From Science to Local Policies:

the Climate Action Plan of the Grenoble Metropolitan Area (La Métro)

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The relevance of the local level in climate policies

- The local level of organization and policy is indeed important for three main reasons:
  1. Density and spatial organization are key factors explaining energy consumption in transport (Newman and Kenworthy) and buildings
  2. Some of the major potentials for emission abatement need local coordination to overcome transaction costs (e.g. thermal retrofitting)
  3. Pervasive climate policies have to imply other actors than states, enterprises and individuals: the intermediate institutions have a particular role to play (civil society)
Three levels in cities commitment

i. Adopting « Mesurable, Reportable and Verifiable » commitments (=> measurement system)

ii. Introducing cost-effectiveness in the design of the Local Climate Plans (LCPs)

iii. Addressing the finance problem through taxes (national or local ?) or participation in an ETS
The accounting tool issue

- Accounting systems based on generic indicators (cf. the Bilan Carbone in France) are adequate for strategic analyses and decisions, but not for MRV approaches

- La Métro (metropolitan area of Grenoble) has developed an « Observatory of the LCP » based on two combined methods:
  - A « cadastral approach » with a localized inventory of activities
  - An energy balance approach at the metropolitan area level
The perimeter issue

◆ Should the emission take into account the emissions:
  - *Of* the community institutions
  - *On* the territory *of* the community
  - *For* the activities *on* the territory *of* the community?

◆ Should the perimeter include emissions of intensive industries and in particular ETS-capped industries?

◆ Answers to these questions should consider the social dimension (cf. Caterpillar in Grenoble) … and the consistency with the national level.
Trends in energy consumption and emissions as from the Grenoble-La Métro LCP Observatory
The global targets

- The global objectives are defined in terms of emission reductions and contribution of local renewable to total consumption.

<table>
<thead>
<tr>
<th>Émissions de CO2</th>
<th>2005</th>
<th>2007</th>
<th>2014</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Année de référence</td>
<td>-6,40%</td>
<td>-14% minimum</td>
<td>-20% minimum</td>
<td></td>
</tr>
<tr>
<td>Consommation d'énergie</td>
<td>Année de référence</td>
<td>-5,30%</td>
<td>X%</td>
<td>X%</td>
</tr>
<tr>
<td>Part des énergies renouvelables (production ENR totale / consommation totale)</td>
<td>Données inconnues</td>
<td>7,90%</td>
<td>14%</td>
<td>17%</td>
</tr>
<tr>
<td>&gt; part de l'électricité renouvelable</td>
<td>20,80%</td>
<td>X</td>
<td>24%</td>
<td></td>
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<tr>
<td>&gt; part de la chaleur renouvelable</td>
<td>6,40%</td>
<td>X</td>
<td>28%</td>
<td></td>
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</tbody>
</table>
The role of « intermediate institutions »

◆ The LCP of La Métro promotes climate action on the territory of the Grenoble metropolitan area. It is organized at two level:
  - Global targets for emission abatement in a Factor 4 perspective
  - A convent with commitments for the partners

◆ Aside the Observatory, a Scientific Council has been introduced to guarantee the quality of methods and analyses through exchanges with the local scientific community
The Systems dimension:
Positive Energy Buildings, Smartgrids and Low Carbon Cities

Building-Transport integration

European Technology Platform Smartgrids

Greening the cities
Introducing cost-effectiveness

- Few LCPs today consider the economic dimension of the problem
- …while the requirement for cost-effectiveness should probably be proportional to the environmental ambition
- The challenge for the design of cost-effective LCPs is probably to develop the capability of combining the system and the incremental approaches
- As for the analysis of international negotiations, the development of MAC curves is one of the simplest and most powerful solution
MAC curves a powerful tool to assess the costs of climate policies.

\[ \text{Marginal Cost} \]

\[ \text{Total Cost} \]

\[ \text{Average Cost} \]

\[ \text{Emission Reduction} \]

\[ \text{Sector X} \]

\[ \text{€/tCO2} \]
MACCs: 1/ connect reductions and costs

- Local Energies
- Transports
- Buildings
- E + T + B

\(\text{€/tCO}_2\)

- MCE
- MCT
- MCE + T + B
- MCB

- QE
- QT
- QB
- QE + QT + QB

- (tCO\(_2\))
2/define cost-effective abatement programs

€/tCO2

MCE+T+B

Local Energies

Transports

Buildings

E + T + B

Q'E

Q'T

Q'B

QE + QT + QB

(tCO2)
3/ identify opportunities for entering an ETS

€/tCO2

Local Energies

Transports

Buildings

E + T + B

Price of Quota

MCE+T+B

Q”E

Q”T

Q’B

Q”tot

(tCO2)
A research agenda

A collaborative research project currently developed at LEPII aims at developing an original appropriate methodology with:

- The combination of a systemic approach to long term Grenoble city development (urban planning, land use and transport) with more incremental measures (such as deep thermal retrofitting of buildings)

- The full development of MAC curves for this latter category of measures in building, transport and local energy systems