Institute for
Sustainable Development and International Relations

What is IDDRI?

Institute for Sustainable Development and International Relations
Paris, France

- IDDRI's origins are based on 3 beliefs:
  - Global changes resulting from human activities are unsustainable over the long-term
  - Complete transformation of development models is needed
  - The above can only be possible for coherent policies are implemented immediately at the global level, bringing about changes in lifestyle.

- IDDRI thus aims to bridge the gap between research and decision-making concerning:
  - Global Governance
  - Trade and environment
  - Climate Change
  - Natural resources / Biodiversity

  …… and analyse these areas from a global perspective

- Strategy:
  - Inform decisions
  - Identify emerging issues
  - Coordinate dialogue among stakeholders whose interests sometimes appear to be at odds: researchers, scientists, companies and political decision-makers

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What is IDDRI

- **A private, non profit Foundation, joint venture between public and private sectors (commercial and NGOs) and national research institutions (CNRS, CIRAD, INRA, Ecole Polytechnique) acting as core funders**

- **Iddri act as**
  - **A think tank networking at international level (Chattham House, E3G, SEI, WRI, RFF, CEPS, China Council for International Cooperation on Environment and Development (CCICED) etc.) involved in European and international Policy developments**
  - **A research Institution, developing collaborative research programmes with other research team (mainly french and european level –LSE, CS-Cambridge, Grantham Institute, Louvain, SWP Berlin …)**
  - **Since 2008, IDDRI is at Science Po Paris and support the development of teaching activities in the area of sustainable development (Master of International affairs, + co development with LSE and Columbia University)**

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Modelling low-carbon futures

- **A carbon policy modelling exercise aiming at :**
  - Analysing the economics of the transition to low carbon economies
  - Describing possible interactions between carbon policy - energy ressources - technology development - structural choices in transportation and urban spatial design – and implications for industrial production ….
  - At the global and regional levels
- **A joint venture, 4 year exercise**
  - A research team gathering different modeling capacities (CIRED/LEPII/ENERDATA)
  - A steering commitee associating the researchers and private stakeholders (Industry, Public Utilities, Banking Institutions)
- **Outcomes:**
  - LCS Scenarios
  - New developments of the modelling tool
  - A methodology to represent the evolution of raw material demand
  - A group of people in the research team, the industry and governm common langage and further projects

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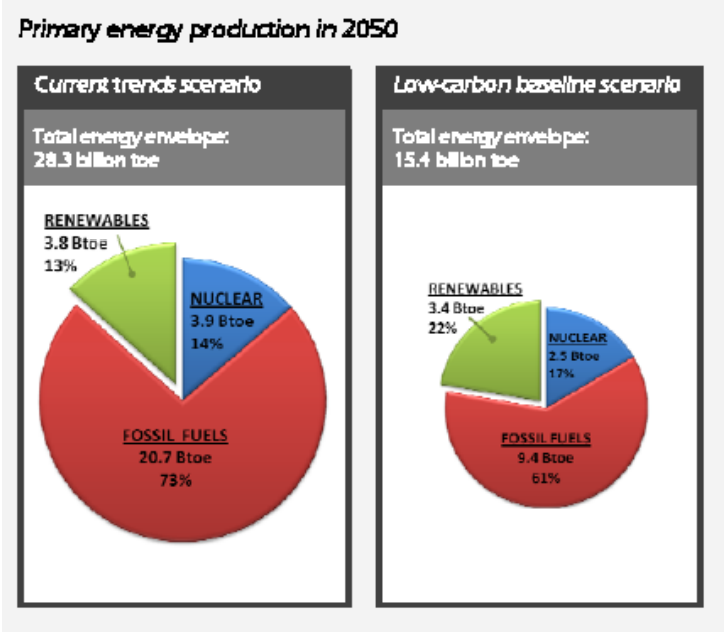
Modelling low-carbon futures

Decrease in the energy envelope in the low-carbon baseline scenario as compared with the current trends scenario

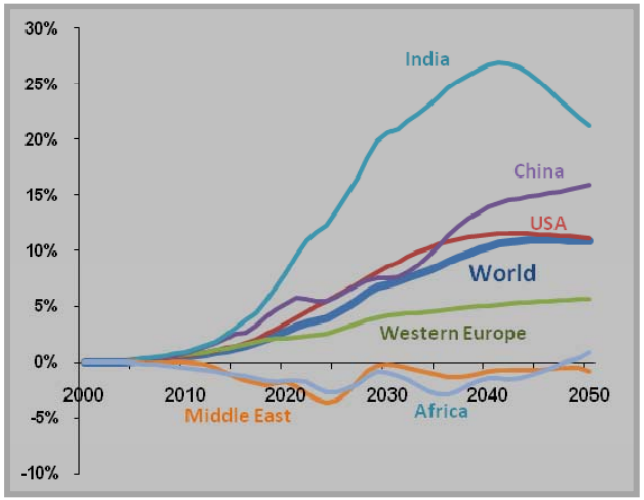
….allowing the Btoe of renewables to actually decrease in the low-carbon scenario



Economic gains from simulataneous decarbonisation efforts in developing and developed countries

(as opposed to a scenario where developing countries delay efforts)

% increase in GDP



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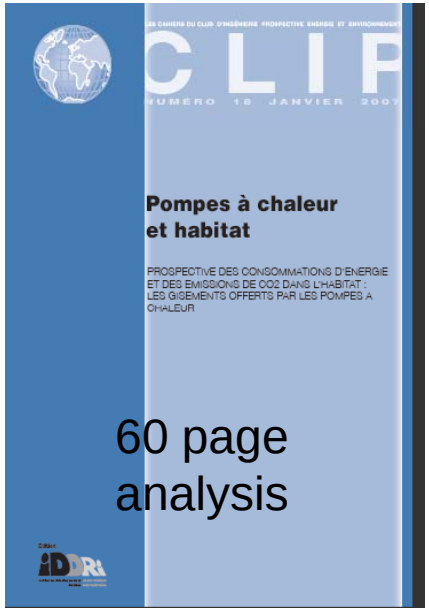

CLIP

Club for Engineering Perspectives on Energy and the Environment

A loose association of government institutions, research partners, technology centres, and industrial companies ….

- Furnish decision makers with specific images of how new technologies could be applied…
- … notably on their insertion in different social and geographical contexts, and their associated consequences on the environment

Technology / Infrastructure / Policies

New business models (who will deliver)

Co benefits / interference with other social issues and agenda (distributive impact, urban cohesion, congestion, local pollution, social housing, etc.)

- Heat pumps & energy consumption
- Hybrid, Electric or H2 vehicles
- Forestry and C sequestration
- Biofuels and water ressources
- Implementation of “grenelle” target
- Small Scale Cogeneration
- Biomass and electricity
- CCS

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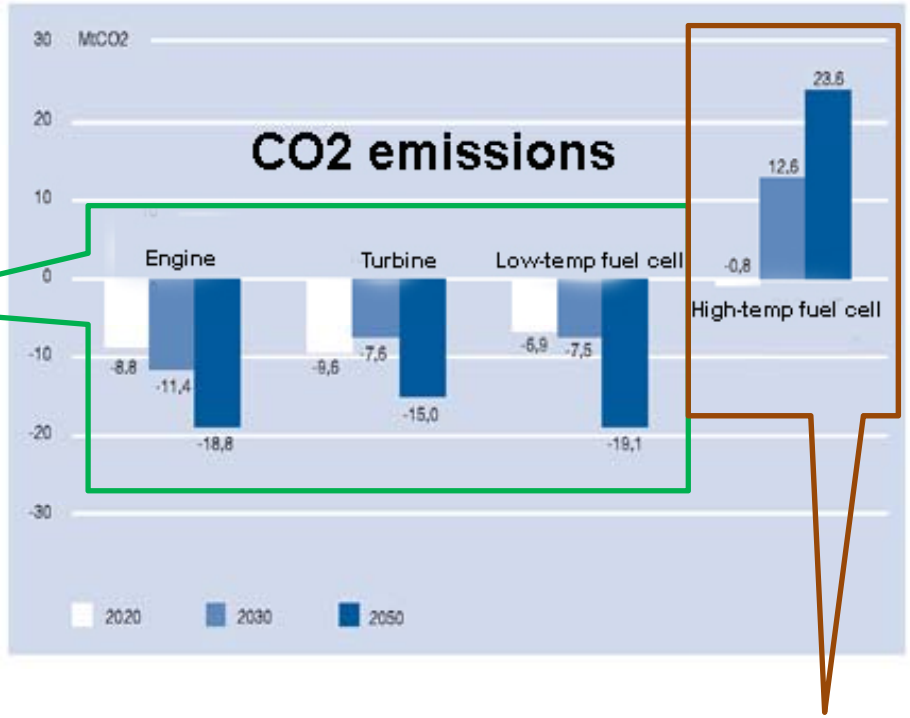
CLIP 15:
Cogeneration and CO2 emissions

4 scenarios for evaluating emissions from the widespread deployment of the following cogeneration technologies:

- Engine
- Turbine
- Low-temperature fuel cells
- High-temperature fuel cells



Significant CO2 emissions reduction with widespread deployment of engine, turbine, and low-temperature fuel cell cogeneration technologies, thanks to:

- *Disappearance of coal as an electricity source*
- *Higher efficiency of low-power cogeneration systems*

with respect to:

- *Separate conventional gas turbines*
- *Domestic gas and oil heaters*

CO2 emissions increase (from 2020 onwards) with massive deployment of high-temperature fuel cell cogeneration technology:

- *CO2 reduction from energy savings < CO2 emissions rise due to replacement of nuclear power with high-temperature fuel cells*

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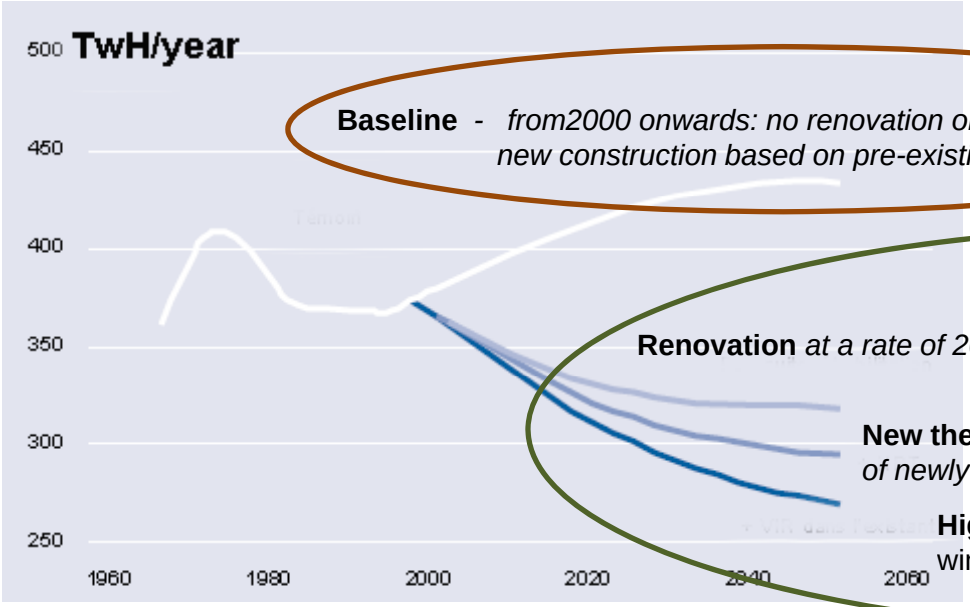
Housing and energy use:
CLIP 13 & other simulations

Potential impact of renovation & new construction on the energy performance of the French housing fleet



A laissez-faire approach ➔ Increase in energy use

Baseline - *from2000 onwards: no renovation on the existing fleet; new construction based on pre-existing standards*

Renovation *at a rate of 200 kWh/m2/year*

New thermal renovation – *stricter regulations on thermal performance of newly constructed buildings*

Highly insulated glass – gradual introduction of high-insulation windows in the pre-2000 fleet

Proactive policies ➔ Decrease in energy use

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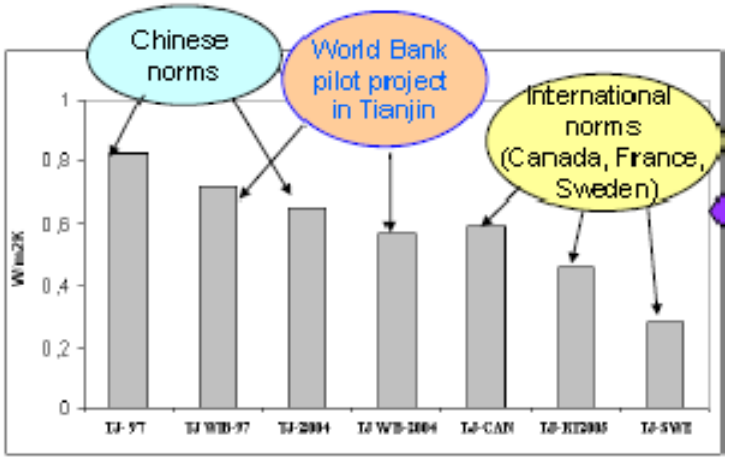
Housing and energy use: CLIP 13 & other simulations

The Chinese Housing Fleet

Potential for improving energy efficiency (W/m^2K)



Minimising carbon cost by choosing the right energy system / building energy standard mix

Average abatement cost of different scenarios ($US\$/tCO_2$)

Building standard \ Supply	CCS	Switch from coal to gas system
RT2005 (French)	32	39
A2 (Improved Chinese)	43	67
SWE (Swedish)	**7**	**8**
LC (« Low-Carbon »)	**11**	**14**

Reference: TJ 2004 +coal; discount rate: 8%

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Other remarks

- ***Other areas of possible interest to LCS-RNet:***
  - Comparative analysis of climate / energy policy instruments
  - Tools for international cooperation (C markets, sectoral approaches, finance and technology deploiement)
  - The development of new research and TT areas : adaptation (since 2006), urban fabric, agriculture and forestry

- ***IDDRI's expectations:***
  - A platform for efficiently sharing methodologies, tools, and results on LCS "visions", beyond IDDRI's current network
  - Sharing experience on how to better interface with the society in the design, the implementation and the interpretation of research activities

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