

## GICC (French ministry of ecology and sustainable development)

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## Framework

- Type of project: partially sponsored research
- Sponsor (partial)
  - French Ministry of Ecology and Sustainable devt
- Parties:
  - KANLO (France)
  - ORDECSYS (Switzerland)
  - CEA (French Atomic Energy Commission)
- Timeline:
  - Start: December 2006
  - Duration: 24 months

## Objective

- Examine strategic interactions induced by Climate Change, assuming a fragmented world
- Scenario 1: three blocks
  - Block 1: Cooperative countries (common reduction target)
  - Block 2: ROW (engaged in technological cooperation, but no reduction targets)
  - Block 3: OPEC (maximize oil revenues)
- Scenario 2: Global cooperation

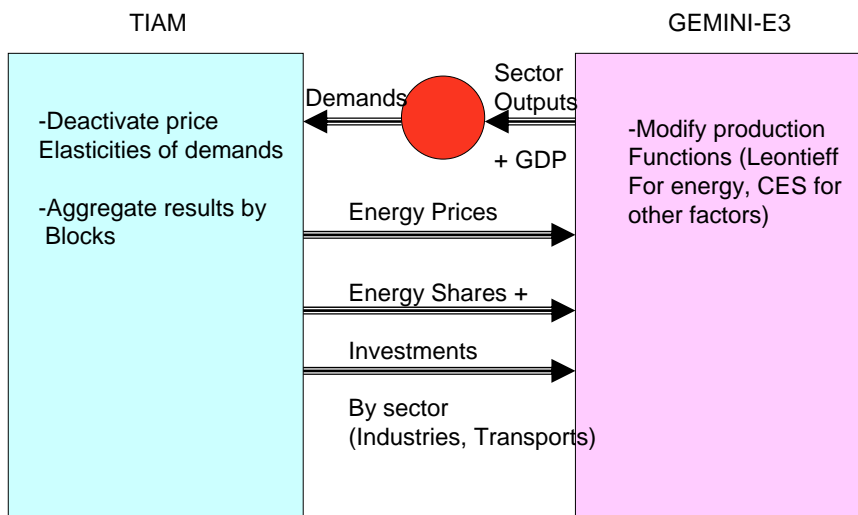
## Other Objectives

- Analyse (un)stability of coalitions under different emission quota systems
- Examine impacts of Climate strategies on development of DC's in both scenarios
- Analyse the impact of OPEC's oil price fixing on emission reduction strategies
- Impacts on energy trade and security

## Methodology

- Game Theory framework
  - Cooperative
  - Non Cooperative (leader-follower, Nash...)
- Coupling of two models
  - TIAM 15-region model
  - GEMINI-E3 CGE model

## LINKING TIAM with GEMINI-E3



## Simulating OPEC's price fixing

### Iterative scheme

1. Choose trajectory of oil production by OPEC
2. Run TIMES, find oil productions by other regions, and oil consumption by World
  - Observe resulting oil prices (endogenous)
  - Calculate OPEC's surplus (objective function + trade)
3. Modify trajectory of oil production and go to step 2 until OPEC's surplus is maximized

Conjecture: OPEC's role important in short term  
but not in long term