Demand-led transition scenario for France & EU
The négaWatt 2017–2050 scenario and beyond

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The négaWatt association

- A think tank on energy created in 2001
- A non-profit, independent group of experts and field-practitioners
- A core of 25 “companions” + 25 “ambassadors”, 1200 members
- Producing sustainable energy scenarios (latest in 2017) and proposing systemic policies and measures

Subsidiary created in 2009
Operational branch of the association
Energy is a system framing our society

A complex system of extraction, conversion, transformation, transport and storage of energy
This system is not sustainable

- Climate change
- Technological risks
- Air pollution
- Access to energy
- Depletion of resources
- Geopolitical crisis

Losses:
- Resources
- Carriers
- Services
A systemic response to unsustainability

Smarter action on...
1. designing energy services
2. delivering the required energy
3. tapping available resources

Substitution
- Fossil fuels
- Nuclear
- Renewables

Efficiency
- Passive input
- Performance rate
- Conversion losses
- Grey energy

Sufficiency
- Dimensioning
- Level of use
- Organisation

Losses
Ressources → Carriers → Services

Source: Association négaWatt - 2018
Decarbonisation options / Sustainable Devt Goals

Source: négaWatt, from IPCC (2018) Special report 1.5°C
Objectives of the scenario

A scenario for

- setting a long term vision
- building a step-by-step pathway
- designing policies and measures

Hierarchy of options

1. Sufficiency, efficiency, flow-based resources

Technological and economic realistic approach

2. Relying on “matures” solutions, although innovation will happen
   - A physically realistic and economically sound approach

Sustainability

3. Ensuring a sustainable and fair transition

Passing down benefits and incomes to future generations rather than burdens and debts
Three levels of sufficiency

1. Dimensional
   - Size, nominal capacity of equipments
   - Size / adapted cars to various uses
   - Surfaces of houses, offices...

2. Servicial
   - Intensity and duration of use of equipments
   - Turning off lights, computers...
   - Reducing obsolescence of appliances

3. Organisational
   - Collective planning and sharing
   - Car-sharing, co-working...
   - Urban planning (reducing distances)

+ Sufficiency on other goods and food
Four levels of efficiency

1. Efficiency of building and manufacturing
   - Life-cycle energy optimisation, upfront and after use
   - Recycling, use of biomaterials
   - Building with wood...

2. Efficiency in using and adapting
   - Insulation, passive gains, optimisation of energy exchanges with environment
   - Thermal retrofitting of existing buildings

3. Efficiency of equipments
   - Reduction of losses, conversion performance of end-use equipments
   - Efficient lights, appliances, vehicles...

4. Efficiency of production
   - Conversion performance of production, reuse of energy
   - Combined heat and power (CHP)
Diversified and balanced mix of renewables

Energy supply by local renewables

- Solid biomass
- Wind
- Biogas
- Photovoltaic
- Hydro
- Thermal solar
- Environment heat
- Liquid biomass
- Geothermy
- Waste
- Marine energies
Change in energy demand

Evolution of final energy consumption in the négaWatt scenario
Change in energy demand

Evolution of final energy consumption in the négaWatt scenario
Primary energy consumption in the négaWatt scenario 2017-2050 for France
Reduction of net GHG emissions

Evolution of greenhouse gas emissions to 2050 (and to 2100)

Net zero greenhouse gas emissions by 2050
Economic impacts

**Associated costs**

- Billion €

**Jobs created**

- Billion €
- négawatt
- Trend

- Jobs created
- Associated costs
- Jobs induced
- Gross creation of jobs
- Gross destruction of jobs
- Total net jobs creation

- Jobs created
- New jobs
- Lost jobs
- Net balance

Scénario négawatt/Scénario tendanciel

- Jobs created
- Indirect jobs
- New jobs
- Net balance

- Lost jobs
Energy transition is a need, a responsibility and an opportunity.

It means a deep transformation of energy consumption and production, therefore of the economy and society.

This transformation is not brutal, but it needs to be managed.

It requires all actors to contribute, with a fair balance of efforts and benefits all along.

That can only work if this long term vision emerges as a collective project.

Scenarios show it is technically and economically feasible, it is mostly political work that is still needed.
European project

- Building a similar systemic, bottom-up approach on the European level
- Discussing the balance of sufficiency, efficiency and substitution in different national contexts
- Integrating into a cooperative European vision
More information

Contact: contact@negawatt.org

- Technical and synthetic reports
- Graphics and data
- Videos
- Press coverage
- négawatt news

www.negawatt.org

- Debunking energy issues

www.decrypterlenergie.org