

# Enterprise-wide approaches to power sector energy efficiency improvements

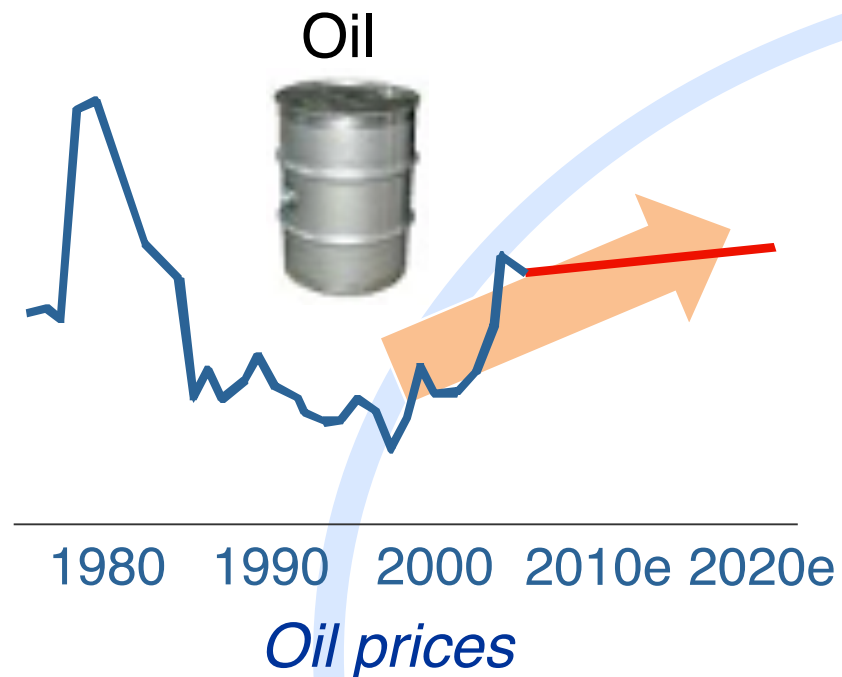


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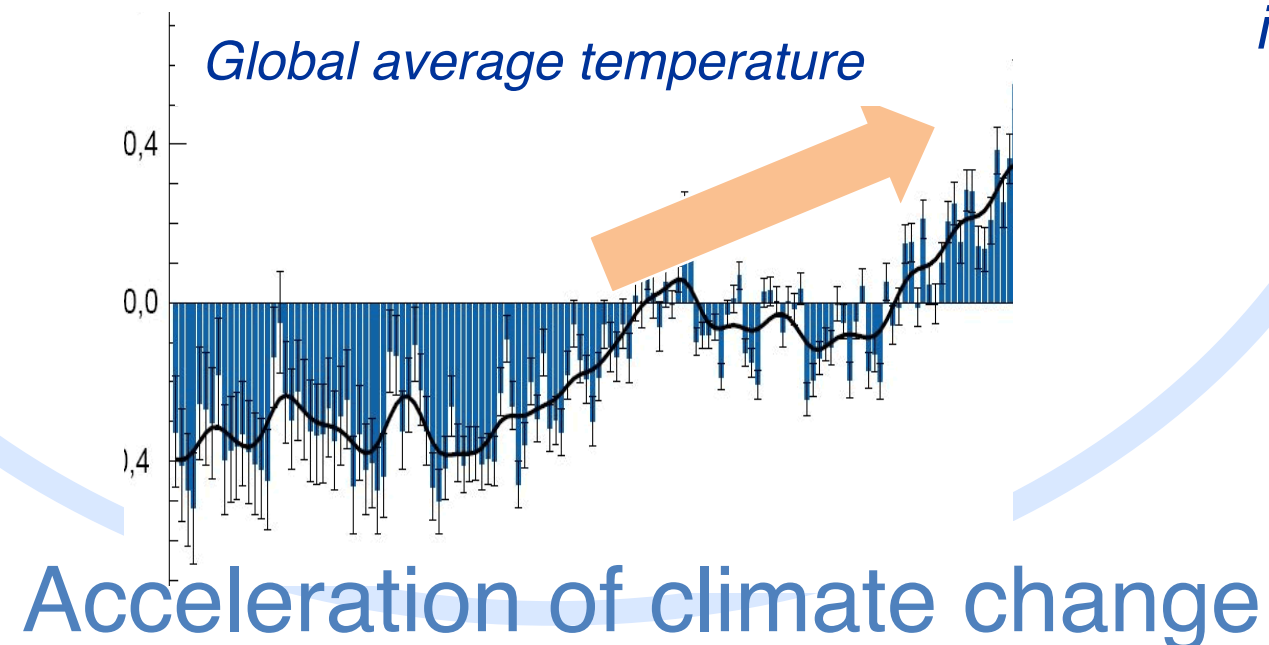
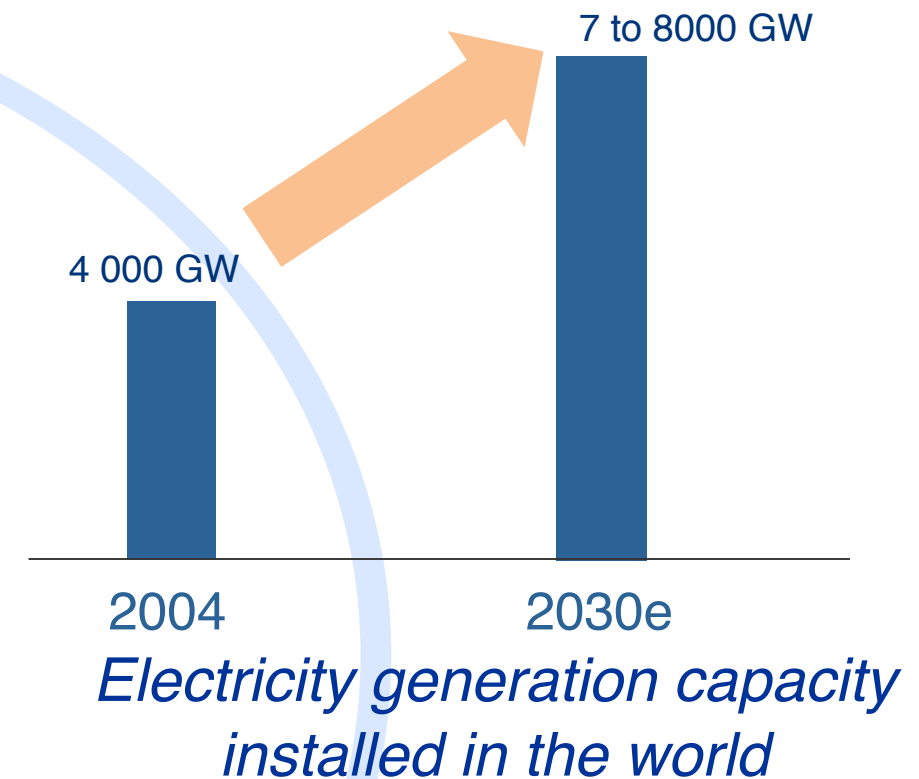
# The Big Bang...

Continuing expensive fossil fuels



Three challenges beyond the crisis

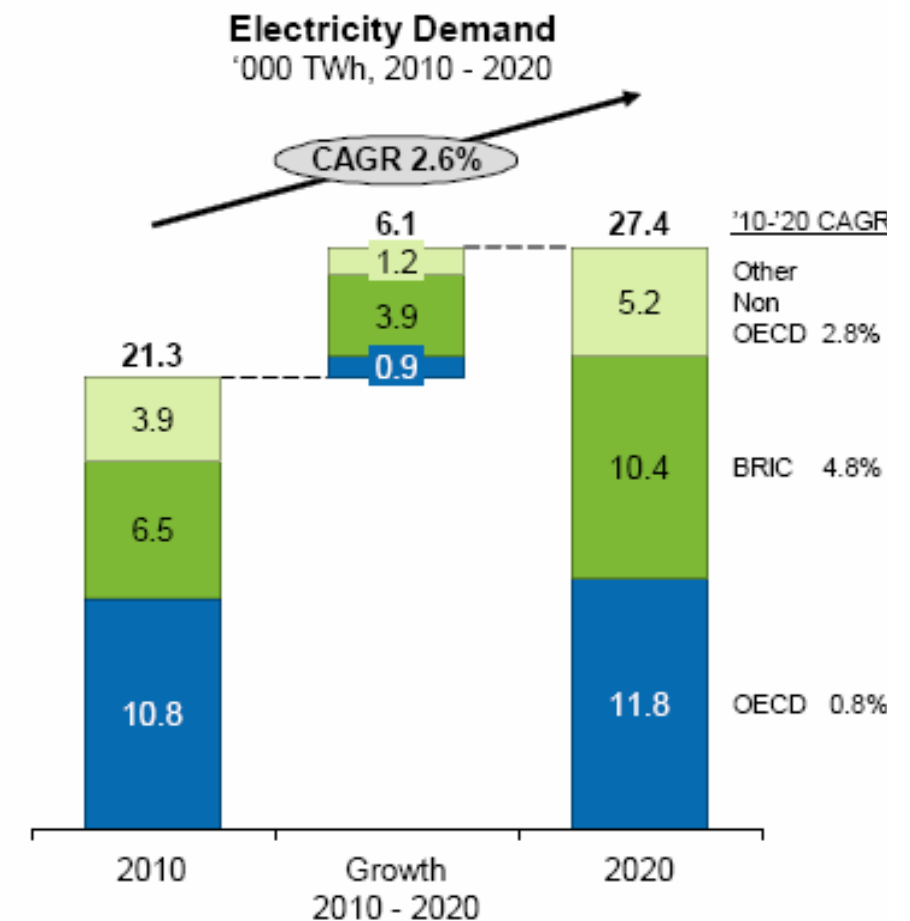
Energy needs in strong growth



# The double Big Bang...

## Four key developments are changing the world:

- ▶ An increase in the urban population: 50% of people living in cities, 70% by 2050
- ▶ Resource scarcity
- ▶ A plural and multi-polar world (new emerging powers: China, Brazil, India, etc.)
- ▶ An ever-more sprawling, decentralised world (urban systems, local energies, smart grids and meters, etc.)



Source : IEA World Energy Outlook 2010

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**1/3**

of global energy needs  
met by **electricity**

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**2 Billions**

people who don't have **access to energy**,

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**40 %**

of global **GHG** emissions from  
**energy sector**,

# There is no “silver bullet technology”

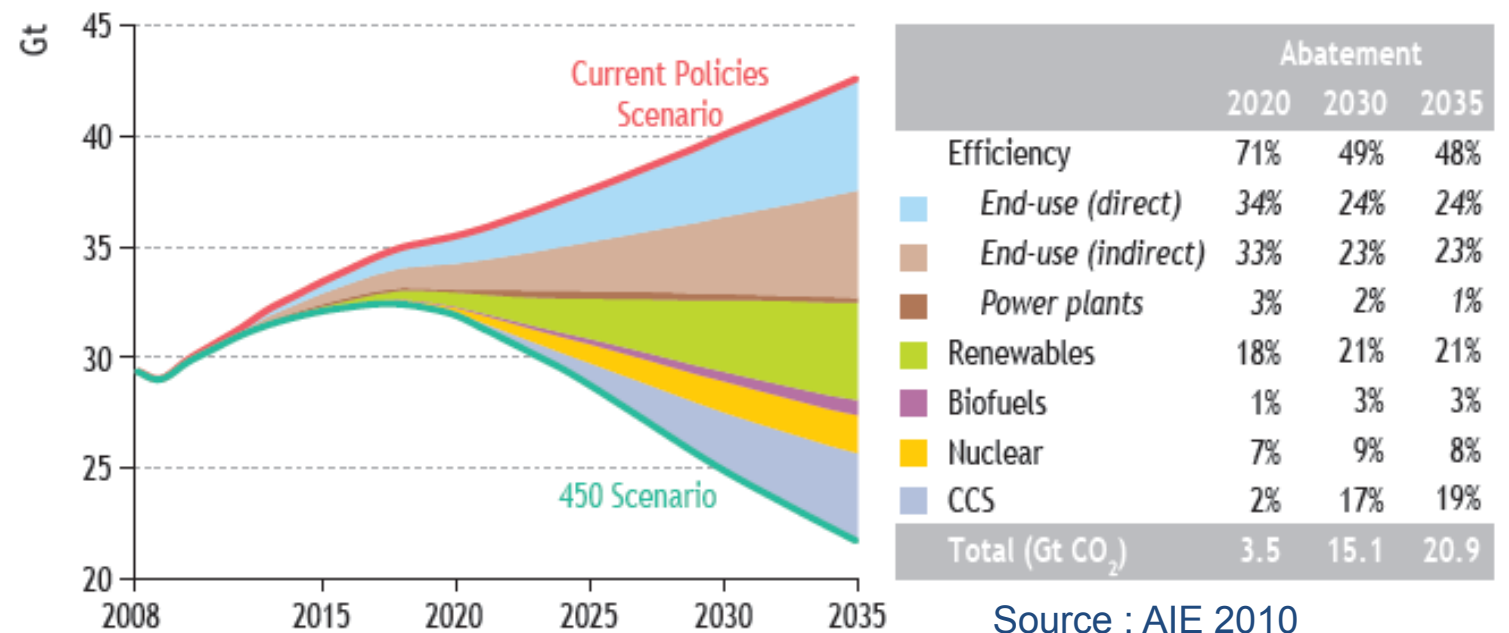
- ▶ Electricity accounts for 40% of the energy sector GHG emissions. Holding global warming under +2°C requires us to divide the carbon content of electricity by a factor 10 (from 500 to 50g CO<sub>2</sub>/kWh) by 2050
- ▶ This means a complete reversal of the global electricity mix:
  - From 1/3 carbon-free and 2/3 fossil today
  - To 1/3 fossil with CCS and 2/3 carbon-free.
- ▶ To achieve this, we need to have development on the supply side of ambitious energy efficiency programs.



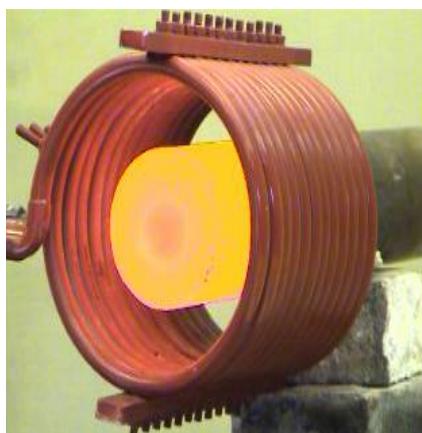
# Energy efficiency is a key answer

- 50% of potential reductions of CO<sub>2</sub> emissions
- Technologies to curb demand and promote energy efficiency

World energy-related CO<sub>2</sub> emission savings by policy measure in the 450 Scenario



Induction



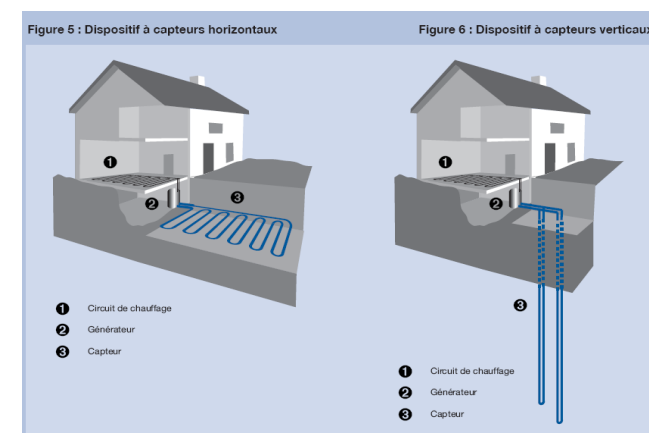
Industrial Heat Pump



Housing insulation

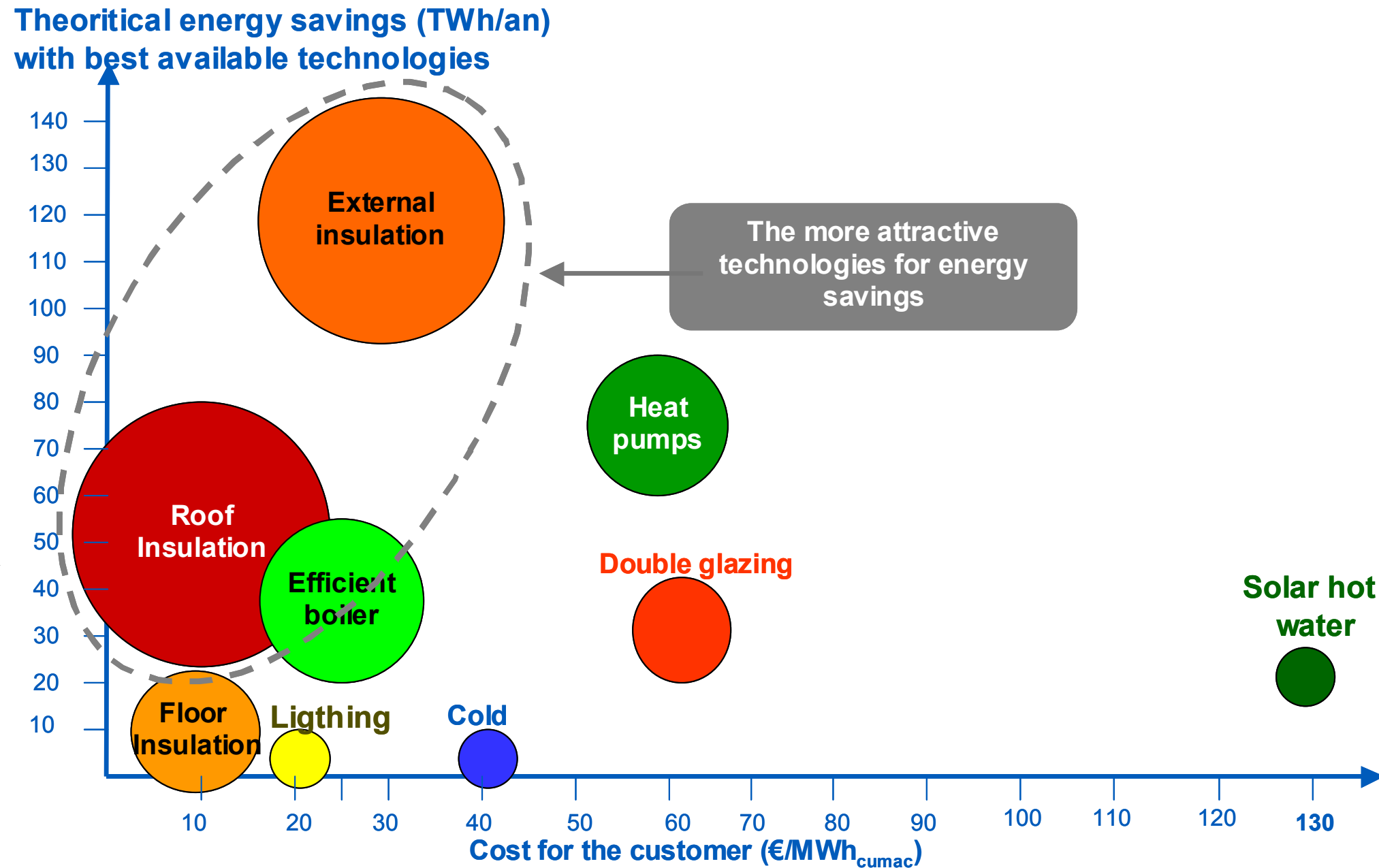


Residential Heat Pump



# High potential of energy efficiency improvements but its content varies among regions

- Insulation is the most effective action
- The refurbishment market is large, provided that it is made more affordable to customers
- A reduction of the needs for heating by 30 to 50% is achievable in **Northern Europe**
- Stakes and objectives are different in **Southern Europe**



# Energy efficiency increases at moderate pace because of barriers

- ▶ Investment costs (up-front payments)
  - **High preference for present consumption** (low value to uncertain long - term savings)
  - Financial constraints (income insufficient to invest)
  - Reluctance of the customer to invest in energy efficiency rather than in its own core business
- ▶ “Split incentives”
  - Actors making investment are not necessarily those that will reap the benefits
- ▶ Transaction costs
  - Large number of players on both sides of markets (customers – installers)
  - **Lack of professional skills (importance of capacity building)**
- ▶ For the potential of energy efficiency improvement to be tapped, we need public policies combining high performance standards and electricity prices reasonably reflecting costs

# Three directions to realize the energy efficiency improvement potential

Increasing investment

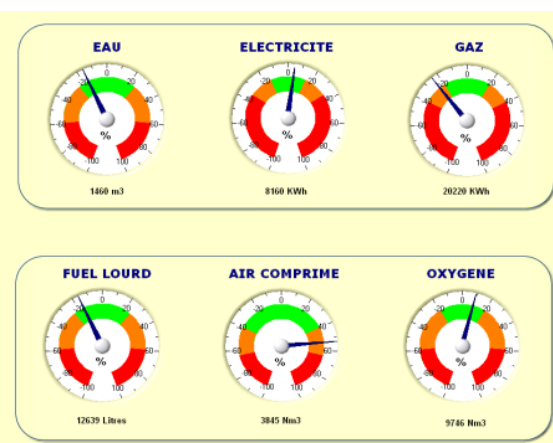
1 – Reduce energy requirements



2 – Use local renewable energies and recover heat losses



3 – Use high efficiency systems





# Energy efficiency require

1. A favorable national framework with no overlapping regulations
2. Local industrial partnerships
3. Financial relevance, clear investment policies and smart investments : PPP – Create clear and stable incentives,
4. Corporate Social Responsibility



# Energy efficiency improvements

Any development program should :

- Include Demand Side Management
- Ensure balance between commercially proven technologies, incentivised technologies and R&D development
- Need ownership from all the stakeholders



**Thank you**

# Energy Efficiency: EDF policy in France

- ▶ Increasing customer consciousness and inciting him to be “virtuous”
  - Information on energy savings
  - Advertising campaigns, ...
- ▶ Realising diagnoses to identify sources of energy savings
- ▶ Accompanying the customer (incl. financially) to help him make the good choice and implement it properly
  - (Directly or indirectly through partners)*
- ▶ Prefiguration of solutions
- ▶ Engineering and installation of solutions
- ▶ Operation & maintenance of solutions



# Some examples of EDF actions : services to enterprises & local authorities



LEADING THE ENERGY CHANGE

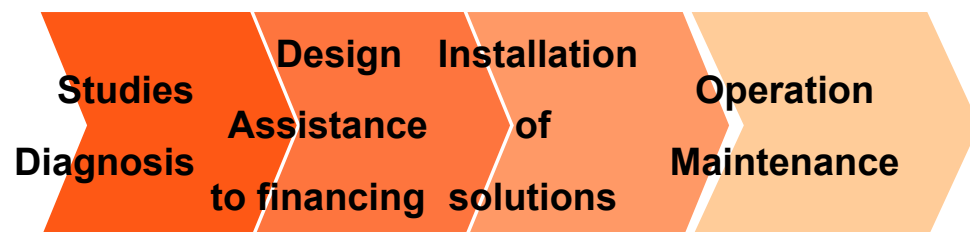


**Optimal Solutions**

GROUPE EDF

- ▶ Our objectives : help enterprises & local authorities reduce energy consumption & CO<sub>2</sub> emissions
- ▶ To fulfill client's energy-related needs:
  - ▶ Heating
  - ▶ Cooling
  - ▶ HVAC
  - ▶ Lighting
  - ▶ Building efficiency
- ▶ **Intervention over the whole value chain with qualified partners**

- ▶ Intervention on the occasion of key events
  - ▶ Equipment replacement
  - ▶ Extension of site
  - ▶ Building or retrofit of a building
- ▶ 4 directions of action :
  - ▶ reduce energy needs
  - ▶ use local & renewable energy sources
  - ▶ use high efficiency equipments
  - ▶ secure energy supply
- ▶ **More than 2000 industrial customers/local authorities as clients**



# Some example of EDF actions in France

## capacity building

- ▶ An innovating and voluntary training device for **building companies and craftsmen dedicated to energy saving**
- ▶ Four sessions :
  - Identification of the key elements of a global energy saving offer
  - Controlling of the software to implement this offer
  - Knowledge, control and implementation of the energy improvements technology (lighting and other electrical equipment, etc.) : one for residential and another for service buildings.
- ▶ In practise
  - **100 centres in France**
  - Since the beginning of 2008, nearly 20 000 professionals trained.
  - A new objective in negotiation : **120.000 trained at the end of 2012.**
  - A reflection in progress for modules on the new Positive Energie buildings
- ▶ Training sessions in public lighting optimisation for **Local authorities' technical departments**



# Examples of EDF actions in France

## services to residential customers

- ▶ *Consumption follow-up (“Suivi conso”)*
  - A follow-up of the annual consumption in kWh and €, starting from a on line questionnaire , with monthly analyses if required
  - Practical advices to reduce consumption/bill.
  - Annual assessment of consumption
- ▶ *Customisable home*
  - For the customer to see and simulate his energy costs
- ▶ *Energy labelling application (Iphone)*
  - To support the customer’s choice of appliances
- ▶ *Work estimates (“Estimation Travaux”)*
  - A detailed and personalised estimation by phone of potential energy savings in case of renovation
- ▶ *Work objectives & achievement (“Objectif Travaux”)*
  - A thermal audit of the house, with a report including recommendations
  - Professionals partners Bleu Ciel d’EDF (with a quality reference frame) carrying out the job
- ▶ *Loan for housing refurbishment*
  - Lowered interest rate