"Social MARKAL"

Integrating Behavioral Changes in the Technological Optimization Framework

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MARKAL combined with survey techniques

Who are we - in 30 seconds?

- HEG Geneva School of Business Administration
- 900 students
  - 3 main divisions BBA
    - Information Technology
    - Documentary Management
    - Business Administration
- Postgraduate courses: EMBA, MAS, DAS, ...
- Website: www.hesge.ch/ heg
MARKAL Nyon

- Project started in March 2008
  - In collaboration with
    - SI Nyon (main utility)
    - Lavigne Denis
    - Prognière Emmanuel
    - Kanala Rumun

- 2 Bachelor theses related to:
  - Standard MARKAL model
  - Creation of the Reference Energy System

- City of Nyon
  - 17,000 inhabitants
  - 11,000 vehicles
  - 9,700 accommodations
  - No production, no PRC/CONV, only DMD, DM

Social MARKAL

We propose a new MARKAL formulation that embeds both technological and behavioral contributions to the environment.
What are your choices?

- For the same price and same costs ... would you buy ...

LEM – Social survey and expertise

- Recognized in Switzerland (more than 40 major surveys)

- For MARKAL:
  - Identify consumption behaviours and resistance to change
  - Create customer clusters
  - Qualitative variable measurement
Social Markal: Lighting Case

- Inefficient technology choices
- Consumer behaviour patterns

**Present Situation**
- Glowing Bulb: 60%
- Low consumption: 40%

**Efficient Situation**
- Glowing Bulb: 15%
- Low consumption: 85%

Consumption behaviour improvement

**Modeling proposal**

Tech 1 – Low consumption
- Inv. + camp.
- kWh: 40%
- kWh due to the campaign: 20%

Tech 1.2 – Low
- Inv. + camp.
- kWh: 40%

Tech 1.3 – Low Bulb
- Inv. + camp.
- kWh: 40%
Questions