Long-term strategies for GHG neutrality by 2050: What vision for the EU? (& comparison with French LTS)

Oliver Sartor

oliver.sartor@iddri.org

Climate Recon Event

(Rome - 15 June 2019)
The EC’s Long-term vision for GHG neutrality for EU

Note - Graphics from:
- EU: European Commission Long-term strategic vision (analytical support document)
- FR: Strategie Nationale Bas-carbone (Draft) (DGEC, MTES, France)
Long-term vision for climate neutrality by 2050 for EU28

Several pathways to get there, but all require very deep reductions across sectors & role for sinks
A need for deep decarbonisation across all key sectors

*Emissions brutes incluant les émissions de GES capturés par CCS
French LTS (Stratégie Nationale Bas Carbone)

- EC LTS and FR SNBC very similar many ways

- Main differences concern agriculture, biomass, role of CC(U)S & % nuclear.
From LTS to NECP...(E.g. of France)

<table>
<thead>
<tr>
<th>Evolution des émissions de GES (par rapport à 2015)</th>
<th>Résumé des orientation sectorielles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>2050</td>
</tr>
<tr>
<td>Transports</td>
<td>-31 %</td>
</tr>
<tr>
<td>Bâtiments</td>
<td>-53 %</td>
</tr>
<tr>
<td>Agriculture</td>
<td>-20 %</td>
</tr>
<tr>
<td>Forêts et bois</td>
<td></td>
</tr>
<tr>
<td>Industrie</td>
<td>-35 %</td>
</tr>
<tr>
<td>Production d’énergie</td>
<td>-36 %</td>
</tr>
<tr>
<td>Déchets</td>
<td>-38 %</td>
</tr>
</tbody>
</table>
Significant reduction in final energy consumption

• Final energy consumption to be reduced by as much as half in 2050 compared to 2005

• Buildings key, most of the housing stock of 2050 exists already today

• Requires adequate financial instruments, skilled workforce, for significantly higher renovation rates
Strong expansion of renewable electricity capacity

- Strong growth in RES generation capacity needed
- Coal, fuel and most gas disappear from power mix by 2050
- Existing nuclear capacity remains
- Mix to depend by country of course.
Strong role for electrification in all scenarios

• Way to increase energy efficiency
• Decarbonised power sources
• Remplacement of other fuels by RES (E-Gas, Biogas, e-fuels, hydrogen)
Very deep decarbonation of energy use in transport

- Electrification of passenger vehicles (end of sales of ICE in ~2040)
- Almost 100% decarbonisation of freight energy
- Some modal shift for freight
- Significant reductions in aviation and maritime emissions
- Actions on demand side for energy efficiency and to manage activity levels
Industrial decarbonisation

• Reductions in energy use:
  • energy efficiency and
  • circular economy and eco-design

• Fuel switching: decarbonise energy (green gas, electricity, biomass)

• Zero or low-emissions process technologies

• CCS deployed to capture remaining emissions

• Industrial transformation to support the transition (e.g. development of markets and local production for strategic items: batteries, EVs, etc...)

![Figure 69: Differences in final energy consumption in industry compared to Baseline in 2050](image-url)
Agriculture: Mobilisation of technical improvements and evolution of diets

• **LTS EU:**
  - Improve CO2 efficiency (optimisation, fertiliser practices) & reduction of meat in diets
  - Significant expansion of bio-economy (mainly for energy not materials): 2nd Gen. biofuels
  - Afforestation to expand carbon sinks

• **LTS FR:**
  - Emphasis on « transition agro-écologique »
  - Greater role for soil storage of CO2
  - Link change in diet habits and evolution of quality of products
  - Additional biomass directed mainly to material substitution not afforestation or energy

**NB. What vision of agriculture sector in 2050 beyond decarbonisation?**
Importance of CO2 sinks

LTS EU : 2050 GHG Emissions

- UTCATF
- CCS Energy
- CCS Industry
- Agriculture
- Déchets
- Energie
- Industrie
- Transport
- Bâtiments

LTS FR : 2050 emissions vs sinks

Bigger role for wood products as a source of sinks and less CCS
Economic benefits, employment, competitiveness

• Need for additional investment of around +200 Mds€/yr at EU level
• Positive impact on employment in 2050: +0,5 à +2 M (e.g. building renovation)
• Some strongly affected and geographically isolated regions requiring « just transition » (fossil fuel extraction)
• Limited but uncertain impacts on GDP in 2050: -1,3% or +2,19% depending on modelling assumptions.
• Significant improvement in trade balance (up to 70% reduction in fossil fuel imports)
• Competitiveness of heavy industries needs to managed during transition, but also source of opportunities for high value, modern products.
• Numerous health and quality of life benefits possible (e.g. diesel)
Some unresolved issues..

• True potential of CC(U)S, BECCS, DACCS?
• True potential (and physical and social limitations) of alternative energy carriers?
• What coordination needs across MS borders (esp. infrastructure)?
• Coherence of decarbonised AFOLU vs. agri-ecology?
• International dimension: what tech or economic drivers from abroad? What potential for cooperation?
• What does EC LTS mean for 2030 policies? (national and EU)
French LTS (Stratégie Nationale Bas Carbone)

- EC LTS and FR SNBC very similar many ways

- Main differences concern agriculture, biomass, role of CC(U)S & % nuclear.
From LTS to NECP...(E.g. of France)

<table>
<thead>
<tr>
<th>Evolution des émissions de GES (par rapport à 2015)</th>
<th>Résumé des orientation sectorielles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>2050</td>
</tr>
<tr>
<td>Transports</td>
<td>-31 %</td>
</tr>
<tr>
<td>Bâtiments</td>
<td>-53 %</td>
</tr>
<tr>
<td>Agriculture</td>
<td>-20 %</td>
</tr>
<tr>
<td>Forêts et bois</td>
<td></td>
</tr>
<tr>
<td>Industrie</td>
<td>-35 %</td>
</tr>
<tr>
<td>Production d’énergie</td>
<td>-36 %</td>
</tr>
<tr>
<td>Déchets</td>
<td>-38 %</td>
</tr>
</tbody>
</table>
Comparison with French SNBC