International Energy Agency (IEA/AIE)
Energy Technology Systems Analysis Programme
(ETSAP Implementing Agreement)

Annex IX

Energy Models Users' Group

1. Description of the Technical Sector

Background

Which are the economic consequences of the new research and achievements in the field of energy supply, end uses and materials onto the energy systems and their emissions? How far is the present technological level from the desired long-term environment and economic goals? Is the present level of effort in the research for new energy technologies in the supply sector, in the end use markets and in the material uses going to fill the gap? What amount of resources is needed to reach a mitigation of the climate changes to the level suggested by the projections over the next century? What technology options look most promising? What policies and measures are most effective?

Decision makers of energy sectors, global environment, related RD&D, some end-use sectors such as transport and electric appliances require quantitative analyses and scenarios as base material to support their decisions. Macroeconomic and aggregated general equilibrium modelling analyses provide economic policy indications but cannot indicate the technological and organizational options through which the policies have to be implemented. These indications are provided by analyses carried out with the help of technology characterisation data bases, together with national and regional energy balances and scenario analyses based upon technical economic models of the energy systems, integrating supply of energy vectors with the demand of energy services by the end-users. To assist decision makers, an assessment of costs and benefits is essential.

The experts working together under this Agreement aim to provide analyses of and solutions to such problems.

History and Achievements

Since 1976 ETSAP has been building a bridge among the specialists of energy sectors, energy technologies, environment and economy in order to carry out joint system modelling analyses. With a relatively low budget – less than 200 k€ in the last few years – this Agreement achieved impressive results. As an international group of systems analysts, ETSAP has been among the first to analyse the energy related environmental issues. It contributed to the acid deposition debate in the 1980s. Concerning climate change ETSAP partners evaluated mitigation costs before the Rio conference, provided environmental policy analysis to preparation of the Kyoto Protocol, are analysing different international mitigation schemes, have contributed to the Third Assessment

Report of the IPCC (Working Group III) and to the Special Report on Emission Scenarios, and in several countries contribute to the preparation of domestic mitigation programmes reported in the Second and Third National Communications to UNFCCC.

Scope and Programmes

The scope of this Agreement is central to the activities of the secretariat, carried out by the Energy Efficiency, Technology and R&D office as well as the Long Term Co-operation and Policy Analysis office. The modelling tools and expertises of ETSAP are presently being used for the Energy Technology Perspective Project of the Energy Technology Policy Division, as well as by the US Energy Information Administration in the "System for the Analysis of Global Energy markets" (SAGE Project) for the preparation of the International Energy Outlook.

The technical sector of this Agreement is different from and non homogeneous to most other Agreements. It has developed and continuously improves large economic programming model generators of the energy technologies systems, it implements the modelling software, it uses both to model global, regional, national and local energy systems, it runs the models to build long term energy environment scenarios, it compares different technologies and clusters, and it evaluates cost and benefits of policies and measures.

Among the programmes of this Agreement are multi-regional bottom up models of the global energy environment system with a strong technological connotation; advanced local energy – environmental planning integrated with Geographical Information Systems (GIS) and life cycle analyses (LCA) along the lines of Annex 33 of the IEA Implementing Agreement on Energy Conservation in Buildings and Community Systems, integration of such global technical-economic models with climate change scientific models; the preparation of an international Data Base characterising from the technical-economic point of view existing and new energy environment supply and end use technologies; diffusion of the methodology to non member countries.

2. Objectives

The main objective of this Task is to support the objectives of this Agreement, diffusing its methodologies to:

(a) New national groups operating in the countries of the Contracting Parties;
(b) Organizations active in other IEA Member countries;
(c) Organizations active in non Member countries;
(d) Governmental and non-governmental international groups and organizations;
(e) Universities and educational bodies.

3. Means

The Participants shall share the co-ordinated work necessary to carry out this Task. The Objectives shall be achieved by:

(a) Facilitating the widespread dissemination and adoption of ETSAP methodologies and analysis in different regions, countries, local areas; an example of such activities is the organization of training courses to form new experts or to widen the analytic capabilities of existing experts domestically, locally and in outreach activities;

(b) Carrying out coordinated analyses of energy technologies systems, energy efficiencies studies on technology options, impact of Policies and Measures, effects of deregulation in energy sub-sectors, RD&D ranking by means of cost/benefit analyses, guidelines for modelling, documentation, etc.;
(c) Collecting, analyzing and disseminating information and data related to energy systems, energy technologies, energy and environment models and scenarios;
(d) Improving the modelling tools, by means of integration with other existing tools, developing new research ideas, testing new solutions, fine tuning experimental models and software (e.g. to foresee links to spatial variables and local GIS, to compare partial/local optima to global optima, to test stepwise or hierarchical approaches and sensitivity);
(e) Organizing annual meetings of experts, as appropriate, to exchange information and experience in the area of work covered by the Agreement; and
(f) Exchanging specialists, experts and students active in the sector.

4. Results

The results of work performed under this Annex will be designed for use by all Participants, and will include:

(a) Proceedings of annual meetings to exchange information on the status of the analyses of active teams in the Participants' countries and international groups;
(b) Reports and summary assessments on progress in analyses, in methodological research and development, and in the general priorities in the field; and
(c) A description of programmes to promote process oriented systems analyses applied to energy environment and related sectors.

5. Time Schedule

This Annex shall enter into force on September 1, 2002 and shall remain in force till December 31, 2004. Within the limits of the term of the Agreement, this Annex may be extended by two or more Participants, acting in the Executive Committee, and shall thereafter apply only to those Participants.

6. Specific Obligations and Responsibilities of the Participants

In addition to the obligations enumerated in Article 7 of this Agreement:

(a) Each Participant shall provide the Operating Agent with reports on the results of the work carried out;
(b) Each Participant shall collect, assess and report to the Operating Agent data and information on the use of models according to the Objectives and Means as described in paragraph 2 and 3 above;
(c) Each Participant shall exchange the material related to, and reviews on the work for, quality improvement;
(d) Each Participant shall participate in the editing and review of draft reports on the Task; and

(e) Each Participant shall support the Operating Agent in efforts to disseminate the methodologies and their use in assessing local or regional systems, offering lessons and courses, carrying out outreach activities.

7. Specific Obligations and Responsibilities of the Operating Agent

In addition to the obligations enumerated in Articles 4 and 7 of this Agreement, the Operating Agent shall:

(a) Prepare and distribute the results described in paragraph 4 above;
(b) At the request of the Executive Committee, organize workshops, seminars, conferences and other meetings;
(c) In co-ordination with the Participants, use its best effort to avoid duplication with activities of other related programmes and projects implemented by or under the auspices of the Agency or of other competent bodies;
(d) Provide the Participants with the necessary guidance for the work they carry out, assuring minimum duplication of effort;
(e) Perform such additional services and actions as may be decided by the Executive Committee, acting by unanimity.

8. Funding

The Programme of Work is carried out on a task sharing basis. A wide use of the web will increase the opportunities of exchanges at low cost.

(a) *Annual Meetings*. The annual meetings pursuant in paragraph 3 above shall be hosted in turn by the Participants. The cost of organizing and hosting the meetings shall be borne by the host Participant.

(b) *Publications*. The cost of publishing the reports and summary assessments described in paragraph 4 above shall be met by the Operating Agent.

(c) *Individual Financial Obligations*. Each Participant shall bear all the costs it incurs in carrying out its activities, including the purchase of the proprietary software necessary to run the models, reporting and travel expenses.

(d) *Task-Sharing Requirements*. The level of work to perform the programme specified in this Annex is estimated at 3 person-months per year for the Operating Agent, 2 additional person-months for each Participant in the first year that the Annex is in force, and an additional person-month per year for each Participant during the remainder of the term of the Annex. Part of the above activities will be funded by Annex VIII budget, with unanimous decision of the Executive Committee.

9. Operating Agent

The Politecnico di Torino (Italy), acting through the Dipartimento di Energetica, is designated as Operating Agent

10. Information and Intellectual Property

(a) Executive Committee Powers
The publication, distribution, handling, protection and ownership of information and intellectual property arising from this Annex shall be determined by the Executive Committee, acting by unanimity, in conformity with this Agreement.

(b) Right to Publish
Subject only to copyright restrictions, the Participants shall have the right to publish all information provided to or arising from this Annex except proprietary information, but they shall not publish it with a view to profit, except as agreed by the Executive Committee, acting by unanimity.

(c) Proprietary Information
The Operating Agent and the Participants shall take all necessary measures in accordance with this Annex, the laws of their respective countries, and international law to protect proprietary information. For the purposes of this Annex proprietary information shall mean information of a confidential nature such as trade secrets and know-how (for example, computer programmes, design procedures and techniques, chemical composition of materials, or manufacturing methods, processes, or treatments) that is appropriately marked, provided such information:
(1)Is not generally known or publicly available from other sources;
(2)Has not previously been made available by the owners to others without obligation concerning its confidentiality; and
(3)Is not already in the possession of the recipient Participant without obligation concerning its confidentiality.
It shall be the responsibility of each Participant supplying proprietary information to identify the information as such and to ensure that it is appropriately marked.

(d) Production of Relevant Information by Governments
The Operating Agent should encourage the governments of all Agency Participating Countries to make available or to identify to the Operating Agent all published or otherwise freely available information known to them that is relevant to the Task. The Participants should notify the Operating Agent of all pre-existing information, and information developed independently of the Task known to them which is relevant to the Task and which can be made available to the Task without contractual or legal limitations.

(e) Production of Available Information by Participants
Each Participant agrees to provide to the Operating Agent all previously existing information and information developed independently of the Annex which is needed by the Operating Agent to carry out its function in this Task and which is freely at the disposal of the Participant and the transmission of which is not subject to any contractual and/or legal limitations:
(1)If no substantial cost is incurred by the Participant in making such information available, at no charge to the Task;

(2)If substantial costs must be incurred by the Participant to make such information available, at such charge to the Task as shall be agreed between the Operating Agent and the Participant with the approval of the Executive Committee.

(f) Use of Proprietary Information

If a Participant has access to proprietary information which would be useful to the Operating Agent in conducting studies, assessments, analyses, or evaluations, such information may be communicated to the Operating Agent in accordance with an agreement between the Operating Agent and the specific Participant setting forth the terms and conditions for such acceptance, but the proprietary information shall not become part of reports, handbooks, or other documentation, nor be communicated to the other Participants except as may be agreed in writing between the Operating Agent and the Participant which supplied such information.

(g) Acquisition of Information for the Task

Each Participant shall inform the Operating Agent of the existence of information known to the Participant that can be of value to the Task, but which is not freely available, and the Participant shall endeavor to make the information available to the Task under reasonable conditions, in which event the Executive Committee may, acting unanimously, decide to acquire such information.

(h) Reports on Work Performed under the Task

The Operating Agent shall provide reports to the Participants and to the Executive Committee on all work performed under the Task and the results thereof, including studies, assessments, analyses, evaluations and other documentation, but excluding proprietary information.

(i) Copyright

The Operating Agent may take appropriate measures necessary to protect copyrightable material generated under this Task. Copyrights obtained shall be the property of the Operating Agent in trust for and for the benefit of the Participants, provided, however, that Participants may reproduce and distribute such material, but shall not publish it with a view to profit, except as otherwise directed by the Executive Committee.

(j) Authors

Each Participant shall, without prejudice to any rights of authors under its national laws, take necessary steps to provide the co-operation with its authors required to carry out the provisions of this paragraph. Each Participant will assume the responsibility to pay awards or compensation required to be paid to its employees according to the laws of its country.

11. Participants in this Task

The Contracting Parties which are Participants in this Task are the following:

(list of parties to be added following their notification to the Executive Director of the IEA and to be selected from the following list + new accessions)

Contracting Parties	Date of Signature
Energieverwertungsagentur (Austria)	19.12.80.
The Department of National Development and Energy (Australia)	13.11.80.
succeeded by the Australian Bureau of Agriculture and Resource Economics (ABARE)	
The Government of Belgium	08.09.81.
The Department of Energy, Mines and Resources (Canada)	07.07.82.
succeeded by the Department of Natural Resources	
The Ministry of Energy (Denmark),	04.12.80.
replaced by the Ministry of Environment and Energy, Danish Energy Agency	
The Commission of the European Communities	11.01.82.
The Government of Finland	
Kernforschungsanlage Jülich GmbH (Germany)	13.11.80.
name changed to Forschungszentrum Jülich GmbH	
replaced by the Institute for Energy Economics and Rational Use of Energy (IER) of the University of Stuttgart	12.05.97.
The Scientific Research and Technology Service of the Ministry of Coordination (Greece)	01.12.80.
The National Board for Science and Technology (Ireland)	17.07.81.
The Ente Nazionale Idrocarburi (Italy)	13.11.80.
replaced by the National Agency for New Technologies Energy and Environment (ENEA)	
The Korea Institute of Energy Research (KIER)*	15.05.96.
The Government of Japan	17. 9.81.
The Stichting Energieonderzoek Centrum Nederland (ECN) (Netherlands)	02.04.82.
The Royal Ministry of Petroleum and Energy (Norway)	13.11.80.
(name changed to the Royal Norwegian Ministry of Industry and Energy)	
The Centro de Estudios de la Energia (Spain)	13.11.80.
The Energy Research and Development Commission (Sweden)	18.11.80.
(subsequently succeeded by the Energy Research Commission and later by the Swedish National Board for Industrial and Technical Development (NUTEK))	
The Office Fédéral de l'Energie (Switzerland)	1. 4.81.
(replaced by the Paul Scherrer Institute)	19.12.91.
The Kocaeli University (Turkey)	22. 3.96.
The Secretary of State for Energy (United Kingdom)	9. 6.81.
(succeeded by the Secretary of State for Trade and Industry)	
The United States Department of Energy	13.11.80.
(replaced by The Government of the United States of America; then again by the United States Department of Energy)	