First modeling insights on Social TIMES Romania country model

Roman Kanala[1,2],
Emmanuel Fragnière[2], Francesco Moresino[2],
Ion Smeureanu[3], Denis Lavigne[4],
Nathalie Turin[2,5], Jean-Philippe Waaub[5]

[1] Université de Genève, Institut des sciences de l'environnement
[2] Haute Ecole de Gestion de Genève
[3] Academia de Studii Economice din Bucureşti
[4] Collège militaire royal de Saint-Jean, Québec
[5] Université du Québec à Montréal

Model design

- Social MARKAL first explored on a small city model for the case of residential lighting with one single final energy input (ELE)
- Extending :

  Concept to household appliances, passenger cars, residential heating

  Scope from city to country model

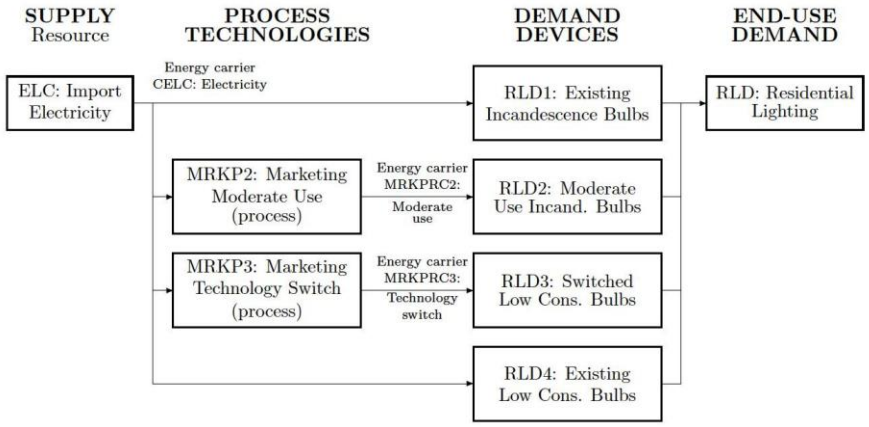
  Tool from MARKAL to TIMES

Common features and differences

	lighting bulbs	household appliances*)	passenger cars	residential buildings
cost	small	low	moderate	high/very high
life	short	moderate	moderate	long
irrationality	moderate (~ 30%)	low	high	low
consumption impact	small	low	high	high
operating mode role	high	low	high	moderate/high

*) turned on all the time (refrigerators) or frequently used to heat water (wash machines, dishwashers)

Social MARKAL – Nyon city model residential lighting

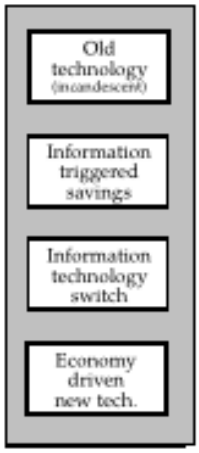


The case of lighting:
conceptual schema

• discrete technologies with similar properties
(incandescent vs. low-cons. bulb)

• commodity character of the goods
(equivalent properties within a group)

• coherent acquisition and use
(once purchased, it will be fully used)

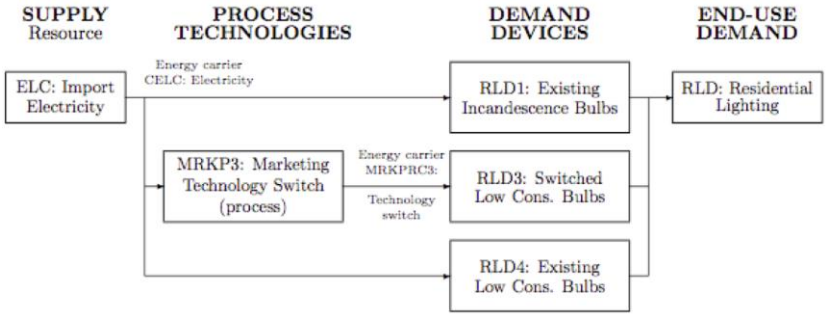


Household appliances

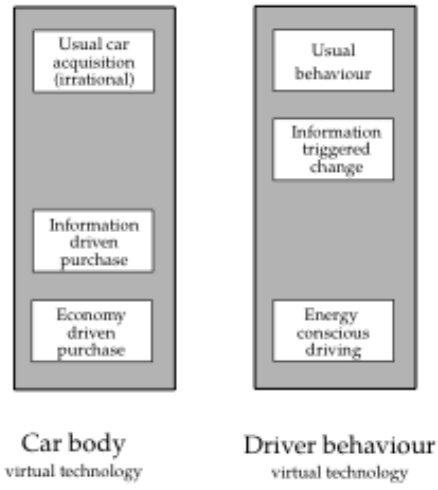
- coherent acquisition and use
- cost characteristics, purpose, operating modes similar to lighting
- lighting framework can be applied directly

Passenger cars

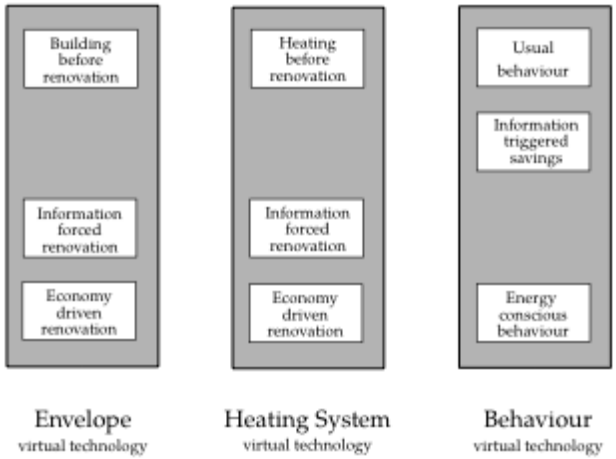
- acquisition and use in different modes
- analogy with lighting technology switch schema, separable technology switch and behavioural change



Passenger cars



Residential heating



Social TIMES Romania

- three sectors: residential, transports, others
- only demand side modeled in detail
- supply side: virtual imports
- start 2010, 6 time slices, 7 periods until 2026

First insights on Socio-MARKAL approach applied on TIMES-Romania country model

Roman Kanala, Emmanuel Fragnière, Francesco Moresino, Marian Dardala

Proceedings of the 12th International Conference on Informatics in Economy

Bucharest 25-28 April 2013

Research project

- Swiss Enlargement Contribution in the framework of the Romanian-Swiss Research Program
- Swiss National Fund of Scientific Research Grant IZERZ0_142217

- Research team:
  - Geneva: Emmanuel Fragnière, Francesco Moresino, Roman Kanala
  - Bucharest: Ion Smeureanu, Marian Dardala, Andrea Reveiu, Emilia Titan, Felix Furtuna