

# INTERNATIONAL ENERGY AGENCY DEMAND-SIDE MANAGEMENT PROGRAMME

The IEA Demand-Side Management Programme is an international collaboration (17 IEA Member countries and the European Commission), which works to clarify and promote opportunities for demand-side management (DSM). For the purposes of this Programme, DSM is defined to include a variety of areas such as load management, energy efficiency, energy conservation and related activities.

The IEA DSM Programme is currently shaping a new international collaborative project to explore the potential for using energy-efficiency certificates, known as “White Certificates”, as a new tool to promote energy efficiency. Tradeable, market-based policy instruments are the wave of the future in energy and environment policy, and participating in this project will generate valuable insights into this whole policy field. New participants (from both public and private sectors) are invited to join in this effort.

To learn more about participating, contact [Antonio Capozza](#) at the Italian Centre for Electricity Technology Research (CESI) in Milan. The IEA Demand-Side Management [Website](#) provides extensive information about the Programme’s activities. A draft work-plan can be found below.

## DRAFT WORK-PLAN

### **1 Task title: MARKET MECHANISMS FOR WHITE CERTIFICATES TRADING**

### **2 General goal**

This project (“Task”) aims to address:

- whether – and how – a scheme involving the issuing and the trading of White Certificates (WhC) provides an effective means of attaining targets of reduction of:
  1. primary energy consumption (main concern)
  2. CO<sub>2</sub> emissions (secondarily)
- what is the most suitable format for such a scheme
- what implementation problems are involved, at national and extra-national levels
- how it can interact with other schemes.

Market-based policy instruments are increasingly being favoured in a wide range of energy and environment policy fields, due to their economic efficiency, benefits for competition, positive incentives for cost reduction and continuous improvement, and their ability to minimise and equalise costs of compliance with policy targets. They are particularly applicable where countries have mandatory quantitative targets for the actors concerned that must be met in a

verifiable way, inside national or extra-national obligation programmes, and within a fixed period.

Examples of this policy approach include:

- **White Certificates:** Energy Efficiency trading schemes – end-use energy efficiency programmes;
- **Black Certificates:** Carbon trading schemes - programmes for reducing CO2 emissions;
- **Green Certificates:** Renewable Energy Commitment trading schemes – increased use of renewable energy sources in power generation.

The focus of the present Task will be on White Certificates, touching on other Certificates only insofar as there are interactions between White and other certificates.

Certificates offer a number of practical benefits for all parties involved. For regulatory authorities, they can be an easily-verifiable way to track compliance with policy targets. For parties obliged to comply with targets, they offer a means to achieve compliance at least cost, and also offer the flexibility to comply either through ‘in-house’ action, by contracting with other parties for their supply, or simply by purchasing certificates in a third-party marketplace. For those able to create and sell certificates, they offer an additional revenue stream which is independent of their other business activities, thus offering hedging and risk-management benefits in addition to direct financial rewards.

Establishing a marketplace for such certificates is a way of helping to align supply and demand in this particular sector. It also offers other benefits by responding to societal and community needs while also respecting the commercial interests of the actors subject to mandatory obligations. This approach has already proved in practice to be more dynamic, more effective and more efficient than legal obligations alone, notably in the field of Renewable Energy Commitment trading. Trading in certificates is an effective way of combining a guarantee of results from regulation with the economic efficiency of market-based instruments. It is thus consistent with the principles of a liberalised market framework.

### **3 Background and rationale**

The reasons for addressing the question of WhCs stem chiefly from the following observations.

- Methodologies based on Certificates trading are currently attracting increasingly favourable interest. In fact, as already noted, they combine social/political benefits with the economic efficiency of market-based instruments and they are consistent with a liberalised market framework. Moreover, leaving aside the question of “trading”, a WhC scheme is in itself a valid mechanism for formalising official quantification and endorsement of energy savings.
- At present, WhC schemes are being applied, on a very pioneering basis, in UK, Italy and New South Wales (Australia). Meanwhile, France is planning to do so and Belgium is establishing instruments involving mandatory Energy Efficiency Programmes aimed at economising primary energy (possibly involving WhCs). Other Countries (Sweden, Norway) are interested in the principle of using WhCs and would like to actively monitor the

progress of this approach abroad. Nevertheless, expectations regarding outcome seem quite homogeneous at an international level and alternative implementation procedures have been devised and their pro/cons evaluated. This being the case, the need for communication and sharing of experience is becoming increasingly necessary. The activities of this Task can meet that need.

- The issuing of a European Union Directive on energy end-use efficiency and energy services was officially fostered very recently by a Proposal from the European Commission (December, 2003). According to this Proposal, each Member Country will be required to stick to a progressively increasing annual target for energy savings “*attributable to energy services, energy efficiency programmes and other energy efficiency measures*”. Moreover, the Proposal recommends the mechanism of WhC trading as a suitable tool to promote and lend appeal to implementation of the relevant programmes.
- Green Certificates trading can already be regarded as an established practice and positive/negative experience with it can be recorded and assessed. Conversely, much less information is available where WhCs are concerned. Activities promoted, set up and monitored within the present Task will benefit from all the operational experience already gained with other schemes.
- In fact, interaction/conflict/interchangeability can be expected among green/black/white Certificates. For example (L. Hull – IEA-DSM - UK), domestic CHP facilitates generation at point of use with close to the same thermal efficiency as conventional boilers. From the users’ point of view, they have a space heating system with electricity produced as a useful by-product.
  - A CHP unit running on Bio-fuel could be regarded as renewable generation and attract Green Certificates.
  - In addition, losses associated with the transmission and distribution of centrally generated electricity are avoided. The installation could be regarded as an energy-efficiency measure and attract White Certificates.
  - Although the efficiency of electricity generation with these systems is low compared to conventional generation, virtually all the energy input is converted to useful energy. When these factors are taken into account, the effective efficiency of the local generator, measured in terms of CO<sub>2</sub> produced per kWh electrical and kWh thermal consumed, can be competitive in comparison with more conventional domestic boilers and central generation. The lower CO<sub>2</sub>/ kWh emissions could then attract Black Certificates.

These questions need further exploration and will be included in the Task studies; involvement of countries not specifically (or not only) concerned with WhC is therefore also expected and encouraged.

- It should be noted that this Task is intended to complement other IEA-DSM active Tasks. For example, Task X on Performance Contracting has a work phase planned within its subtask E devoted to the interaction between Energy Performance Contracting (EPC) and WhC, and the possible reciprocal benefits of the interaction.

## 4 Questions to be addressed

A preliminary meeting was held in Milan on December 5<sup>th</sup> 2003 to brief interested parties on the Task, to promote participation, and to gather consent and suggestions about content and organisation. A draft concept paper was circulated. A preliminary list of key concerns to be considered was drawn up after that meeting and subdivided into issues of “principle” and “practical” issues.

### 4.1 Principle (Policy) issues

1. *Effectiveness of a certificate trading mechanism to promote energy efficiency projects*; in other words, whether Certificates Trading is different when applied to promote energy efficiency in the end-use sector, instead of renewable sources or reductions in CO<sub>2</sub> emissions.
2. *Who the obligation-bound actors are* (distribution companies, suppliers, others)
3. *Who can buy and who can sell* (obligation-bound actors, exempted actors, ESCO, consumers)
4. *How to create demand* for WhC trading; market trading versus bilateral contracts
5. *Competition issues*
6. *Interactions with other trading schemes*:
  - *Green vs. White Certificates*
    - They have different objectives and therefore cannot be interchanged
    - *Green* energy can be easily measured for certificate issue purposes (only electricity)
    - Energy savings for WhC are definitely much more difficult to evaluate
  - *Interaction among Green / White Certificates and Emissions Trading*
    - Both White and Green Certificates have CO<sub>2</sub> emission reduction equivalency
    - CO<sub>2</sub> reductions obtained through Energy Efficiency projects could be sold to the Emission Trading market if convenient (as will probably be the case).
7. *Interactions with other policy tools* for the promotion of energy efficiency
8. *Prospects for an enlarged extra-national market* for tradable certificates
  - a. Compliance with different rules for interchangeability already existing or projected in different countries
  - b. Expected / pursued developments in national legislation on the matter, such as:
    - i. Widening of the reference perimeter (from national to EU – see proposal for EU Directive - or from EU to OCDE level)
    - ii. Agreement on an international standard for handling the matter; at least at an EU level, with a view to possible wider extension

### 4.2 Practical (Operational) issues

1. Criteria for design and development of projects for energy efficiency in end-use; e.g.:
  - eligibility criteria – technology, actors, etc.
  - size
  - avoiding double/multiple counting , see remarks in Chapter 3.
2. Valuation issues, i.e.:
  - how to measure, or how to evaluate, the saving impact of projects (by measurement, by calculation, mix, baseline, IPMVP)
  - free riders
  - free-drivers
  - economic impact

- documentation to be kept
  - accreditation/certification of the actors
  - possible ranking of the projects according to merit indexes
3. Monitoring mechanism and non-compliance regime; e.g.:
    - how to assess the duration of an energy saving project,
    - how to handle the inability of an obligation-bound actor to meet his energy efficiency goals
  4. Possible cost-recovery mechanisms; e.g.:
    - public benefit charges
    - direct support mechanisms
    - fiscal incentives:
      - which funding level
      - which mechanism(s)
      - how to deal with projects which receive funding from more than one public source
  5. Issuing and use of certificates; e.g.:
    - ex-post
    - ex-ante,
    - metric (toe, kWh, GHGs, k€)
    - accounting rules
  6. Trading mechanisms; e.g.:
    - participants,
    - tools, bilateral contracts
    - lifetime of the certificates,
    - frequency of transactions
    - safety rules of the transactions
  7. Responsible entity/ies; i.e. which body/ies (institutions, entitled body, independent certified experts) should be responsible for the different activities (i.e. issuing, monitoring and verification, validation, etc.)

This list should be complemented, where appropriate, with further expert contributions.

The above key concerns will be examined by the participating countries, with a view to identifying for each item:

- views on relevance within the national energy policy framework
- national adopted/planned/expected approaches
- possible problems relating to implementation
- experience gained in tackling and solving these problems – case studies

## 5 Approach

Relatively little experience of WhC schemes exists. So the proposed work cannot count on synthesis of past experience, as is often in the case with IEA-DSM Tasks. This Task will call for exchanges among experts on subjects as diverse as tradable certificates theory, demand-side management policies in the residential, transport and tertiary sectors, or existing English, Italian and French WhC schemes. The Task must therefore be organised in a non-traditional manner and with strong involvement of IEA-DSM task experts.

A "light" Task has therefore been conceived, as similar to a work group as possible and limited in duration and in cost sharing (which means more effective task sharing for the country experts). It will be based on regular events, at four months' intervals, made up of:

- one day open thematic discussion/workshop with national practitioners and national experts;
- one day restricted meeting of IEA-DSM Task experts.

Each workshop will explore a set of issues coming under one of the following main headings:

1. expectations
2. policy/principle issues
3. organisation/practical issues
4. interaction with other trading schemes and with other EE policies (points 6 e 7 of Section 4.1)

The following day, a meeting restricted to the Task experts will be devoted to processing, discussing and synthesising the workshop results and preparing the next workshop. The table below outlines the planned events schedule.

Event	Workshop	Workshop subject	Task experts meeting subject	Month*
1	NO		<ul style="list-style-type: none"> <li>- Kick-off .</li> <li>- Task organisation</li> <li>- Preparation of following workshop</li> </ul>	1
2	YES	Expectations at national level	<ul style="list-style-type: none"> <li>- Discussion on the past workshop</li> <li>- Preparation of following workshop</li> </ul>	4
3	YES	Policy/principle issues	<ul style="list-style-type: none"> <li>- Discussion on the past workshop</li> <li>- Preparation of following workshop</li> </ul>	8
4	YES	Organisation / practical issues	<ul style="list-style-type: none"> <li>- Discussion on the past workshop</li> <li>- Preparation of following workshop</li> </ul>	12
5	YES	Interaction with other schemes/EE policies	<ul style="list-style-type: none"> <li>- Closing meeting</li> <li>- Discussion on the past workshop</li> <li>- Discussions on the organisation and structure</li> <li>Final Synthesis Report</li> </ul>	16

\* Assuming that the Task will officially start in Month "1"

No subdivision into subtasks is planned.

## 6 Deliverables

The content of the contributions and of the discussions relevant to each of events 2 to 5, described in Chapter 5, will be processed and synthesised in corresponding *Critical Synthesis (CS) Reports* under the responsibility of the Operating Agent (OA). These reports will be discussed among the OA and the task experts. After approval, each of the four CS reports will become an official task deliverable.

A Final Synthesis Report (FR), issued by the OA on completion of the Task's work, will contain a summary and a review of all the activities undertaken and experience gained during the progress of the Task.

It should be pointed out that all expedients for simplifying the OA's synthesis and review process must be examined if the shared costs are to be contained with a certain limit. To this end, a written/electronic version of the workshop/meeting presentations and a written version of the main contributions during the relevant discussions will be expected from all participants.

## 7 Project timescale and schedule

The timescale of the task is 18 months, with a mix of task-shared and cost-shared participation

Within this period, the time schedule of the events described in Chapter 5 and of the issuing of the documents described in Chapter 6 is given in the following table.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Event	1			2				3				4				5		
Document					CS				CS				CS				CS	FR

CS = Critical synthesis report of the event (workshop + IEA-DSM experts meeting)

FR = Final synthesis report

## 8 Operating Agent Responsibilities and Costs

The Operating Agent will assume the following duties:

- Organise five IEA-DSM task experts meetings, relying on the local assistance of the host-country expert
- Propose and discuss with IEA-DSM task experts the organisation of four national workshops
- Organise the results of each of these events (IEA-DSM experts meeting + national workshop) into a Critical Synthesis Report, collecting and critically reviewing all the contributions and discussions
- Write and issue the Final Synthesis Report
- Internal and external steps for circulating the results

The OA activities require the following budget (k€):

OA's input	53
Assistants input	8
Travel	15
Administrative costs (phone, fax, editing)	9
Contingencies	5
<b>Total</b>	<b>90</b>

It is proposed that the Operating Agent activities be cost-shared by **at least 4 participating countries**.

At the Executive Committee meeting in October 2003, six countries expressed interest in the Task. Belgium, France, Italy, Norway, Sweden and UK indicated a 'Yes'. Australia and Denmark indicated a 'Maybe'. Later, Greece sent an expert to attend the preliminary task meeting.

Assuming equal sharing of the Task budget, the following table shows the country contributions required for participation of four to eight countries, which should be settled at the beginning of the task.

<b>N. Participating Countries</b>	<b>Country Contribution (€)</b>
4	22,500
5	18,000
6	15,000
7	12,857
8	11,250
<b>Total Budget</b>	<b>90,000</b>

## **9 Designated IEA-DSM Task Experts' responsibilities and resources**

The responsibilities of each IEA-DSM Task expert are given below.

- Comment on, and discuss with the Operating Agent, the content of four national workshops
- Organise and host one of four national workshop in their own countries
- Host one of five IEA-DSM experts meeting in their own countries
- Attend all the organised national workshops and IEA-DSM experts meetings
- Discuss the results of the workshops with the OA and assist him in setting up the Critical Synthesis Report of each of the four events (IEA-DSM task experts meeting + national workshop)

- Comment on the draft Final Synthesis Report set up by the OA

In addition, each country Expert will be required to undertake about three person-months of work during the 18 months' duration of the Task.

The IEA-DSM Experts' costs would be funded by participating Countries.

## **10 Benefits for the participating countries**

As pointed out, the Task will produce a complete survey on issues such as:

- Effectiveness of a scheme involving the issuing and trading of White Certifications (WhC) to attain targets of reduction in:
  1. primary energy consumption (main concern)
  2. CO<sub>2</sub> emissions (secondarily)
- the most suitable format for such a scheme
- problems involved in its implementation, at a national and extra-national levels
- possible interaction with the other schemes

In this context, benefits resulting from the Task can be expected for both the countries who are applying the scheme (even though at a pioneering stage) and for the countries planning to incorporate the scheme into their energy policies. Benefits will stem from enhanced understanding of:

- various alternative approaches that can be adopted for similar types of problem (policy, practical, etc.)
- experience that may already exist
- ways to deal with interaction/conflict/interchangeability among green/black/white Certificates, when this occurs.

## **11 Remarks**

The following point should be made to ensure that the Task's requirements are met.

- Both work-plan and costs are based on the assumption of at least four participating countries and a maximum of eight participating countries. Arrangements should be reviewed if the circumstances change.
- Written/electronic versions of the workshop presentations and written versions of the main contributions during the relevant discussions are expected from all the participants.
- Written/electronic versions of the presentations and written versions of the main contributions to the relevant discussions during the tasks experts meeting are required.
- CSs are official deliverables and require some formalities. After preparing a draft of each of the four CSs, the OA will submit each to the expert via e-mail and request written comments

via e-mail. Once the CS is completed, the OA will organise a ballot on it among Country Experts before it is issued.

- The structure and the organisation of the CS will be proposed by the OA and discussed during the final task meeting. Afterwards, a draft will be written by OA. The OA will submit it to the expert via e-mail and will ask for written comments via e-mail. Once the SR is completed, a ballot on it will be requested by the OA from Country Experts before issuing

## 12 Acronyms

Acronym	Meaning
CS	Critical Synthesis Report of an event (Workshop + Task experts meeting)
EE	Energy Efficiency
EPC	Energy Performance Contracting
FR	Final synthesis Report
GHG	Greenhouse gases
IPMVP	International Performance Measurement & Verification Protocol
OA	Operating Agent
WhC	White Certificate