



## **Modeling Energy Technology Perspectives in China and the rest of the World**

**Fridtjof Unander - Dolf Gielen  
Energy Technology Policy Division  
International Energy Agency**

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## **Energy Technology Perspectives Project**

- **Analyses how technologies may impact long-term energy markets (→2050)**
- **Provides input to several IEA studies, including the World Energy Outlook**
- **Based on a 15-regional global energy technology model**
- **Develops energy technology policy scenarios to explore role for important technology areas such as hydrogen, CO2 capture, renewables, transport**

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## ETP

### Global Energy Technology Model

- Based on MARKAL
- Full coverage of energy system from fuel extraction to energy service demand
- Covers the period 2000-2050
- Includes 15 linked world regions, with trading among regions
- One global technology database, including state-of-the-art energy technology information
- Technology Learning aspects included

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## ETP

### Model and Software Development

- Collaboration with ETSAP ensures efficient software development
- Global model covering the entire energy system is operational within the IEA Secretariat
- MARKAL user-interface (ANSWER) modified to better handle large multi-regional models
- MARKAL software code modified to better represent demand side and emission accounting

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## ETP Energy Model Builder (EMB)

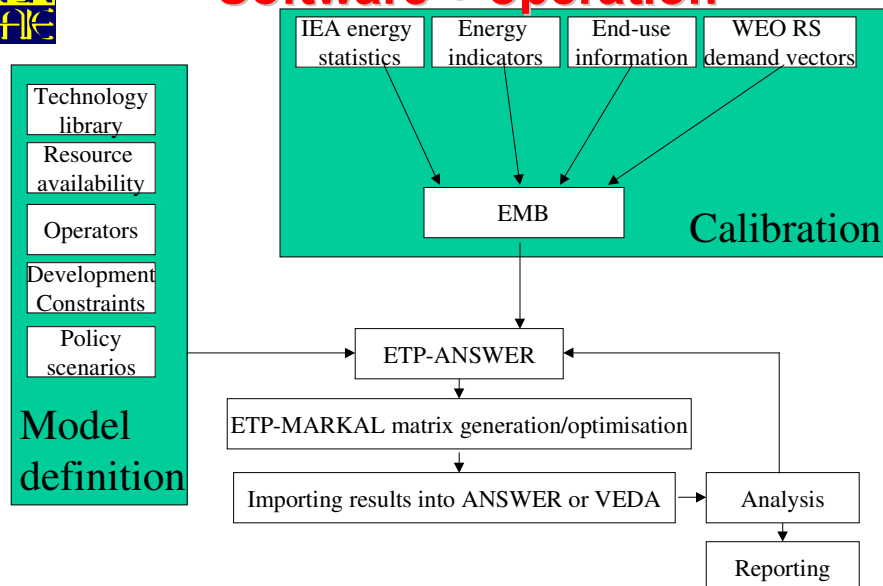
- Spreadsheet tool linking the ETP model to IEA Energy Balances and Energy Indicators databases
- The tool allows for:
  - ◆ Defining the demand side structure
  - ◆ Representation of base year technologies consistent with IEA statistics
  - ◆ Specifying the turnover of the base-year technology stock
  - ◆ Development of energy service demand projections
  - ◆ Analysis of demand-side policies outside the MARKAL cost-optimization approach

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## Software + operation



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## **ETP Project China-IEA Collaboration**

- Working with ERI to develop MARKAL model for China
- Visit to IEA by expert from ERI
- Seminar on Energy Modeling and Statistics in Beijing 20-21 October
- Complete one-region model for China by spring 2004
- Continued work to expand model to a multi-region China model
- Possible participation in ETSAP for long-term collaboration on model and software development

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## **ETP and the WEO 2004 *Global Alternative Scenario***

- WEO 2002 Alternative Scenario developed as “marriage” between top-down (WEM/IEA-EAD) and bottom-up (ETP/IEA-ETPD)
- WEO 2004 AS: ETP will assist in calculating impacts from various policies and measures considered for the AS
- Key policy drivers will be energy security, climate change, and energy access
- Changes in fuel mix and energy demand from the Reference Scenario will be estimated for all end-use sectors and electricity generation

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