

Buildings and Energy Efficiency in France

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Sustainable Development

Facing a double challenge :

- Energy needs : depletion of fossil energy resources (oil, natural gas, coal) and developing new energy sources
- Climate change: global warming and greenhouse gas mitigation

Energy consumption

	Residential and Tertiary sector	Transports	Industry	Agriculture and others
Europe	38%	30%	28%	4%
France	43%	30%	25%	2%

Existing buildings in France

Residential Housing :30 millions in total, divided into:

- 17 millions : private houses
- 13 millions : apartment buildings

Before1949	1949 - 1975	After 1975
31%	34%	35%

Non Residential : 10 millions of equivalent housing

Final energy consumption (kW/m²/year) in France

	Appliance	Buildings before 1975	New buildings (RT2005)	Average existing Buildings
Residential	Heating	300	50 à 130	250
	Hot water	36		
	electricity for domestic appliances		Not ruled	30
Non residential	Heating	200	20 à 130	200
	Hot water			
	Electricity			100

The French *Grenelle Environment* Round Table (1)

- In July 2007, the French Government initiated the ***Grenelle environment Round Table***, a democratic debate on the environmental issues, between Government, NGOs, local authorities, labour and management, workers and the business world
- A **law** for the implementation of the conclusions of the round table is being to be discussed by the French Parliament
- The **programme** of the law includes the following items:
 - The mitigation of the Climate change effects
 - The reduction of energy consumption in buildings
 - The development of a sustainable urban planning
 - The implementation of sustainable transports for passengers and freight
 - A financing Plan for R&D in the field of sustainable development
 - Measures for protecting the Biodiversity and preventing Biodiversity loss

The French Grenelle Environmental Round Table (2)

New buildings and energy conservation

The goal: to improve the energy efficiency of residential buildings and buildings of the tertiary sector

- The French standard on "Low Energy Consumption Buildings" (i.e. **50 Kw/m²/year** of energy consumption) shall be applied for delivering the **building permit of new buildings from 2020**
- The **new buildings** constructed in the framework of a **national programme of rehabilitation**, shall apply this standard as soon as **2010**
- The French standard on "Positive Energy Buildings" shall be applied from 2020

The French Grenelle Environmental Round Table (3)

Existing buildings and energy conservation

The goal : a cumulative **38 percent reduction in energy consumption** by 2020 for **existing buildings**

- Every **existing building** whose owner is the National State or a Public Agency or a local Authority **shall be audited** in order to establish a diagnosis on energy consumption **by the end of 2010** and to rehabilitate them aiming at a **40% reduction** in their energy consumption and a **50% reduction** in their greenhouse gas emissions.
- The **residential housing** of social sector will be rehabilitated in order to **reduce their energy consumption from 250 (or more) to 150 Kw/m²/year**, the average annual rate being 70 000 apartments/year from 2011
- **Incentive tax credit** will be granted to owners or tenants rehabilitating dwelling units
- The Government will encourage the **repayment of loans** to Banks and Insurance Companies, based on the cost estimate of annual energy savings

Development of rehabilitation technologies for existing buildings (1)

- **Improving the performance of heating systems et and of hot water production:**
 - High performance boilers with condensing economiser
 - Supplementary heating sources such as heat pumps, geothermal
- **Reducing the heat loss**
 - External insulation of walls
 - Double glazing of windows with reinforced insulation and insulated locking systems
- **Improving the internal building ventilation (double flow)**
- **Developing renewable energy sources (20% of total final energy consumption)**
 - Solar thermal for hot water production
 - Photovoltaic cells for domestic electricity production
- **Responding to air cooling needs**
 - Reversible air conditioning systems
 - Heating and cooling walls in interior spaces
 - High scale "heat and cold" thermal storage

Development of rehabilitation technologies for existing buildings (2)

	Energy conservation ranking (base 100%)	Average return on investment
Thermal insulation of walls	98	15 to 20 years
Double glazing with reinforced insulation	25	10 years
High performance boiler	30	3 years
High temperature heat pump	62	10 years
Low temperature heat pump		3 to 5 years
Solar hot water	18	5 to 10 years

The end

Thank your for your attention

