Getting Ready for Zero Emissions and 100% Renewable Energy: Plans and Scenarios to Pave the Way for the Transition

10 December, 2015 - 11:15-12:45 - Room 2

Side event to the UNFCCC COP21, Climate Generation Area, Paris, France

Energy Policy: the négaWatt Scenario for France

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The event was organised by Nordic Folkecenter for Renewable Energy (Denmark) & NegaWatt (France) in cooperation with INFORSE, Track 0, Centre for Alternative Technology –CAT (UK).

The event was part of the "Climate Generation Area" Conference organised by the French Government parallel to the UNFCCC COP21 - www.cop21.gouv.fr/en/les-espaces-generations-climat/

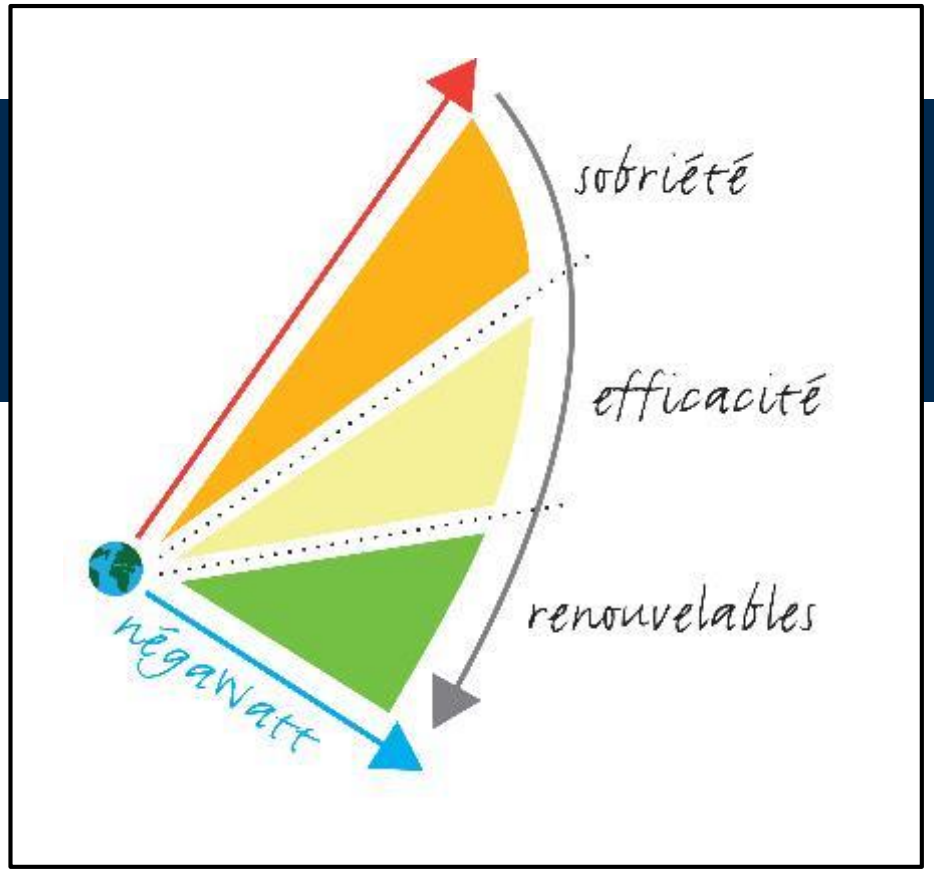
sufficiency, efficiency, renewables

négaWatt

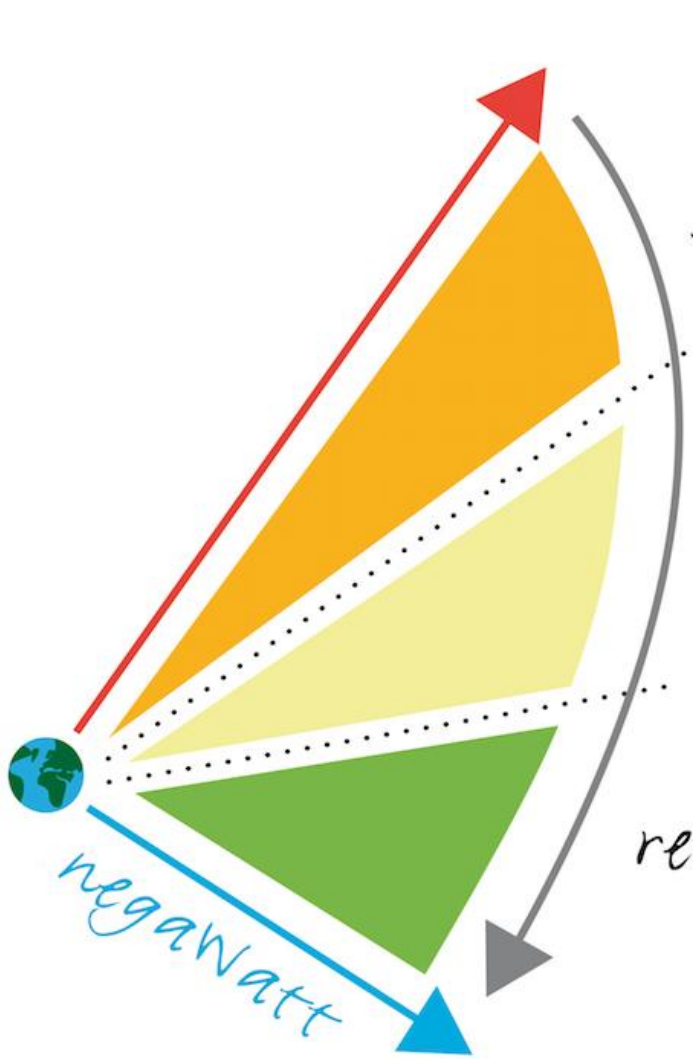
Energy policy: the négaWatt scenario

Yves Marignac

COP 21 – Paris Le Bourget
10 December 2015



The négaWatt approach to energy



Prioritize energy needs in terms of individual/collective **energy services**

Increase the efficiency of energy "chains", from primary ressources to end-uses

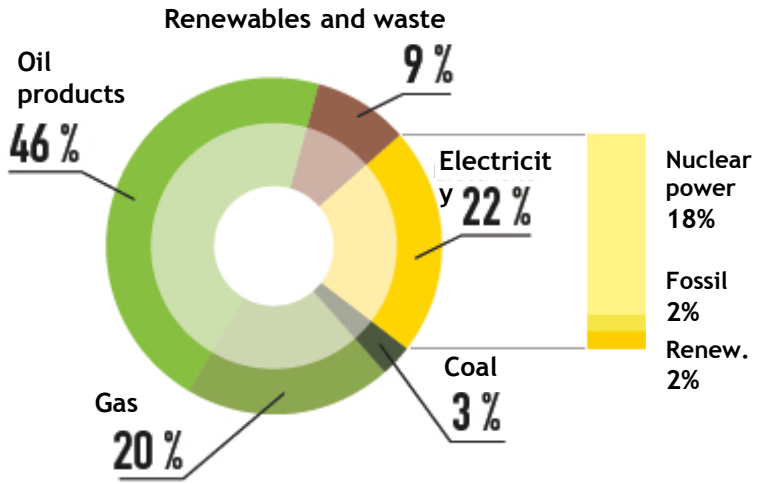
Substitute "flow-based" energies (renewables) to "stock-based" energies (fissil and fossils)

French situation – Scenario objectives

French energy situation

- Dependency on fossil fuels remains high (70%)
- GHG emissions considered 4-fold higher than sustainable
- Strong dependency on nuclear power for electricity (80%)
- Low development of renewables

France's final energy consumption, share by energy source (2011)



Source: bilan de l'énergie, 2011, SOeS

Fundamentals of the négaWatt scenario

- Provide a sustainable pathway towards low-carbon, 100% renewables
- Build a long term strategy (2050) to guide decisions in the short term
- Use existing solutions instead of betting on hypothetical breakthroughs
- Develop a physical model of uses and resources to discuss the economics

Implementation on energy demand

Buildings	Moderating surfaces/person or activity Deep and large thermal retrofitting Constructing positive energy new buildings
Specific electricity	Implementation on every uses of best equipments and behaviours of today
Transports	Urban planning to reduce need for distances Modal transfer (road-rail, individual-collective) Efficiency of vehicles and adaptation to uses
Industry	Extended recycling of materials Reduced need of goods Efficiency in processes
Agriculture	Same approach on land-use & use of biomass Change of food-habits (less meat, etc.)

Roughly 2-fold division of final energy consumption in each sector

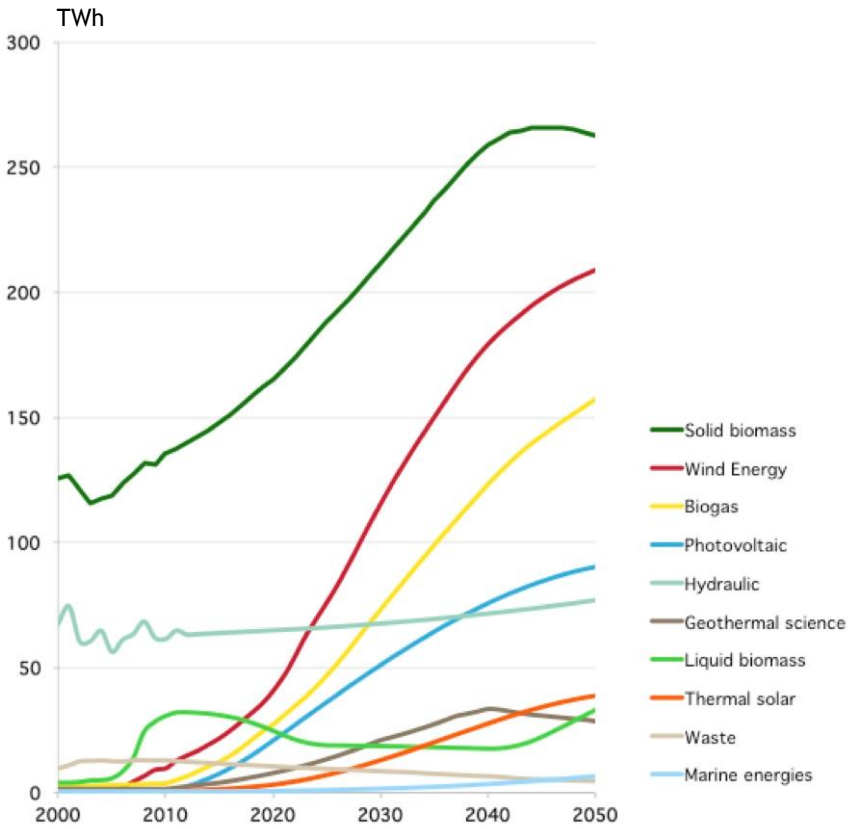
Allows for sustainable use of bioenergy

Sufficiency + efficiency are keys for substituting rather than adding renewables to existing energy productions

Implementation on energy resources

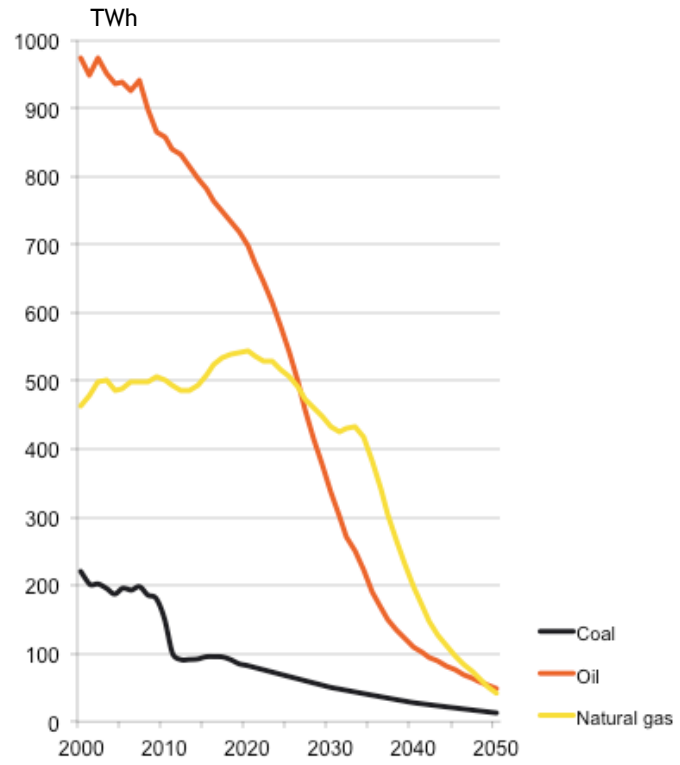
Strong development of renewables

- Biomass (mostly wood and biogas)
- Electric renewables (mostly wind and PV)

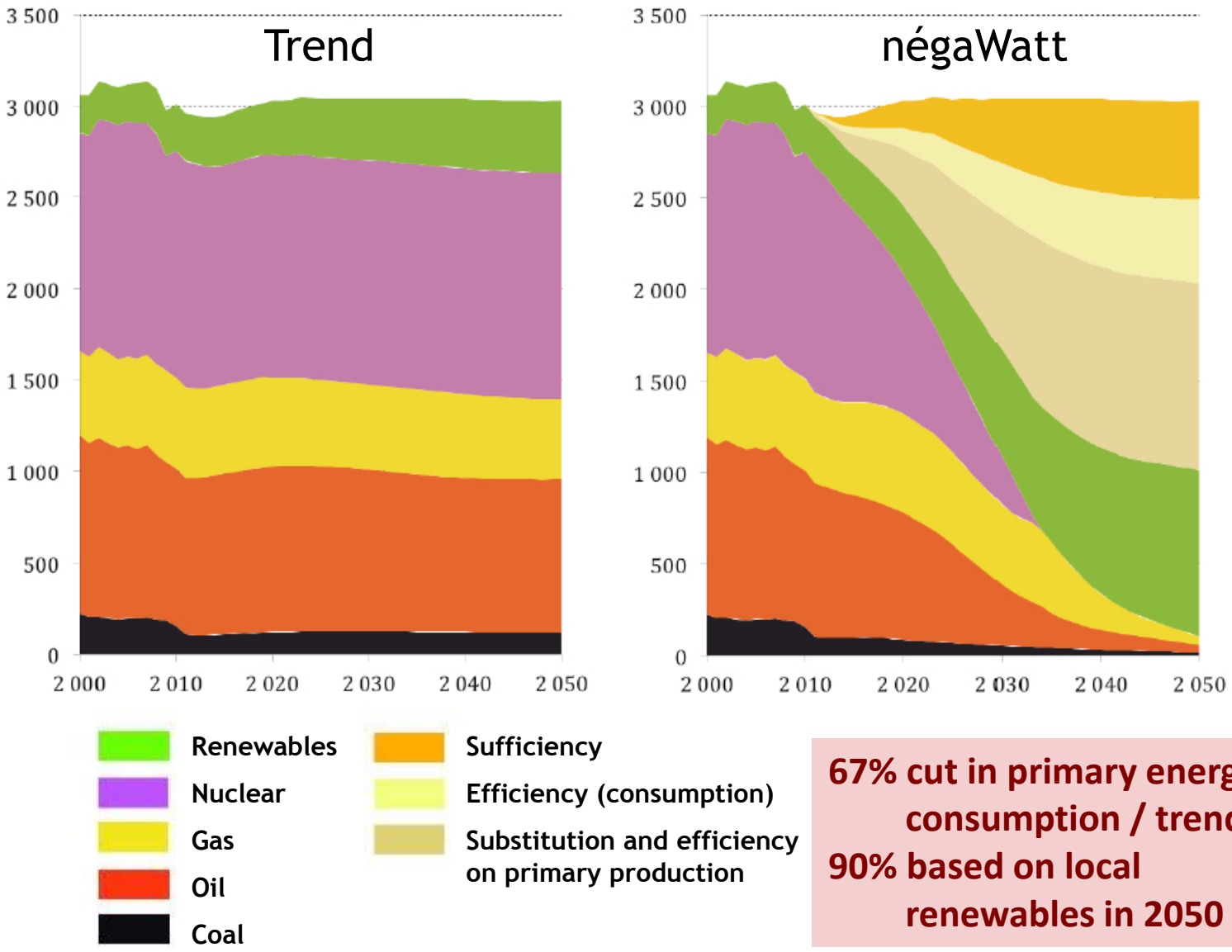


Phase out of stock-based energies

- 58 nuclear reactors gradually shut-down (before 40 years lifetime)
- Residual use of fossil fuels



Primary energy balance



67% cut in primary energy consumption / trend

90% based on local renewables in 2050

Greenhouse gas emissions

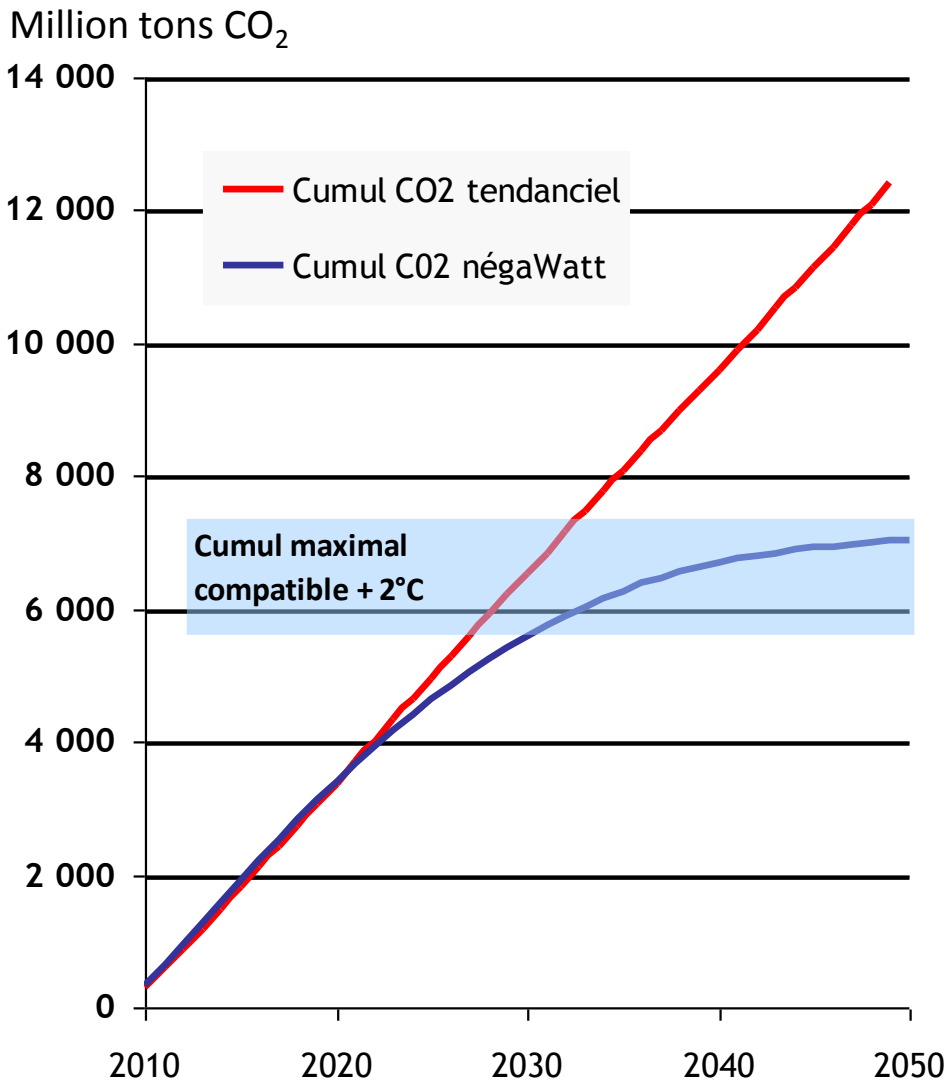
- **Factor 4 on GHG emissions by 2050**

  Compared to 2010, CO_2 emissions divided by 16 by 2050, estimated GHG emissions divided by 4

- **Cumulated CO_2 emissions 2011-2050**

  In line with France's fair share in a global mitigation scenario (keeping global warming below 2° C)*

* Based on carbon budgets, cf. study by Postdam Institute



Economic opportunity

Savings on national energy bill
(60-70 G€ per year)

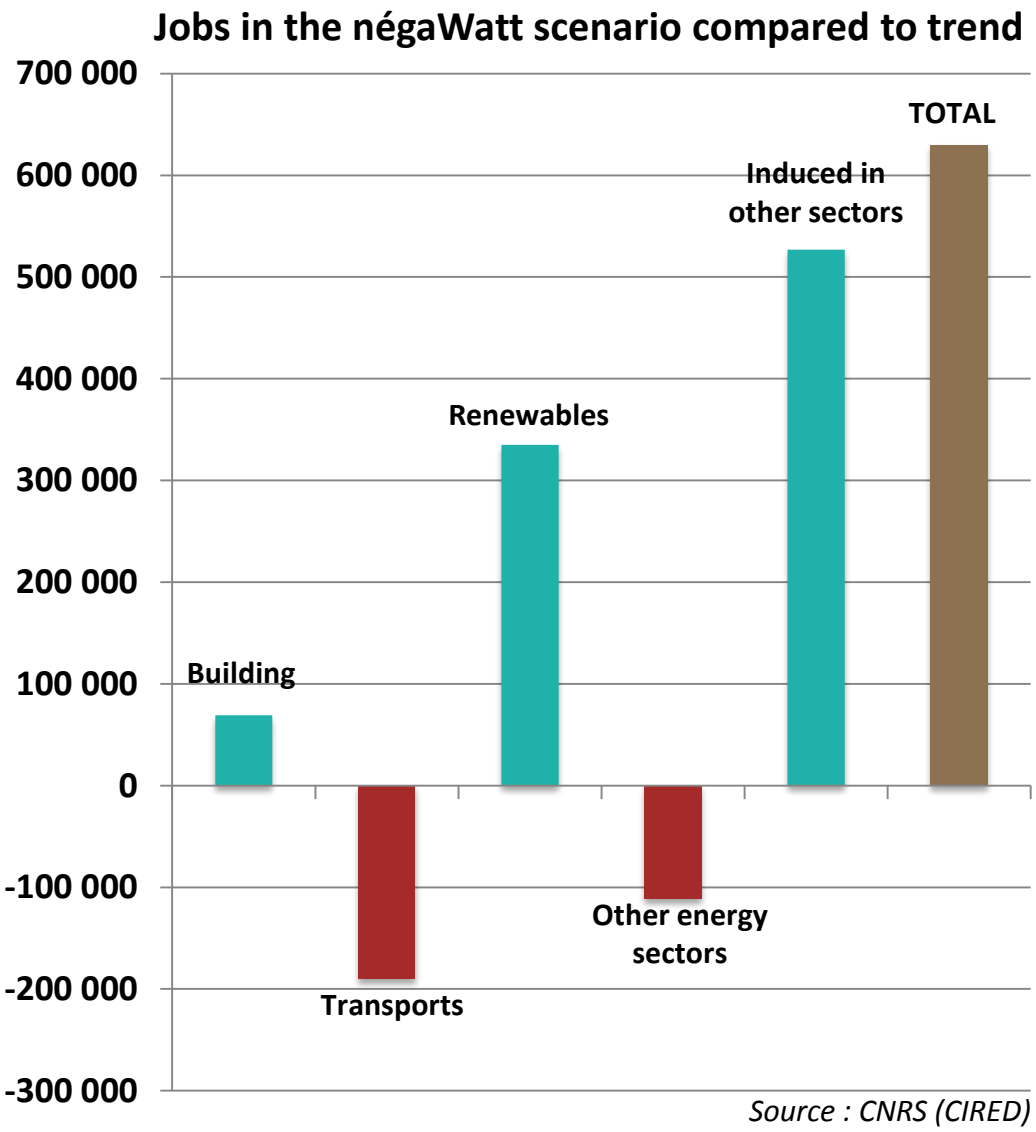
Investments with predictable payback
(energy conservation)

Long term competivity
(decreasing costs of renewables, vs. increasing costs of fossils & nuclear)

Jobs creation
(+ 600.000 net by 2030)

Less economic poverty
(now up to 10 million people)

Overall positive macro-economic results



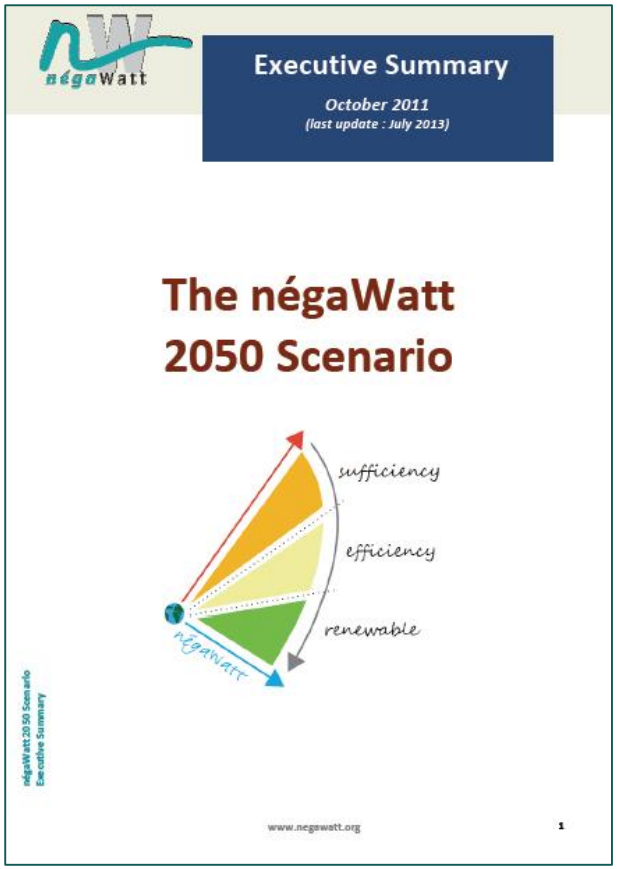
Source : CNRS (CIRED)

Conclusions and recommendations

- Based on existing and emerging solutions, it is possible to implement energy transition of a country like France to **almost 100% renewables by 2050**
- A strategy based on **intelligent energy uses, technical solutions and choice of resources** is needed to meet the objective of keeping below 2° C
- More efficiency and inclusion of sufficiency are the most readily available option to **raise the ambition of countries' pledges** (INDCs)
- **Sufficiency in the North is key to equity with the South**: in a globally constrained use of fossil resources, shifting useless uses of energy allows for increasing vital ones
- The **négaWatt approach is based on strong values** of fairness, equity, minimum risks, and 'no-regret' path
- The recommended solutions and policies have **social and economic benefits** and can be replicated in many other countries

Thank you for your attention!

To learn more:



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