CL06

FORUM

Establishment of an hoc forum for the comparison of the TIMES-MARKAL an LEAP model as a support for Belgian Long-term energy policy

DURATION OF THE PROJECT	BUDGET
15/12/2009 - 31/01/2012	98.971 €

KEYWORDS
Energy system, modelling, MARKAL-TIMES, SEPIA-LEAP, long-term energy policy

CONTEXT

Ever since the oil crisis of 1973 policy makers have expressed a growing need for reliable projections (often extending many decades into the future) of future energy demand, energy technology development, and the emissions and costs to be expected. This need has been met by a widespread development of energy models. The growing awareness of the climate change problem since the nineties has added significantly to this proliferation of models. But the ability to apply the models effectively and efficiently in the context of energy-, climate- and/or sustainability-related policy questions still leaves somewhat to be desired. In the intervening years the gap between modellers and potential users of the models has remained for the most part large and pervasive. This is due to the in-built characteristics of energy models (e.g. assumptions with regard to the adoption of energy-saving behaviour, the functioning of markets, etc.) which often remain 'hidden' for policy makers.

PROJECT DESCRIPTION

Objectives

The main goal of the FORUM project is to render more transparent the two energy models presently used by Belgian authorities in their decision-making concerning a transition to a carbon neutral economy. The aforementioned models are the engineering optimisation model TIMES-MARKAL and the energy accounting model SEPIA-LEAP.
In doing so the projects attempts to answer the following questions:

- Are the models appropriate to signal to the policy-makers threats, challenges and opportunities concerning sustainable energy systems?
- To what extent to these models take into account the complex (technological, economic and policy-related) interactions within the energy system?
- Can these models aid in making normative choices?
- Can these models integrate the experience and know-how of experts and stakeholders, in addition to the existing data-set and given the numerous uncertainties?

The project will develop and test criteria for evaluating both models..

Methodology

The methodology consists of:

- An internal comparison of the two models and of the scenarios developed in the framework of the BELSPO SEPIA and TUMATIM projects. From this comparison new similar scenarios can be derived which will be run by the two models in parallel;
- Assembling a workgroup or "FORUM" that will gather three times during the projects. The members of the workgroup are first and foremost potential users of the models, and secondly experts who either have built energy models themselves and/or who are very familiar with the usage of such models.
- The process steps are as follows:
- STEP 1. A detailed description of the two models (TIMES-MARKAL & SEPIA-LEAP), an a priori listing of expectations potential model users might have concerning the results of such models, and preparing two or three preliminary scenarios describing the transition to a carbon neutral economy.
- FORUM 1. First meeting of potential model users, who are given the opportunity to ask questions about the models, to comment on their perceived expectations and to make critical remarks concerning the proposed scenarios.
- STEP 2. Adjusting the scenarios, based on the inputs of the forum members, and first run of the definite scenarios with the original versions of TIMES-MARKAL and SEPIA-LEAP, giving the first preliminary results.
- FORUM 2. Trying to establish to what extent the preliminary results of the models satisfy the expectations of the potential users?
- STEP 3. Adjusting the models – to the extent feasible – to better meet the expectations of the forum members, and second run of the scenarios with the adjusted models leading to the final results.
- FORUM 3. Discussion of model adjustments, and determining in what ways potential model users have to adjust their expectations about the possibilities of policy-supporting models?
- STEP 4. Final report
- CONGRES. Presentation of the project results to a wider audience.

SSD SCIENCE FOR A SUSTAINABLE DEVELOPMENT

ENERGY

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During the project one should always keep a close eye on the trade-off between model comparisons as such and energy policy analysis for which the different models simply serve as tools. In this respect it is imperative to point out that SEPIA-LEAP only forms part of a broader (i.e. non-modelling) methodology to assess long-term sustainable energy policy in the Belgian context, whereas MARKAL-TIMES is more of a closed modelling system.

INTERACTION BETWEEN THE DIFFERENT PARTNERS

The University of Antwerp (UA) and VITO coordinate the project in close cooperation regarding the general planning, the administrative aspects of the FORUM meetings, and the coordination between the researchers and the FORUM members. UA takes care of the internal coordination between the researchers.
Both UA and VITO are evenly in charge of building and adjusting the scenarios which will be presented to the FORUM members.
UA is responsible for all aspects related to running and adjusting the SEPIA-LEAP model, whereas VITO has similar responsibilities as regards the MARKAL-TUMATIM model. VITO is also responsible for constructing the list of criteria

EXPECTED RESULTS AND PRODUCTS

The results of the comparative study will be published in a summarizing report aimed at a broad audience. The final report will explain what the models have in common and how they differ from one another. It would also – to the extent possible – provide answers to the issues raised. Finally, the report identifies the limitations of the study and may make recommendations for further development or adjustments.
A public conference will conclude the project.
Separate "supporting documents" may give a detailed description of the models, the scenarios, and a framework for comparing the models. If necessary detailed technical papers may discuss more deeply some analytical issues that have surfaced during the study.

PARTNERS

Activities
The research Group "Energy & Climate" within the department MTT (environment, environmental technology and technology management) of the University of Antwerp is involved in both fundamental and applied research concerning energy-efficiency and sustainable housing, climate and energy policies, renewable energy, cogeneration and electricity economics.

The Unit "Transition Energy and Environment" of VITO groups 40 researchers who scientifically underpin the transition to a more sustainable society. The research is particularly used as a basis for policy recommendations to regional, national and international governments, such as the European Commission. The research is focused on four domains: 1) energy and emission scenarios, 2) energy and climate policy, 3) transport and mobility, and 4) integrated sustainability assessments.

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Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting http://www.belspo.be/fedra or http://www.belspo.be/ssd

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