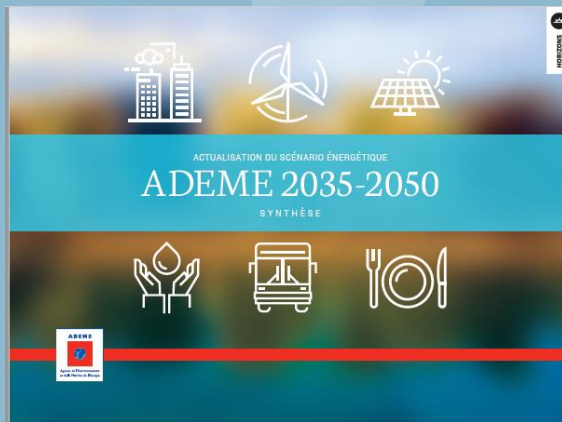


Energy-Climate Perspectives in France 2035-2050



David MARCHAL

Deputy Director Sustainable Productions
and Energies
ADEME





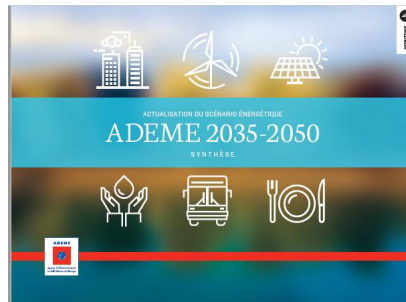
- **Public establishment** under the joint authority of the Ministries in charge of :
 - Ecological And Solidary Conversion
 - Research
- **Areas of activity:**
 - Waste management
 - Transport & mobility
 - Sustainable city
 - Energy & Climate
 - Energy efficiency
- **Budget:**
 - 570 M€ , in 2018
 - 3 300 M€, for the « Investments for the future »
- **ADEME's missions:**
 - **Forerunner** for the energy & environmental transition
 - **Generalizer** of good practices
 - **Expert** of the energy & environmental transition
- **How many, where?**
 - Around 900 employees
 - Head offices (Angers, Paris, Sophia Antipolis)
 - 17 regional Directorates



ADEME's Energy climate scenarios:

- ➔ An ambitious and realistic multi energy scénario
- ➔ CO₂ / 4 by 2050
- ➔ Energy consumption / 2 by 2050

2012, updated in 2017



Other more technical and exploratory studies

- 100% REN Power Mix



- 100% REN gaz Mix:



Energy Prospective 2035 – 2050 at a glance

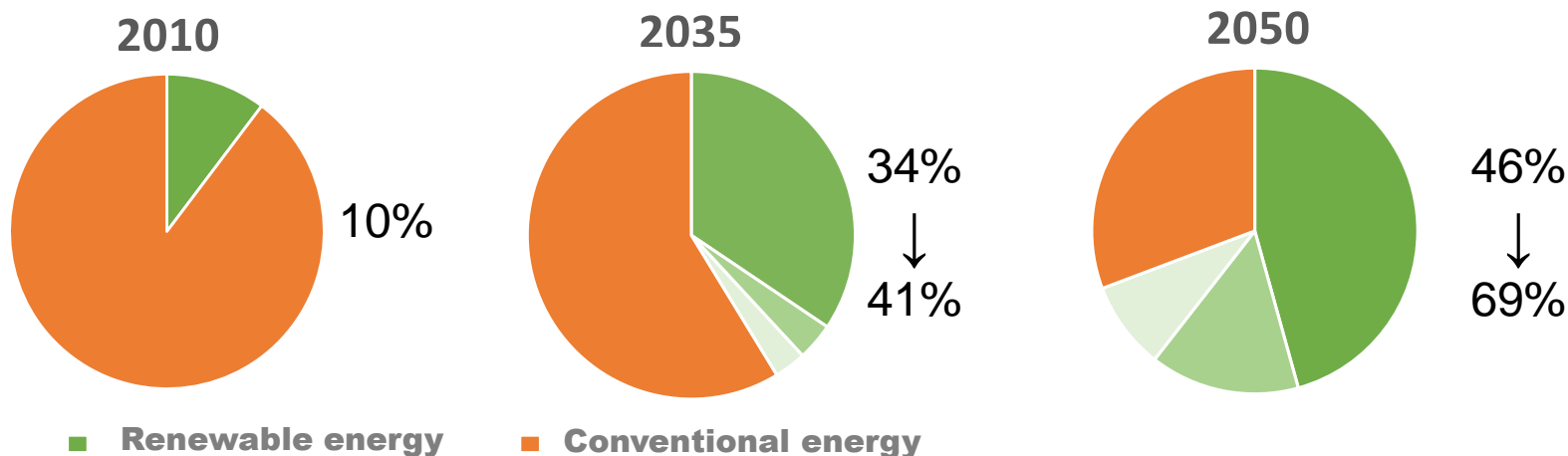


Final energy demand MToe

2010		2035		2050
149	- 29%	105	- 45%	82

Percentage of energy demand decrease : at 2035 (red), at 2050 (green)

Share of renewable energy in energy mix (3 options)



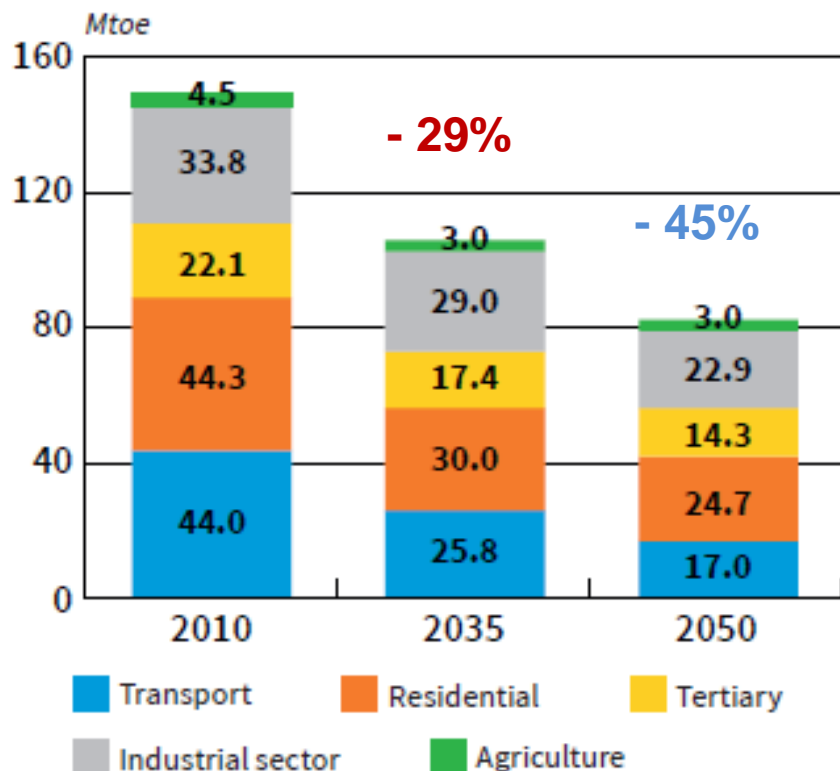
Percentage of renewable energy in the mix for each option

GHG CO₂ eq. emissions

1990		2035		2050
529	- 51%	260	- 70% à -72%	158 - 146

Percentage of CO₂ emissions reduction respectively to 1990 : in 2035 (red), in 2050 (green)

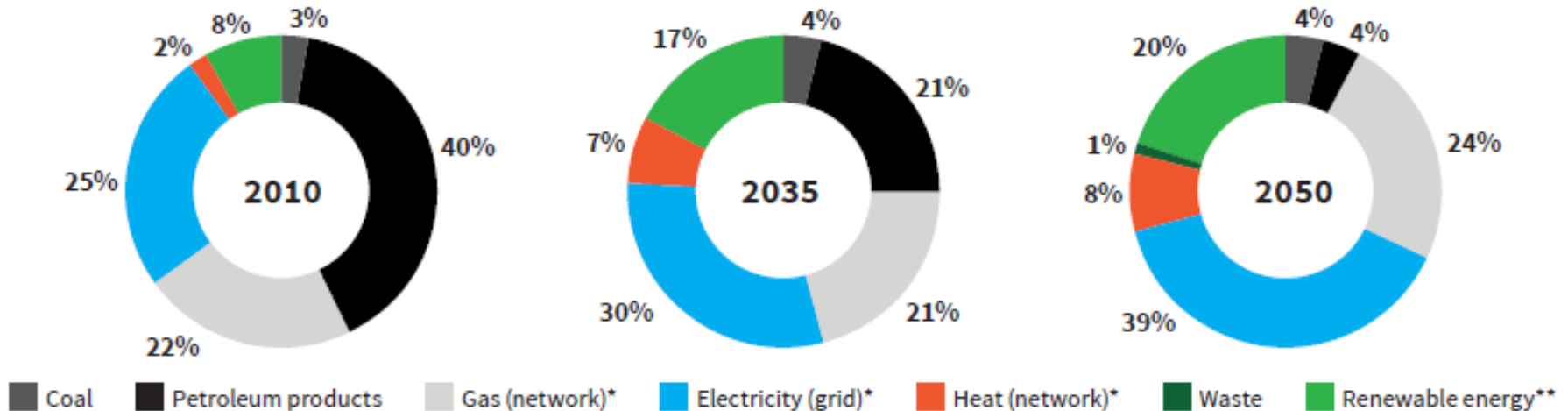
Energy demand evolution by 2035 and 2050



- **Building** : 500 000 thermal refurbishing/year to 2035 then 750 000/year in residential. Best heating equipment and appliances,
- **Transport** : performant thermal motorization and penetration of alternative motorizations. Mobility services, collective transports, lower mobility
- **Industry** : growth of global production, gains in energy efficiency and recycling
- **Agriculture** : avoiding agriculture losses, agro-ecology, after 2030 evolution of alimentation diet

- No more petroleum nor coal by 2050
- **Electricity:** relative share growth from 25% to 40%, but absolute value decrease
- **District heating network:** : twice more

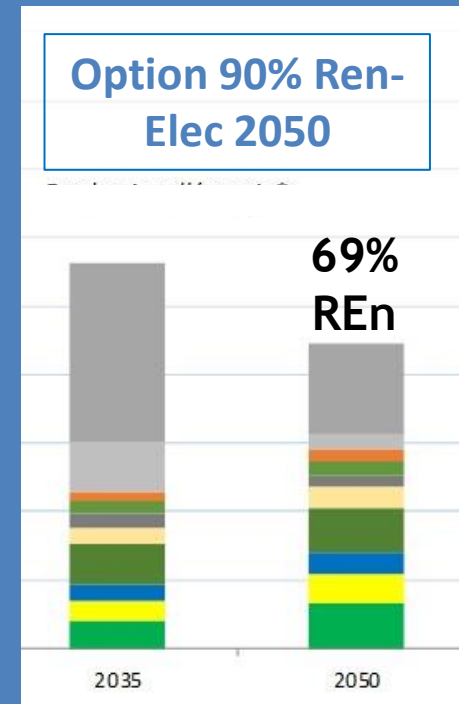
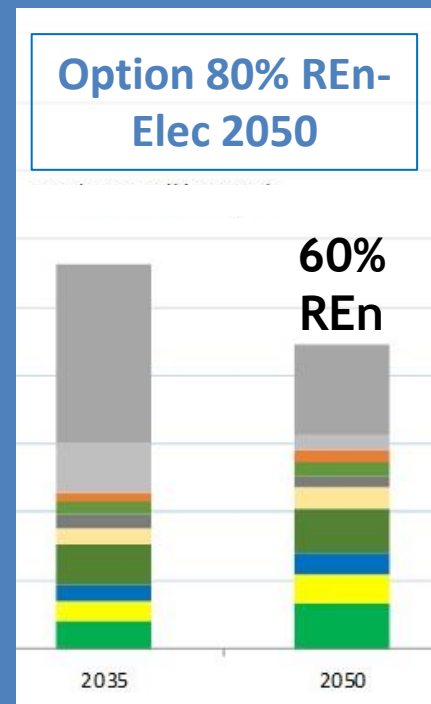
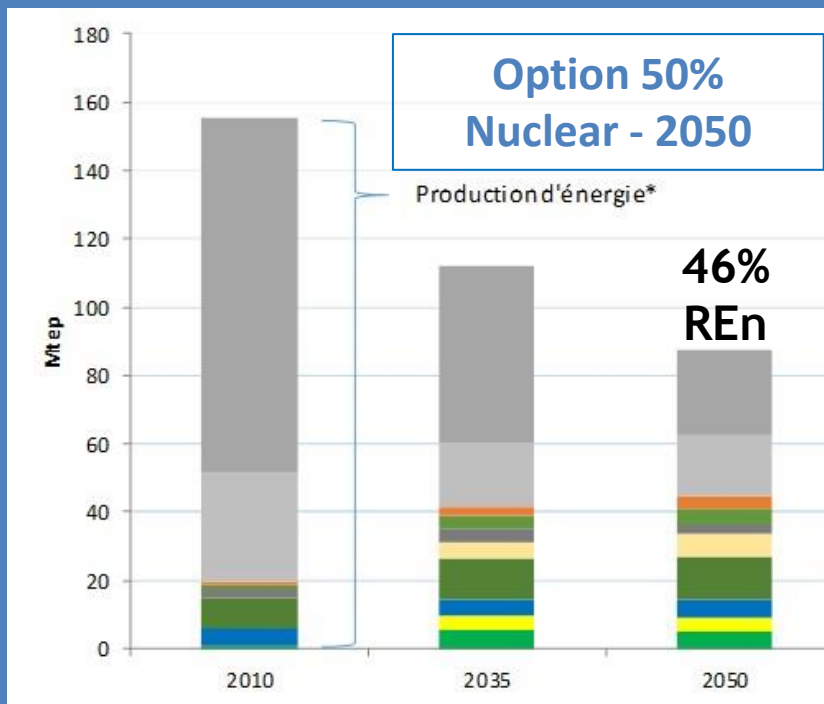
FINAL ENERGY CONSUMPTION IN 2010, 2035 AND 2050, BY TYPE OF ENERGY



Production Energy mix at 2050



- 3 options envisaged for electricity mix
- Between 46% and 69% of REN in the production
- Ambitious but realistic development trajectories

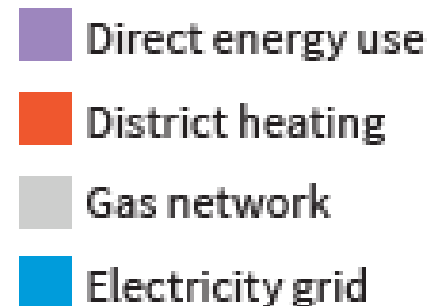
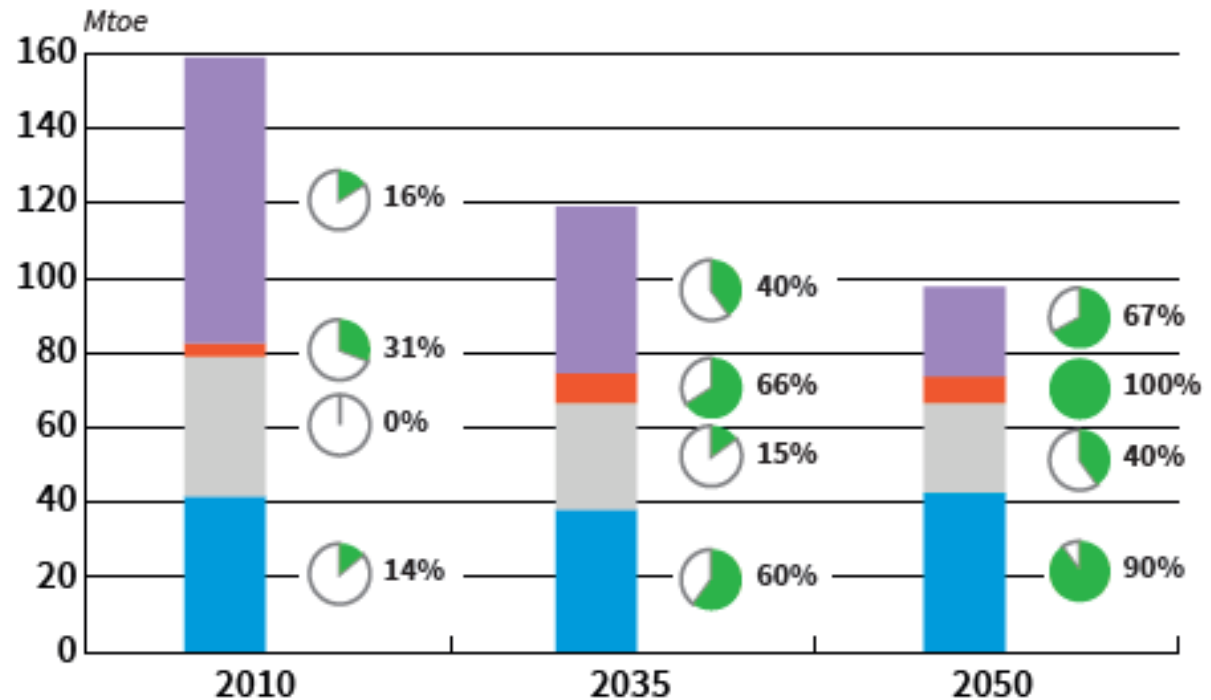


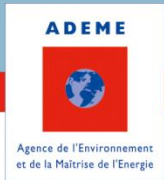
Energy vectors and renewable



- REn share depends on vectors
- Electric REn potential to make other vectors « greener »

90% renewable electricity and power-to-gas mix in 2050 –
RE share in energy mix: 40% in 2035, 69% in 2050



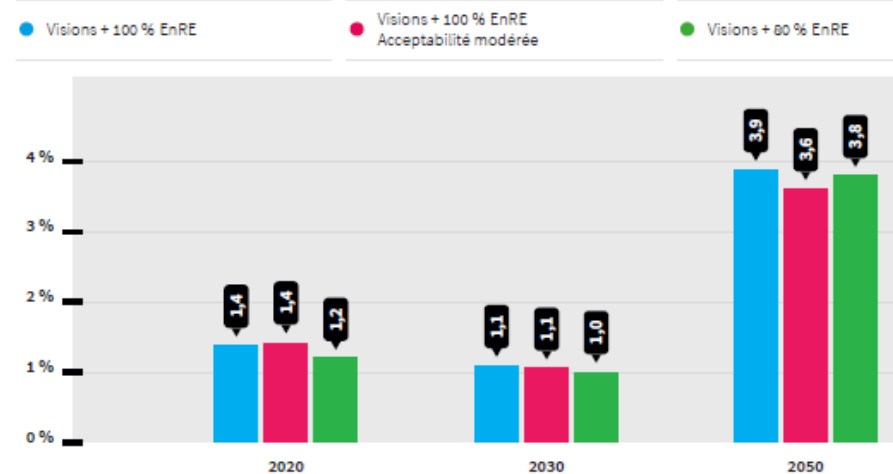


- **Significant efforts must be deployed in the short and medium term, up to 2035:**
 - Need to boost the existing buildings refurbishment
 - rapidly and broadly reduce the number of fossil fuel internal combustion vehicles in use
- **Equilibrium and convergence of energy vectors will be of major importance:**
 - Biomass resources uses: between heat, biogas....
 - New scenarios to explore
- **New levers must be explored to reach a carbon neutral society in the longer term**

The growth impacts of the energy transition outweigh the recessionary effects:

- GDP: More than + 3,6 % by 2050
- Employment: More than + 830 000 employees
- Disposable household income growth

Impacts sur le PIB



Revenu disponible des ménages

