

The Management of Large-scale Multi-region MARKAL/TIMES Models

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In a post-Kyoto era, regional and global cooperation will be key factors in achieving sustainable economic growth coupled with a substantive reduction in GHG emissions. To assess the potential benefits of cooperation, decision-makers need appropriate modeling frameworks that fully depict each player within a multi-regional context. Recently the ETSAP models (MARKAL and TIMES) and their support systems (ANSWER and VEDA) have rapidly evolved to meet this challenge, as evidenced by a number of major undertakings (e.g., IEA-ETP, EIA-SAGE, ASEAN/EPSP, EFDA, NEEDS, SEE-REMS, NESCAUM/NE) employing them.

This presentation will focus on facilities that make management of these large-scale multi-region models possible. Both systems will be available for hands-on trial by those interested.

Current Major MARKAL/TIMES Multi-region Modeling Initiatives

- International Energy Agency's *Energy Technology Perspectives* (ETP) [15-region global];
- Energy Information Administration's *System for Analysis of Global Energy* (SAGE) markets [15-region global];
- *European Fusion Development Agreement* (EFDA) [15-region global];
- Australian Agency for International Development sponsored *Energy Policy and Systems Analysis Project* (EPSP) [8-country ASEAN]
- US Environmental Protection Agency sponsored *New England MARKAL* [6 States, expanding to 12];
- European Union sponsored *New Energy Externalities Development for Sustainability* (NEEDS) [27-country]; and
- US Agency for International Development sponsored *Southeast Europe Regional Energy Market Study* (SEE-REMS) initiatives [8-country].

Keywords:

multi-region modeling, global modeling, data management, capability building, post-Kyoto evaluation