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MINISTÈRE DE L'ÉCOLOGIE,
DU DÉVELOPPEMENT DURABLE,
DES TRANSPORTS
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MINISTÈRE
DE L'ÉCONOMIE
DES FINANCES
ET DE L'INDUSTRIE

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The Energy Picture of Europe in 2050 - Scenarios – Policies – Technologies -

French Views on the Use of Energy Scenarios by Policy Makers

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The French energy policy framework

- *Loi POPE (2005) : determines the main orientations and objectives for the medium-long term, up to 2050*
- *Grenelle de l'environnement (2007) : focusing on climate change and energy efficiency, up to 2020*
- *Multi-year Investment Programme (2009) : focusing on electricity, gas and heat, up to 2012 and 2020*
- *Energy Climate Package (2008) : EU level, focusing on climate change, renewables and energy efficiency, up to 2020*

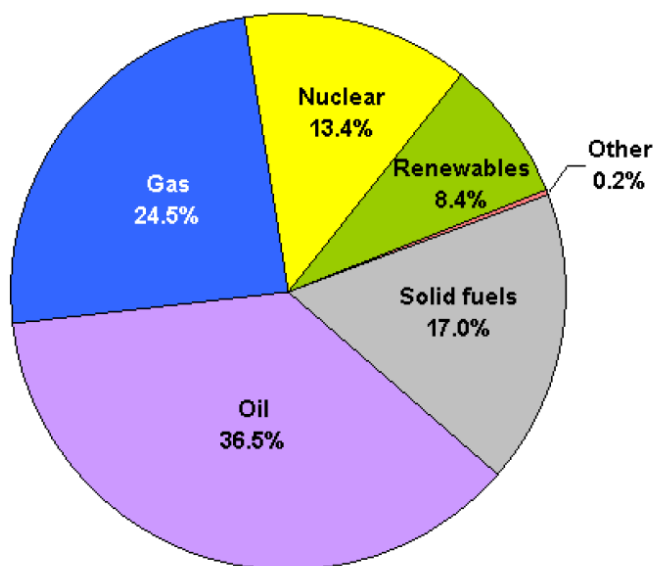
France is located in the heart of EU



The EU energy mix is slowly changing

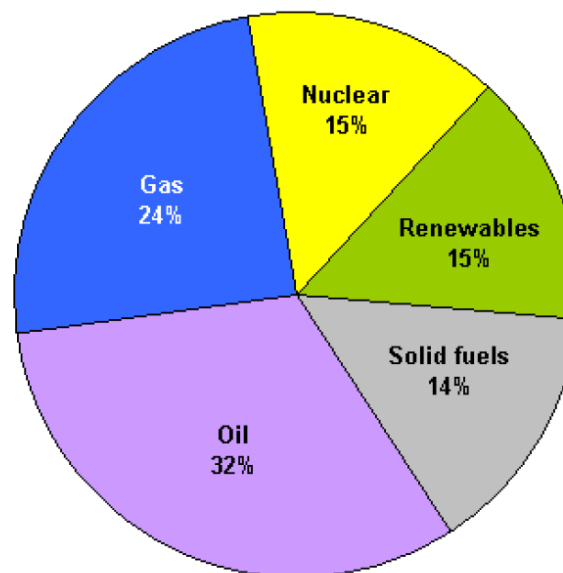
(pre-Fukushima analysis)

EU Gross inland consumption 2008



in % (1799 Mtoe; 2008)

EU Gross inland consumption 2030

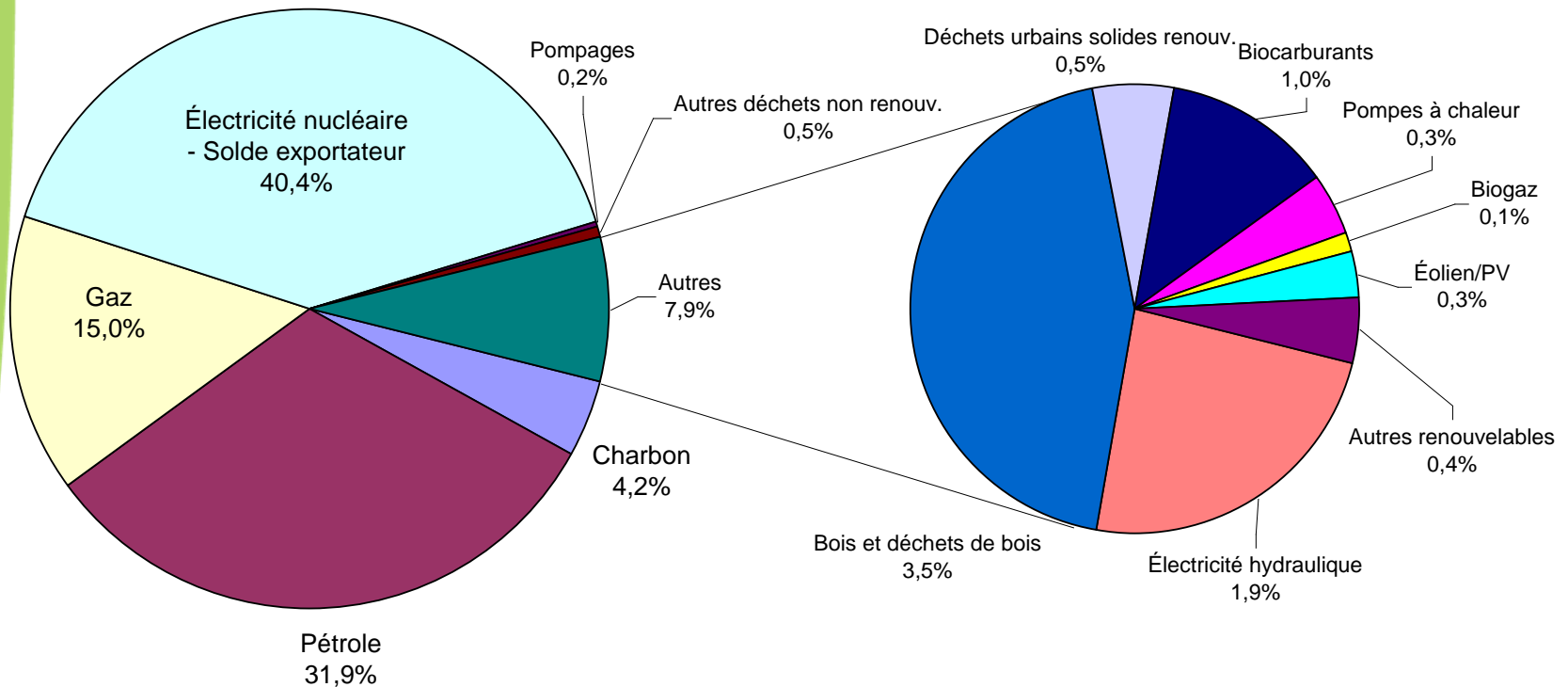


in % (1807 Mtoe; 2030 « business as usual »)

Fossil fuels represent up to 80% of our energy mix today. In a “business as usual” scenario, the share may still be 70% by 2030, but renewable sources are expected to account for an increasing proportion.

The French energy mix

259 Mtoe primary energy in 2009



Source : MEDDTL/CGDD (bilan énergétique de l'année 2009)

Ambitious targets from “Grenelle de l’environnement” (laws of 2009 and 2010)

- Programme in favour of **renewable energies** :
 - + 20 Mtoe by 2020
- **Energy efficiency programme**
 - eg 38% cut of energy consumption by m² in dwelling by 2020
- **National Round Table for energy efficiency**, second half of 2011 to reach and go beyond 20% improvement by 2020
- Consumption from 30 to 50% of renewable energies in the overseas territories in 2020
- National support for energy R&D:
 - Second-generation biofuels
 - Low carbon energies (CCS, renewables, clean vehicle, nuclear, etc.)

The Multi-year Investment Programme (MIP) for electricity, heat and gas

- **3 framework documents relative to investments in the energy industry**
 - they are required by law
 - they are updated at least once by every new elected Parliament
- **Where energy policy and individual decisions come together**
 - To set objectives for the development of infrastructures and production capabilities
 - To light the way and orientate economic operators in their investments
- **A follow-up committee with several workshops**
 - Electricity, gas and heat examined together
 - Participation of the State, companies (production and consumption), NGO's, trade-unions and members of Parliament

Electricity MIP : main directions

- *Uncertainties in 2020 on both offer and demand*
- *Room for manoeuvre is necessary to ensure safety, low emissions, and competitiveness*
 - *Two first EPR shall be put in operation. Operation of nuclear power plants after 40 years privileged but ASN, the nuclear safety authority, has the final word*
 - *Shutdown of the most polluting coal plants by 2015. New plants will not be authorised unless they are part of a CSC demonstrator*
 - *Many CCGT projects shall ensure semi-base load generation*
- *This room for manoeuvre, which is carbon-free, shall contribute through exportations to the global european effort to cut CO2 emissions*

Energies 2050

- *In order to define the future energy mix, a commission has been announced on September 6th 2011 by the French Minister of Energy with a kick-off on October 20th*
- *The commission is:*
 - *chaired by Mr Jacques Percebois (French University of Montpellier) and vice-chaired by Mr Claude Mandil (former IEA Executive Director)*
 - *composed of about 40 representatives of various stake-holders for energy policy:*
 - *Trade unions*
 - *Consumers*
 - *Professional unions (companies)*
 - *State energy bodies*
 - *High-level experts*



Energies 2050

- *The target of this commission is to assess the existing energy scenarios for France, from various origins, including scenarios made by international bodies*
- *A report will be prepared by this commission by January 2012*
- *This report « Energie 2050 » will analyse:*
 - *benefits and drawbacks of each energy scenarios with respect to the preoccupations of the French energy policy*
 - *their limits to represent the real energy situation (energy balance, modelisation coherence, economic consequences, citizen behaviour, etc.)*

Energies 2050

- *Among the scenarios to assess, the commission will explore in particular four options for France:*
 - *extending the life of the existing nuclear power plants*
 - *accelerating the transition to Gen 3 or Gen 4 reactors*
 - *gradual declining of the nuclear contribution to the power mix*
 - *total phasing out of nuclear power*

Energies 2050

- *The work will be conducted over a long term time horizon, ie 2050 with an intermediate look at 2030*
- *Results will be presented to the Minister of Energy and to the press by end of January 2012*



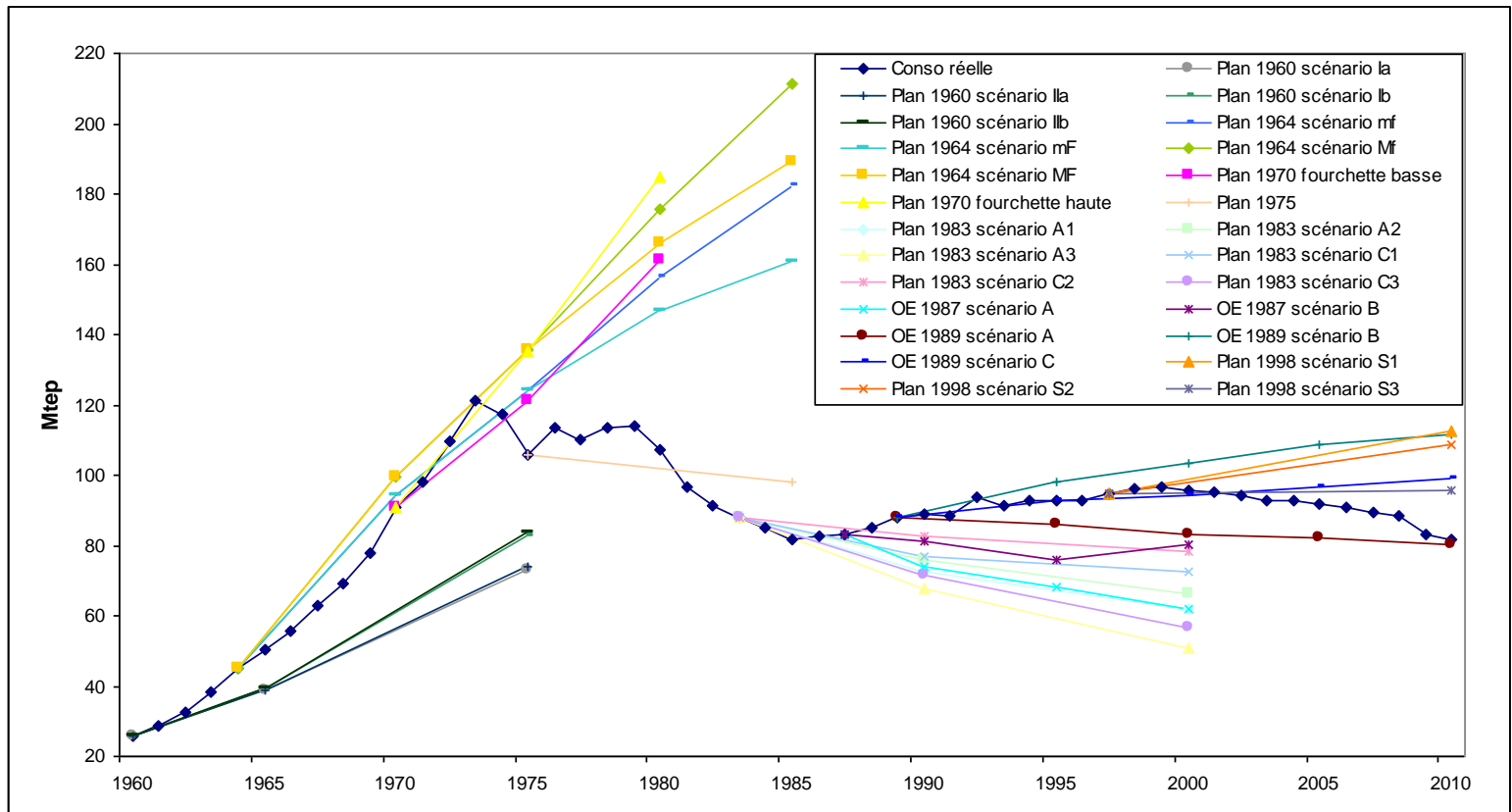
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Lack of confidence within policy makers

- *Comparison of long term projections for oil consumption in France since 1960*



Source: Observatoire de l'énergie, Magali Humbert, 2005-2010

Main challenges for energy outlook

- *Difficulty to discriminate between scenarios for short run and scenarios with 40 years time horizon (2050)*
 - *Climate change*
 - *Heavy financial burden for investments*
- *Consequences of the economic and financial crisis*
- *Sensitive political issues in electoral debate*
 - *Nuclear*
 - *Employment*
- *Lack of assesment for modelisation tools*
 - *IIASA*
 - *NTUA*
 - *Enerdata*
 - *?*
- *Complexity to identify key assumptions (geopolitical, costs & prices, learning curves, breakthrough technologies, etc.)*
- *BAU vs reference scenarios*
- *Sensibility analysis: all energy futures are possible?*

Thank you for your attention!