

# **Modeling the Transition to Low Energy and Low Carbon Energy Systems for the EU-27**

**WIFO**

**Austrian Institute of Economic Research**

**Stefan P. Schleicher**

**Claudia Kettner**

**Angela Köppl**

**Gregor Thenius**



# The conceptual approach

## The Pacala-Socolow stabilization wedges

S. Pacala and R. Socolow

### **Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies**

Science, Vol. 305, August 13, 2004.

“Humanity already possesses the fundamental scientific, technical, and industrial know-how to solve the carbon and climate problem for the next half-century.”

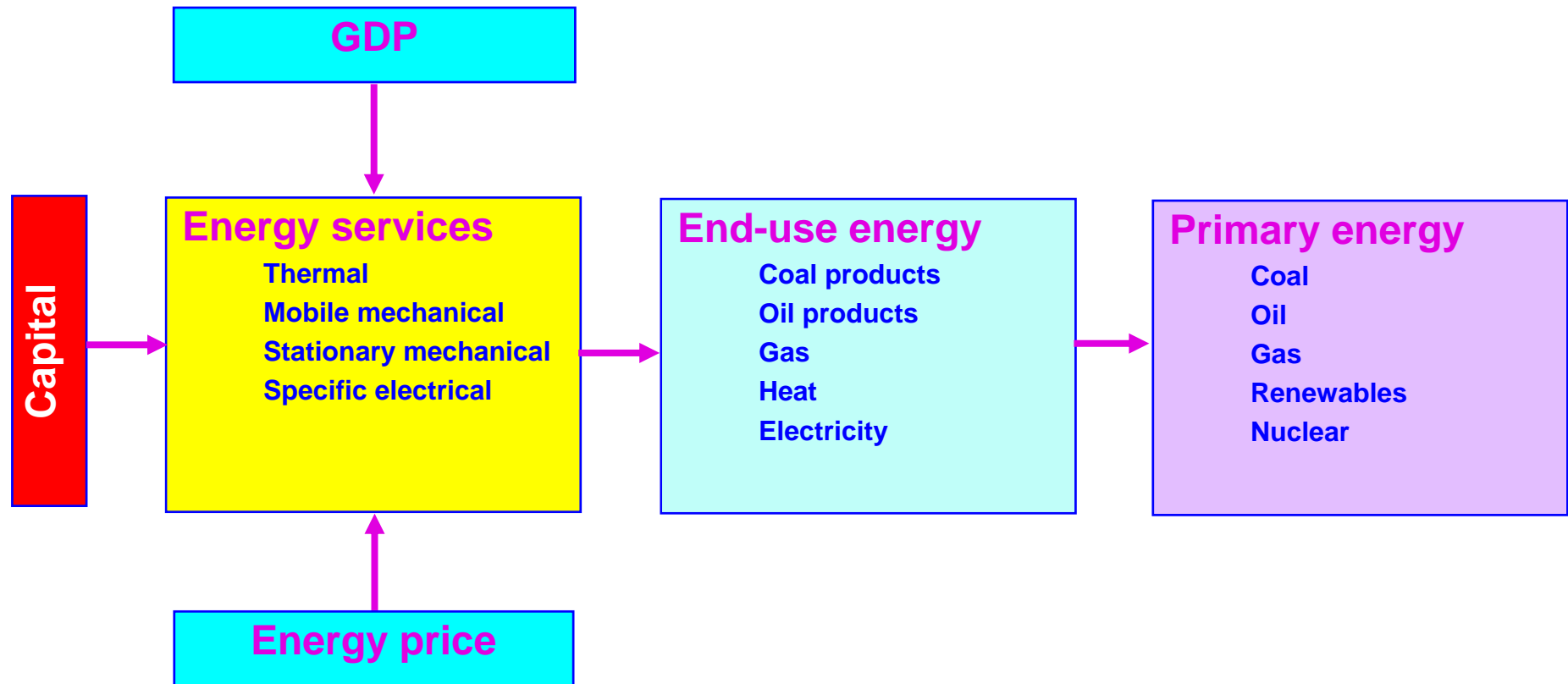


# The implementation GAIN modeling framework

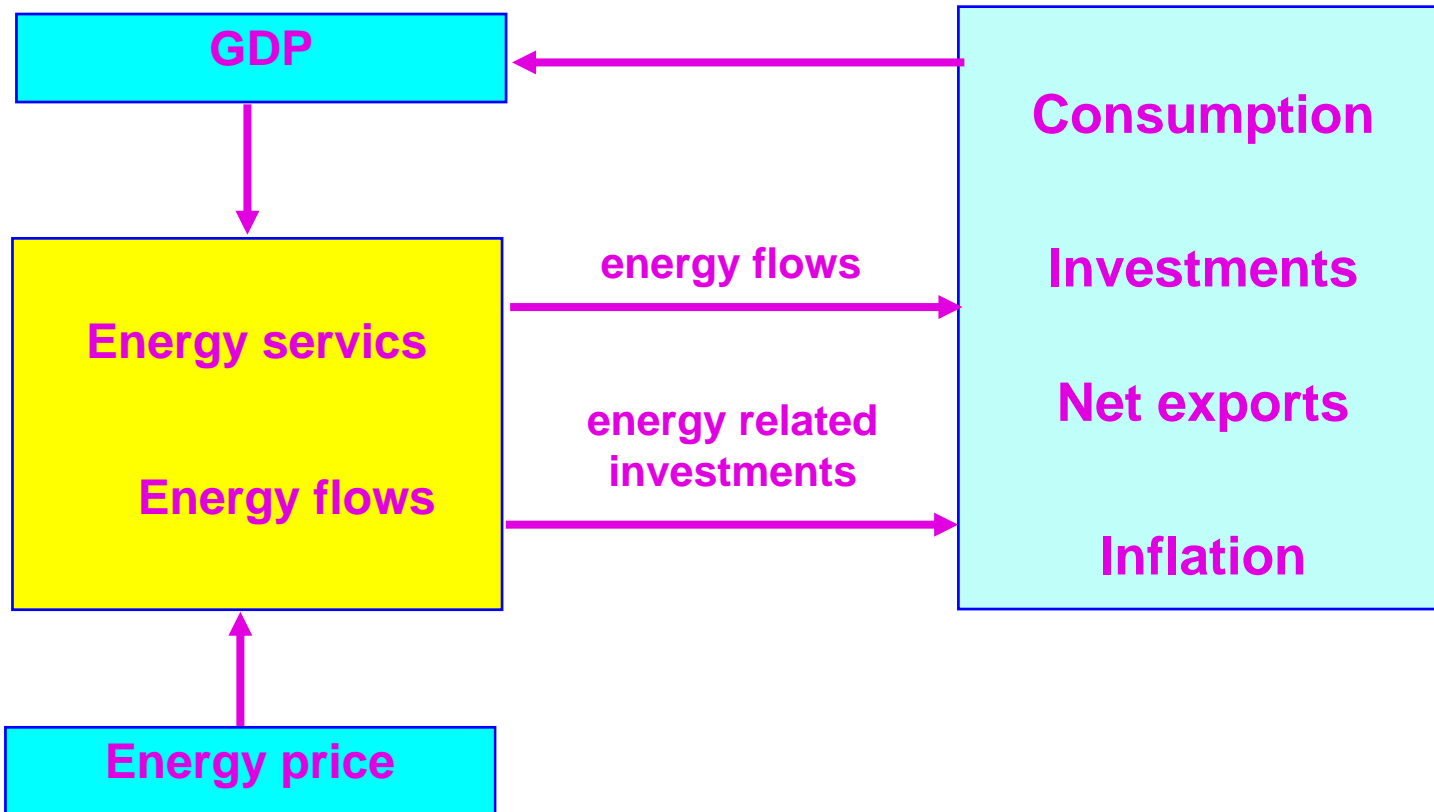
- **Impacts of technical change**
  - on investment
  - on operating
- **Extended view of energy system**
  - energy services
  - end-use energy
  - primary energy
- **Integration into macro-economic framework**



# Model structure – energy system



# Model structure – macroeconomic feedbacks



# Simulating technology wedges

## Service wedge Energy services

## Application wedge Application technologies

## Transformation wedge Primary energy composition Transformation technologies



# EU-27 2020 Scenarios

