

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

Insights in current state of 2050 modelling

The case of France

Technical Dialogue 3
Copenhagen, 27 February 2019

Supported by:



based on a decision of the German Bundestag



STIFTUNG
MERCATOR

Project partners:



IDDRI



ENERGIACLUB
CLIMATE POLICY INSTITUTE
APPLIED COMMUNICATIONS



This project is part of the European Climate Initiative (EUKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

1. Evolution of scenarios

- Ongoing effort by various institutional and non institutional organisations to develop ambitious scenarios, using different approaches for modelling
- Progressive shift from “factor 4” (on CO₂ or GHG emissions) to “net zero”





Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

2. The French low-carbon strategy

- A first strategy adopted in 2015 in application of the law for Energy Transition and Green Growth of 2015
- Roadmap for the French mitigation policy, in coherence with the European targets
- Sets long term objectives and carbon budgets for periods of 5 years, up to 2028, based on a scenario
- Defines policy orientations to achieve the goals
- Revised every 5 years

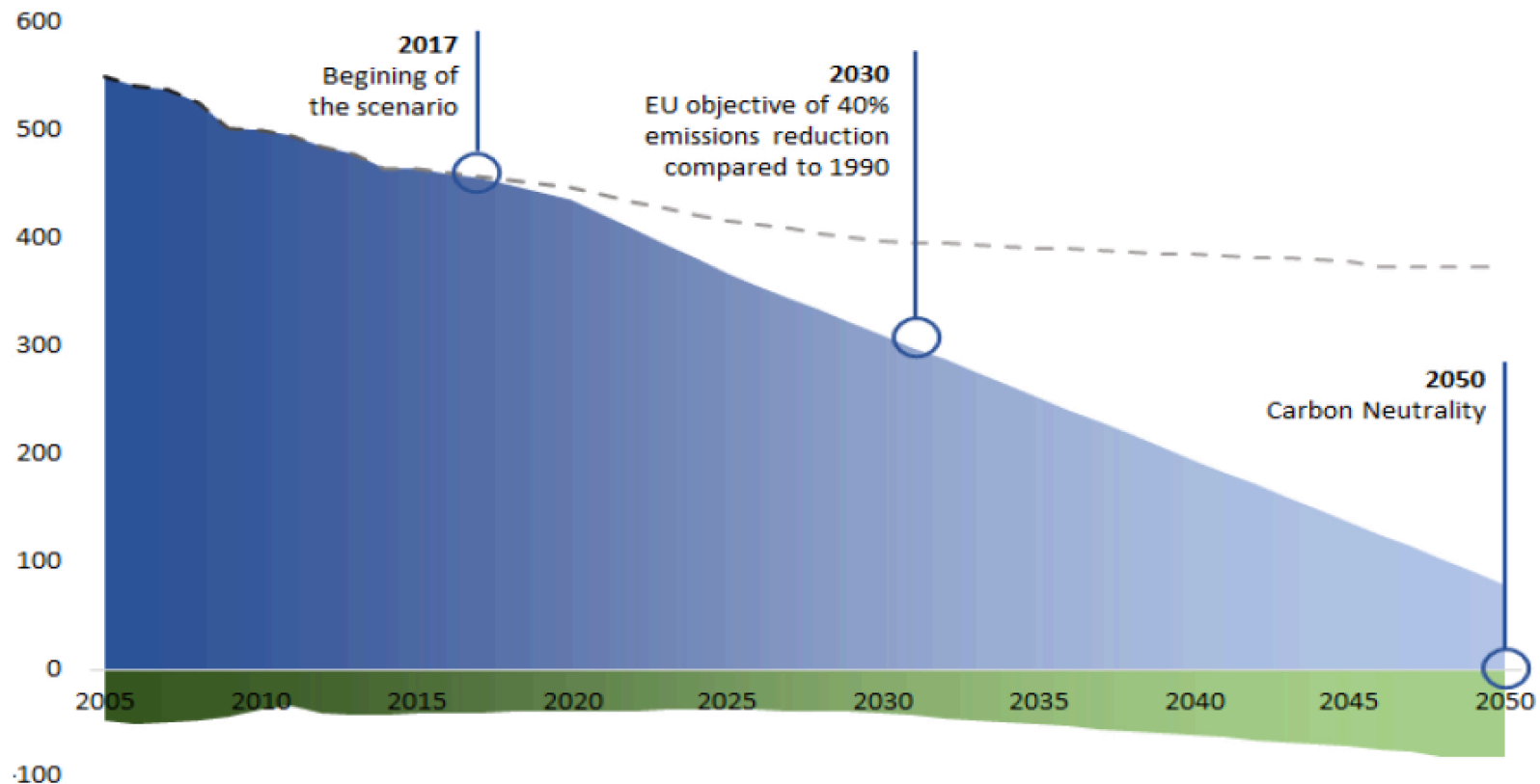
Source: Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

3. Carbon neutrality

National greenhouse gases emissions between 2005 and 2050



Source: Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

4. Global action towards carbon neutrality

A balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases

A strong decrease in energy consumption

- Energy temperance
- Energy efficiency

A complete decarbonization of energy production by 2050

- Biomass
- Renewable heat from the environment
- Decarbonized electricity production

A limitation of non-energy related emissions

- Agriculture
- Industrial Processes

An increase of the carbon sink

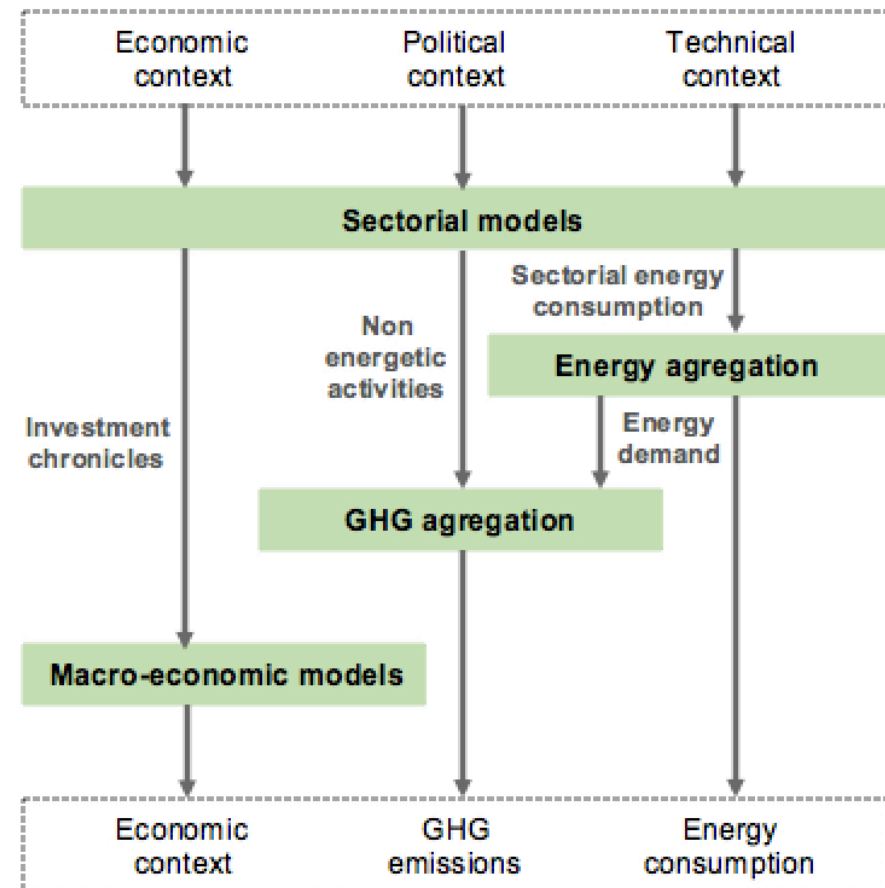
- Forest management
- Wood products
- Land
- CCS

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

5. Modelling efforts

- **AMS scenario** (“with additional measures”)
- **Macro-economic input**
(demography, economic growth, prices of energy...)
- **Use of technico-economic sectorial models**
 - **MENFIS** (residential) by ADEME,
 - **Clim’agri** (agriculture) by ADEME / Min. of Agriculture,
 - **Modev** (transports) by CGDD,
 - tertiary sector by CGDD,
 - etc.
- **Agregation by Enerdata**
(energy consumption, GHG emissions, air pollutants)
- **Macro-economic and socio-economic**
by ADEME and CGDD
to assess economic impacts
- **Use of a carbon price**
(225€/tCO₂ in 2030 - 600€/tCO₂ in 2050)



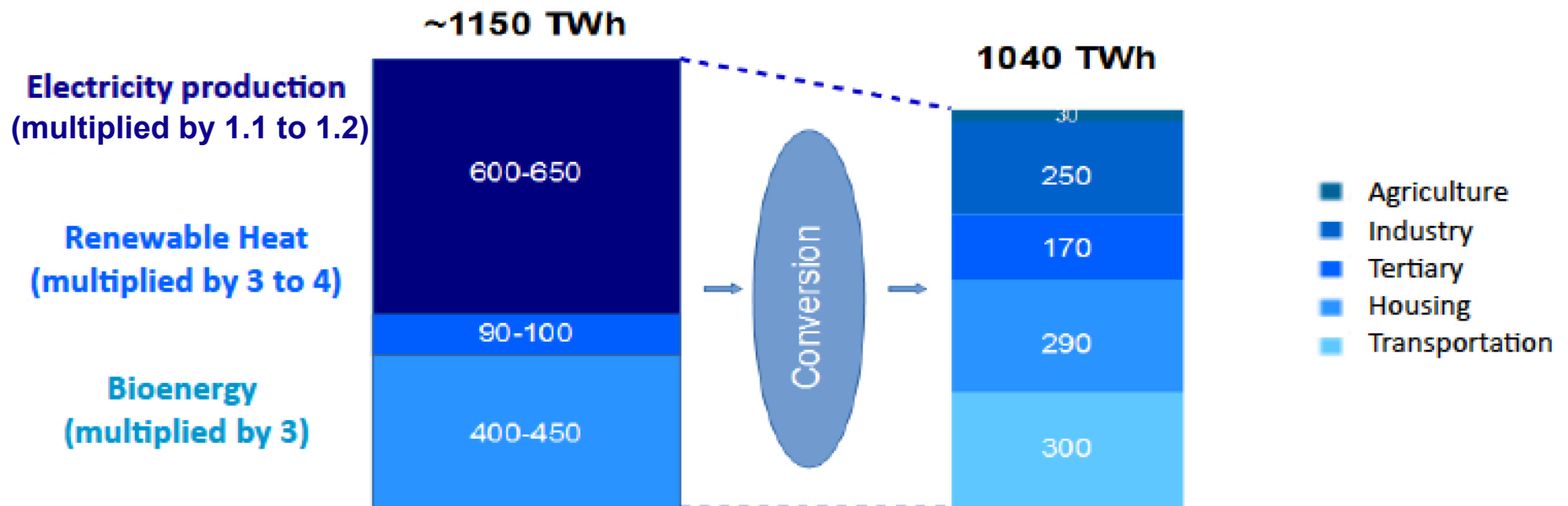
Source: based on Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

6. Energy balance

- Reduction of energy consumption (divided by two in 2050 compared with 2017)
- Prioritized use of biomass for energy in uses with high value added and low substitution possibilities
- Further electrification of energy consumption (roughly doubling its share in final energy)



Source: Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

7. Key actions by sector

| Sector | 2030* | 2050* | Main actions |
|----------------------|-------|-------|---|
| Buildings | -53% | -100% | 100% low-energy buildings by 2050 (massive and deep retrofit of existing stock) Change of heat systems (heat pumps, biomass...), efficiency of equipments... |
| Transports | -31% | -100% | Limited increase of passengers and goods trafic (modal shift, sharing...) 100% electric cars by 2050, mix for freight (electric, gas, hydrogen, biofuels...) |
| Industry | -35% | -81% | Energy efficiency of all branches, shift to biomass / biogas / electricity sources for processes, development of eco-design and circular economy |
| Agriculture | -20% | -46% | Development of new technologies and practices (reduces use of N-based fertilizers, increase of soil C-absorption), change in consumption habits (food diet, wastage...) |
| Energy | -36% | -100% | High mobilization of biomass, Development of electric renewable energies |
| Waste | -38% | -66% | Reduce waste production, enhanced (bio)waste recovery Respect of waste treatment hierarchy |
| Natural sinks | — | +50% | Development of bioeconomy, use of natural products, forestry Stop to net artificialisation |

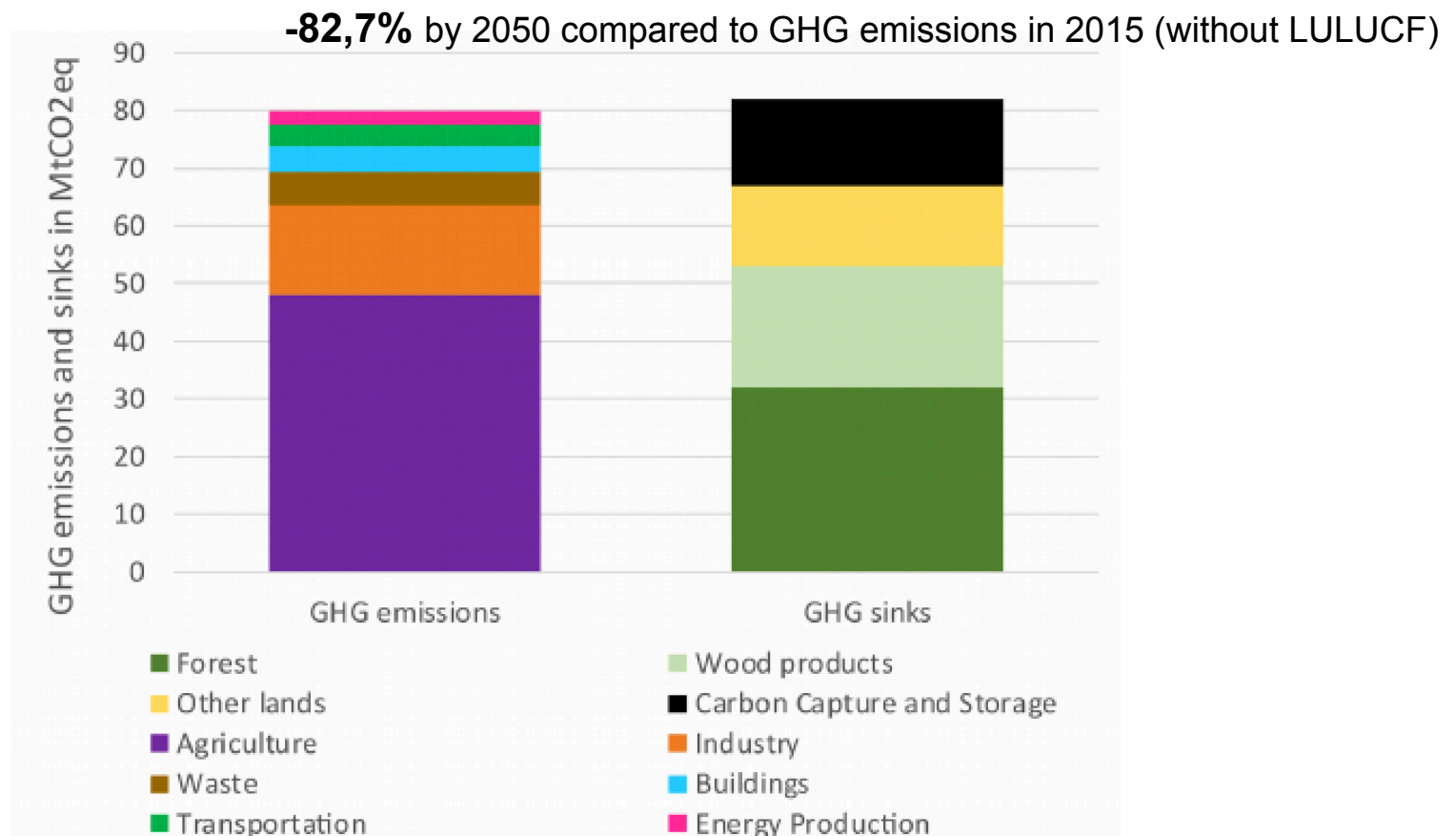
* Reduction compared to 2015 baseline
(for natural sinks, increase of absorption)

Source: based on Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

8. Residual GHG emissions, and GHG removal



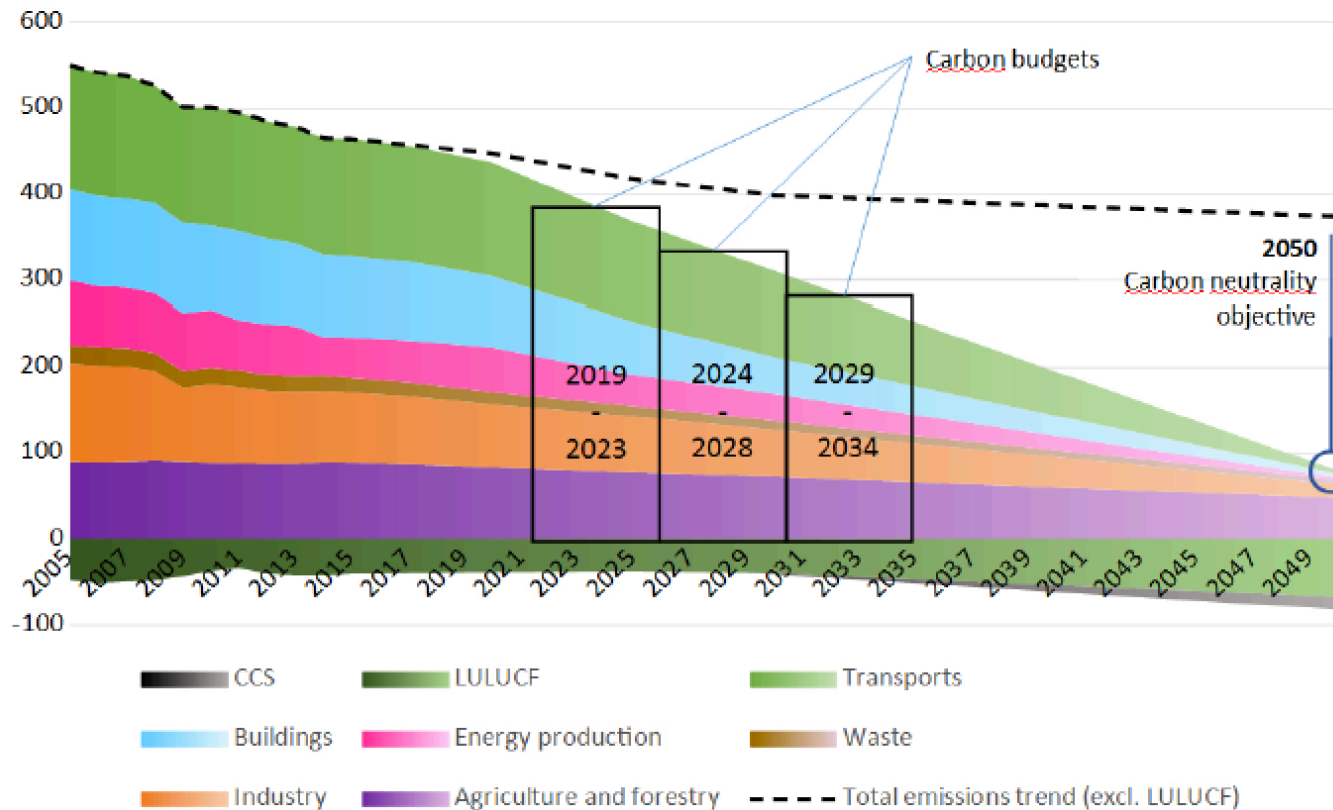
Source: Ministère de la transition écologique et solidaire, France - 2019

Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

9. Carbon budgets

Evolution of GHG emissions on national territory
between 2005 and 2050 (MtCO₂eq)



Source: Ministère de la transition écologique et solidaire, France - 2019



Climate Recon 2050: Dialogues on Pathways and Policy

France
Yves Marignac, Association négaWatt

10. Ongoing discussions

- Broad agreement on the need for reducing energy demand to decarbonize, common view of scenarios about halving final energy consumption by 2050
- Diverging views on the respective role of technical options (efficiency) and societal changes (sufficiency) to reach that level of reduction
- Shared views on the need to develop low carbon energy supply but:
 - consensus on the growing role of low carbon power, stiff debate on the future low carbon electric mix
 - diverging views on the best options for mobilizing biomass for energy in a sustainable way
- Diverging views on the respective role of different energy carriers (electricity, gas and biogas, hydrogen, biofuels, etc.) for different uses in different sectors, especially in transports
- Shared visions on the need for an evolution of food diet (meat consumption) and a less material-intensive economy
- Various visions about the potential role of specific technologies, such as power-to-gas, carbon capture and storage (CCS), no foreseen role for bioenergy with CCS (BECCS)
- Uncertainties and debate about the impact of changes in agricultural modes on natural carbon sinks and the evolution of forests (increased use of wood / adaptation to climate change, etc.)