





International conference on mobility challenges

Decarbonizing Transports: whatever the cost?

Pr. Yves CROZET



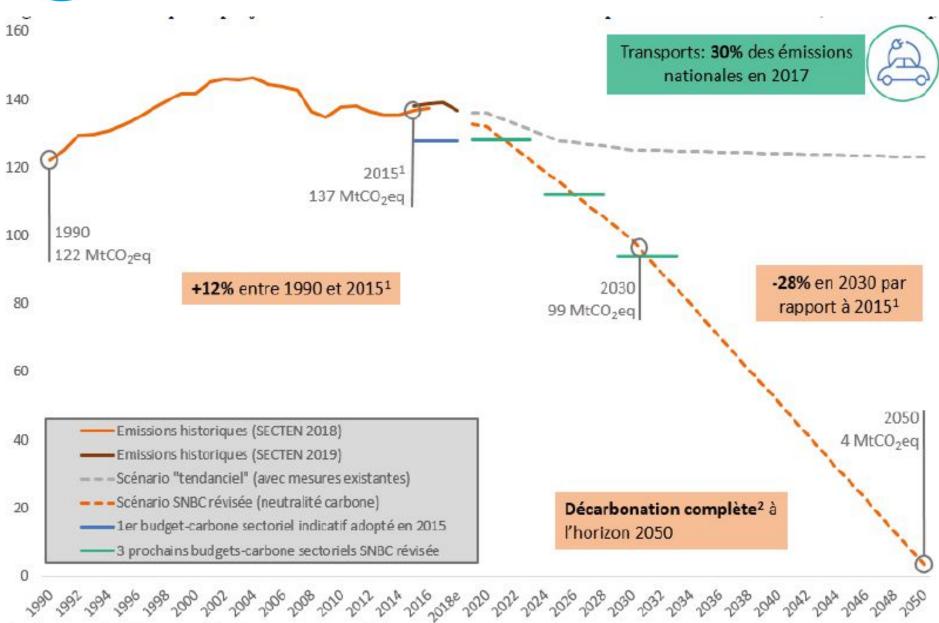
LABORATOIRE AMÉNAGEMENT ÉCONOMIE TRANSPORTS

TRANSPORT URBAN PLANNING ECONOMICS LABORATORY





The challenge...



¹Les émissions de référence pour l'année 2015 sont issues de l'inventaire CITEPA SECTEN 2018

²Ne tient pas compte des fuites résiduelles « incompressibles » de gaz (gaz fluorés, gaz renouvelables) et des émissions résiduel les issues du transport aérien domestique.



How to achieve the goal?

- Technical changes:
 - Efficiency of Internal combustion engines (ICE)
 - Electrification of cars and light or heavy duty vehicles
- Behavior changes
 - Modal shift
 - Load factor (freight and passengers)
 - Demand



Decarbonizing: the toolbox



- Quantitative rationing
- Ration coupons

- Regulation, standards

Price

- Public subsidies

Quantities

- Negotiable Permits
- Emission trading scheme ETS)

- Taxation
- Pricing

Market economy



Reduction of CO2 emissions: Public and private cost

Administrated economy

2020 and the lockdown > 6700 € per ton of CO₂

Electrification

- in Norway

1370 € per ton of CO₂

- in EU 390 €

Price

Quantities

Carbon market (ETS)

- From 2 to 80 €

Carbon tax

- In France 44,6 €

Market economy

Fridstrom L. 2021, The Norwegian Vehicle Electrification Policy and its implicit price of Carbon, *Sustainability*, 13, 1346



Acceptability issues

- Is it possible to extend the EU-ETS?
 - -Aviation, maritime...
 - Road transport (Freight and passengers)

 Fuel taxes in France are already equivalent to a carbon tax of 250 € per ton of CO₂