

## Development of an Energy Modeling System with Techno-Economic Submodels for Switzerland

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- 11) **Short Summary:** The objective of the research project is to develop a new model system for simulating the Swiss energy system and energy economy. The new model system will improve the evaluation possibilities of sectoral energy efficiency policies.
- 12) **Keywords:** Energy Economics

### **13) Project description:**

The objective of the research project is to develop a new model system for simulating the Swiss energy system and energy economy on the basis of the models already existing at CEPE. The new simulation model system should also allow close co-operation with the MARKAL model group at the Paul Scherrer Institute (PSI) in Villigen/CH and the two groups LASEN and LENI at the Swiss Federal Institute of Technology Lausanne (EPFL). The new model system will improve the evaluation possibilities of sectoral energy efficiency policies.

Economic, technical and organisational potentials of energy efficiency are manifold in industry, the service and the residential sector, but their application is subject to existing obstacles, traditional decision-making, and market imperfections. In order to assess these influences and explore the effectiveness of suitable policy measures aiming to realize the economic energy efficiency potentials, several models will be further developed, besides others a multi-agent industrial energy simulation model which classifies companies according to their energy saving potentials into three distinct groups of agents: 'innovators', 'followers', and 'late applicants'. The agents' behaviour will be defined by rules that are going to be derived from survey results, and translated into a stochastic algorithm.

It is envisaged to integrate the results of the improved industrial energy simulation model into a general equilibrium model (SCREEN) by modifying its Input/Output matrix. The link between the two types of models, a transformation tableau, will be developed and calibrated for the year 2000, after which several scenarios will be designed for 2010 and 2020 including policy measures and general instruments (e.g. the CO<sub>2</sub> surcharge of the Swiss CO<sub>2</sub> Act). The framework to be developed will make it possible to simulate policy-induced technological change, which is an essential element in energy policy analysis that current generation energy-economy models cannot offer.

**14) Popular description:** no entry

**15) Graphics:** no entry

**16) Publications:** no entry

**17) Links to important web pages:**

- <http://www.cepe.ethz.ch>