UKERC

SUMMARY OF THE IEA ENERGY TECHNOLOGY SYSTEMS ANALYSIS PROGRAMME (ETSAP) 2005 MEETING

Meeting Report, 16-18 November 2005

Event organised and sponsored by:

UKERC psi dti AEA TECHNOLOGY ENVIRONMENT

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UK Energy Research Centre

THE UK ENERGY RESEARCH CENTRE

The UK Energy Research Centre is a publicly funded organisation charged with drawing together energy research in the UK while establishing itself as a centre of research excellence.

By taking a co-ordinated and collaborative approach to national and international energy research, and through our own interdisciplinary research activities, we will provide the knowledge needed to work towards a sustainable energy system and realise UK energy policy goals.

The Energy Systems and Modelling (ESMT) Theme of UKERC

The UKERC's ESMT research activities are being undertaken by the Policy Studies Institute (PSI) and the Cambridge Centre for Climate Change Mitigation Research (4CMR) at the University of Cambridge, with collaboration from Cambridge Econometrics.

Background to ETSAP

The Energy Technology Systems Analysis Programme (ETSAP) is an Implementing Agreement of the International Energy Agency (IEA), first established in 1976. It functions as a consortium of member country teams and invited teams that actively cooperate to establish, maintain, and expand a consistent multi-country energy-economy-environment analytical capability.

Its backbone consists of individual national teams in over 35 countries, and a common, comparable and combinable methodology, mainly based on the MARKAL / TIMES family of models, permitting in-depth national, multi-country, and global energy and environmental analyses. The MARKAL and TIMES models developed collaboratively over the past two decades are E4 models (economy, energy, engineering, environment) models of an entire energy system, and track commodity flows through the entire system together with the technologies that transform and utilize energy. These are optimisation models that simultaneously consider supply and demand in a dynamic equilibrium. Model variants allow macro economic impacts, uncertainty, endogenous technological change, materials or near optimal solutions to be investigated in depth. Typical applications of the models include technological competitiveness under different market conditions and constraints, life cycle analysis, and emission reduction policies and instruments.

ETSAP holds open workshops twice a year, to discuss methodologies, disseminate results, and provide opportunities for new users to get acquainted with advanced energy-technology developments. This workshop hosted by the United Kingdom was the autumn 2005 workshop, and enabled the UK MARKAL modelling team to network and learn from its international peer group. As part of its outreach activities, ETSAP collaborates with many other research teams throughout the World, participates in various global forums, and makes its Newsletter and its Workshop Proceedings available online to the public at large.

Overview of 2005 Meeting

This regular ETSAP workshop, held at *St Anne's College, Oxford,* was preceded by a focused UKERC sponsored event which examined issues in modelling future energy technology costs and choice. A full workshop report is available at (www.ukerc.ac.uk).

The ETSAP meeting was structured around the two main themes. The first was applications of the MARKAL / TIMES model variants in specific methodological and policy focused projects. The second was presentations detailing ongoing model development and improvement in this open-source collaboration in energy system analytical tools. The presentations are listed below and electronic versions of all presentations are freely available on the UKERC (www.ukerc.ac.uk) and ETSAP (www.etsap.org) websites.

Two underlying developments were discussed throughout the two days. The first was the surge of interest in scenario quantification and modelling of the options for climate change mitigation policies arising from the G8 Gleneagles Summit. ETSAP is likely to be heavily involved in this process which includes the IEA preparing a new flagship publication on Global Energy Technology Perspectives (GETP). The first annual GETP is to be published in March 2006, will explore the role energy technologies can play in shaping long term markets and will be closely tied to results from the global MARKAL model. The second was an ongoing aim to continue to interact with key developing countries and to enhance and to link with their energy modelling capacities. This has been done through ETSAP as a whole and through bilateral contacts and this process will continue to be strengthened.

In additional to the modelling insights this workshop offered an excellent opportunity for networking and relationship building between international modelling groups. This was facilitated by the conference dinner held at St Anthony's College, Oxford.

November 16th: Presentations

NOTE: electronic versions of all presentations are freely available on the UKERC (www.ukerc.ac.uk) and ETSAP (www.etsap.org) websites.

ETSAP Workshop: Models and Studies

- Modelling studies on the impact of liberalised electricity and gas markets in Europe
- Denise Van Regemorter, Katholieke Universiteit Leuven

- Redesigning the representation of the residential sector in a MARKAL model for Western Europe
- Hilke Rõsler, Gerard Martinus, Energy Research Centre of the Netherlands

- Modelling issues in Sweden
- Anna Krook Riekkola, Chalmers University

- Modelling issues in Denmark
- Poul Erik Grohnheit, Risoe National Laboratory

- Energy and electricity models applied to UK
- Mark Barrett, Sustainable Environment Consultant, Senco

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- The TIMES Integrated Assessment Model (TIAM), the Energy Modelling Forum (EMF-22)
- Richard Loulou, Maryse Labriet, Amit Kanudia, Kathleen Vaillancourt

- Computing Equilibria with Coupled Constraints in Large-scale Energy-Economic-Environment Models via an Oracle based Optimisation Technique
- Alain Haurie, Ordecsys / C-ordee

- The US-EIA SAGE project: an update
- Amit Kanudia, KanORS Inc.; Phillip Tseng, US-EIA

COFFEE/TEA

- Long term strategy of the electric sector in the Italian regions
- Evasio Lavagno, Maurizio Gargiulo, Rocco De Miglio, Politecnico di Torino

- Emission trading and reduction: Interaction between the European Electricity and Gas market
- Markus Blesl, IER, University of Stuttgart

- SEE-REDP RES and Project Overview
- Gary Goldstein, IRG Ltd, Denise van Regemorter, KUL, Helena Bozic, EIHP

- Other updates

- Reception and conference dinner, St Anthony's College

November 17th: Presentations

NOTE: electronic versions of all presentations are freely available on the UKERC (www.ukerc.ac.uk) and ETSAP (www.etsap.org) websites.

ETSAP Workshop: Methods and Tools

- Marginal Abatement Cost of GHG in the MARKAL-MACRO-TRADE model
- Socrates Kypreos, Paul Scherrer Institute, Ken Noble, Noble-Soft Systems

- MARKAL (TIMES)/REMI linkage concept and developments
- Gary Goldstein, IRG Ltd; Richard Loulou, Haloa Inc.

COFFEE/TEA

- The connection of TIMES with GIS
- Markus Biberacher, CIEMAT-IPP/MPG

- Quality assurance experiences on a major energy system analysis project in South East Asia
- Brendan Millane, Key Economics Pty Ltd

- New England Governors' GHG policy assessment
- Gary Goldstein, IRG Ltd, Gary Kleiman, NESCAUM, Amit Kanudia, KanORS

- The IEA Energy Technology Perspective Project: an update
- Fridtjof Unander, IEA

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- New features of MARKAL version 5.5
- Gary Goldstein, IRG Ltd.

- New features of TIMES version 1.5 (Damage function) and version 2.0 (Stochastic, Macro)
- Antti Lehtila, VTT; Markus Blesl, IER

- ANSWER6 for TIMES: Status Report
- Ken Noble, Noble-Soft Systems

COFFEE/TEA

- New features of VEDA-Back End version 4.5.40
- Status of VEDA Front End 2.0.58 and Templates
- Amit Kanudia, Kathleen Vaillancourt, KanORS

- ANSWER "Smart" Templates
- Ken Noble, Noble-Soft Systems; Gary Goldstein, IRG Ltd

- Next steps
- Common discussion

- Summing up
- GianCarlo Tosato

November 18th: Executive Committee Meeting

This closed session focused on the ETSAP budget and strategic issues. The next ETSAP meeting was announced for Cape Town, South Africa from June 27-29 2006, in conjunction with the International Energy Workshop. This continues the drive to enhance the developing country participation in both ETSAP and energy modelling networks in general. The conference closed with a vote of thanks to the organizing committee and support staff for an excellent meeting.