Nuclear Power in France

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A check on :

- Energy Security
- Climate Change
- Environment
- Economy

A unique position

Share of nuclear in the electricity production

France	Ukraine	Sweden	Korea	Japan	Germany	UK	USA	Russia	Canada
79%	48%	46%	38%	28%	26%	20%	19%	16%	15%

Primary Energy

Source (Mtoe)	Fossil fuels	Nuclear Electricity	Hydro & Wind Electricity	Other Renewables	Total
Production	2	115	6	14	136
Consumption	141	116		14	271

Official Energy Independence Rate: 50 %,
of which 87% nuclear

Misleading accounting

But :

- Nuclear electricity is accounted 3 times higher than Hydro & Wind
- Uranium is totally imported
- 440 TWh gross production but only 320 TWh to the grid for domestic consumption
- Equivalent to 47 Mtoe of natural gas (CC),

  or 34 Mtoe of natural gas plus 7.5 Mtoe of renewable (hydro, wind, solar)

Final Energy Consumption

Final Energy	Fossil fuels	Electricity	Other renewables	TOTAL
Mtoe	129	37	11	176
Share	73%	21%	6%	100%

- Nuclear share in electricity: 67%
- Nuclear contribution to final energy consumption: 14%

The dependence on oil

Oil consumption per capita in 2007

Country	France	Germany	Italy	United Kingdom
Population (million)	60.8	82.4	58.7	60.2
toe	1.46	1.36	1.31	1.33
Discrepancy	0%	- 7%	- 10%	- 9%

Nuclear and Climate Change

- France GHG emission (2005) : 553 Mteq CO2
- Avoided by nuclear power : 69 - 100 Mteq CO2

15% to 20%

Country	France	Germany	Italy	United Kingdom
GHG emission (Mteq CO2)	553	1001	582	657
Per capita (teq CO2)	9.1	12.1	9.9	10.9
Discrepancy	0%	+ 33%	+ 9%	+20%

Nuclear hazards and pollution

- Risk of major accident
- Disposal of radioactive waste
- Proliferation of nuclear weapons
- The case of EPR
- The German government position

The total cost of nuclear power

- Investment
  - Power plants (domestic or imported)
  - Fuel industries (domestic or imported)
  - Irradiated fuel and waste disposal facilities
  - R&D installations
- Running costs
  - Nuclear fuel (natural U, enriched U, manufactured)
  - Nuclear plant operation
  - Waste disposal
  - Decommissioning and Dismantling
  - Safety and Radio-protection monitoring & control

Large uncertainties on costs

Cost components of the French nuclear programme (until 2000) over lifetime

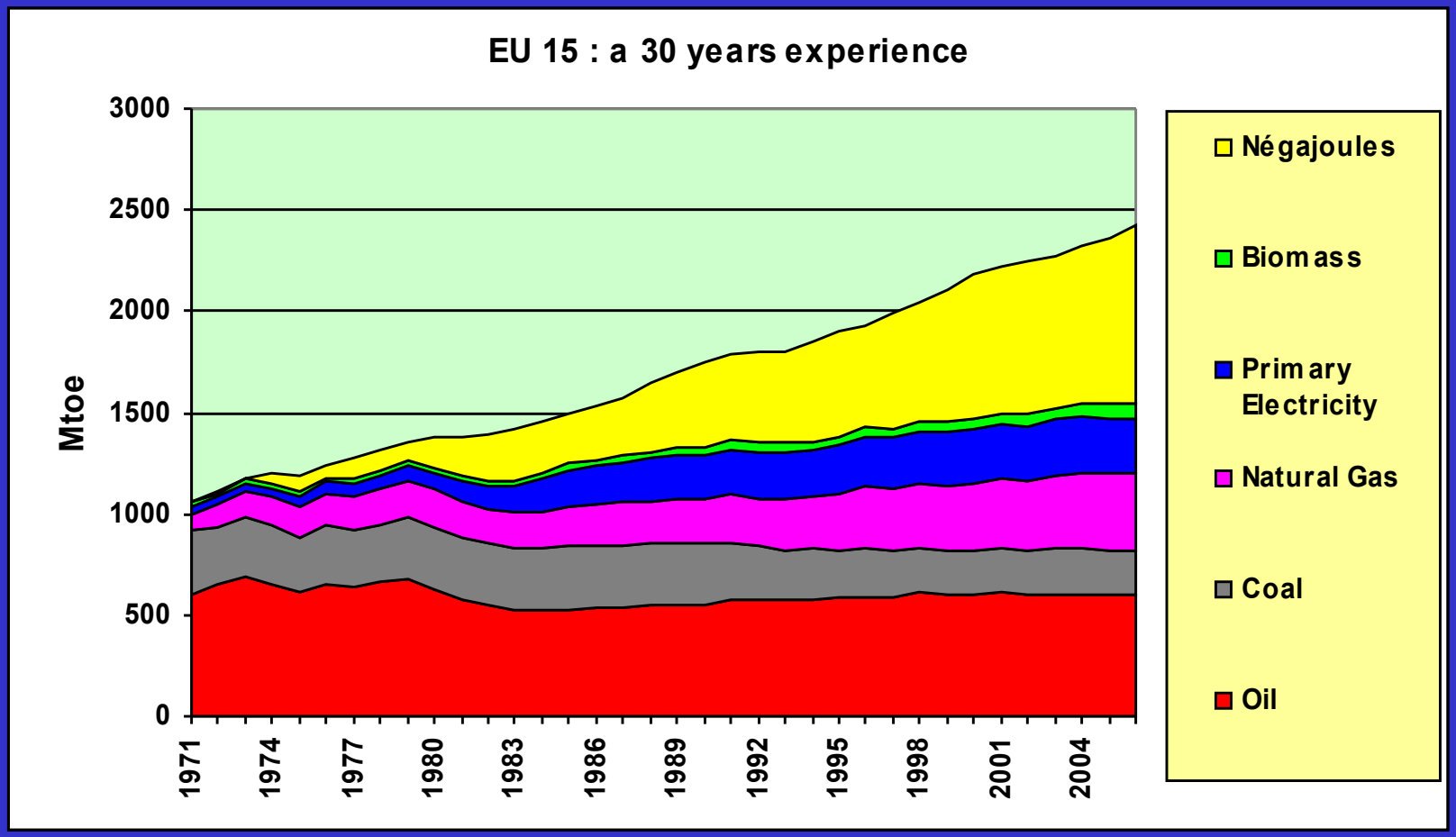
- Investment : 25%
- Operation : 43%
- Fuel cycle : 20% (front end) + 12% back-end

No World market price for nuclear plants

Increase in World power installed capacity between 2003 and 2006

Source	Gas	Coal	Hydro	Wind	Nuclear	Biomass	Oil	Total
1000 MW	203	182	71	34	10	8	-51	450
Share	45%	40%	16%	7%	2%	2%	- 12%	100%

Best road : Energy Efficiency



The 20% EU objective

The objective of 20% energy savings in 2020 for EU 27 represents:

- an annual energy saving of about 400 Mtoe in 2020,
- a cumulated energy saving of 3 000 Mtoe over 2005-2020, and
- a financial saving of 1000 billion Euros on the EU energy imports bill.