 November
2002	Milan, Italy 18-19 April Graz, Austria 2-4 October	Oslo, Norway, 14-15 March Milan, Italy, 13-14 June, Tokyo and Kyoto, Japan, 28-30 October	Seminar on ESCO and Third Party Financing: National Experience in the International Context, Milan, Italy, 12 June
2003		Stockholm, Sweden, 30-31 January Milan, Italy, 20-21 May Graz, Austria 23-24 October	International Workshop on Performance Contracting, Stockholm, 30 January Special session with Italian ESCOs, Milan, 20 May Thermoprofit Workshop – International Experiences and Perspectives for Austria, Graz, 23 October
2004		Athens, Greece, 18-30 February	Public Workshop “EPC Procedures and Partnerships for Upgrading Building Environmental Quality in Cities”, Athens, 20 February

2 IEA DSM Task X Performance Contracting: Examples of International Conferences/Workshops where Task X Operating Agent and/or experts have participated with papers or presentations

- The IEA/CTI Conference “Regulatory Framework for Energy Third Party Financing in Central Europe”, Budapest, Hungary, November 2001.
- The “2nd International Conference on Improving Electricity Efficiency in Commercial Buildings (IEECB)”, Nice, France, May 2002.
- The “14th Conference of the Electric Power Supply Industry (CEPSI)”, Fukuyoka, Japan, November 2002.
- The “NAESCO International Energy Efficiency Financing Roundtable”, Los Angeles, United States, October 2002.
- The first European Conference on ESCOs “Creating the Market for the ESCOs Industry in Europe”, Milan, Italy, May 2003.
- The “European Council for an Energy Efficient Economy (ECEEE) Summer Conference”, Southern France, June 2003.
- The Operating Agent has given presentations of the Task X work at conferences held by CIB (the international Organisation for Building Research), such as for example the “CIB Procurement Symposium”, Madras, India, January 2004.
- The “Energy Efficient Commercial Buildings Conference”, Frankfurt, Germany, April 2004.
- Seminar on “ESCO development in Russia”, St. Petersburg, Russia, May 2004.

Appendix 4

IEA DSM Task X Performance Contracting – List of Experts

Updated August 2004 – Please note that the address data available may be out of date. (Some of the experts have participated regularly or on single occasions, some during the whole duration of the Task, others only during the first or second part of the Task.)

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