



CSR
in Total's business model

Total and the climate change challenge

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General context – Climate change and energy

- Fossil energies still represent 75% of energy supply in 2030 : diversification of supply is needed to satisfy energy demand
- Increasing complexity about geopolitical, technical/regulatory costs and natural resources uses concerns
- Climate change and growing need of technological investments both in oil & gas and renewable energies

Deep offshore



- Technological frontier
More difficult crudes
- Reducing flaring

LNG



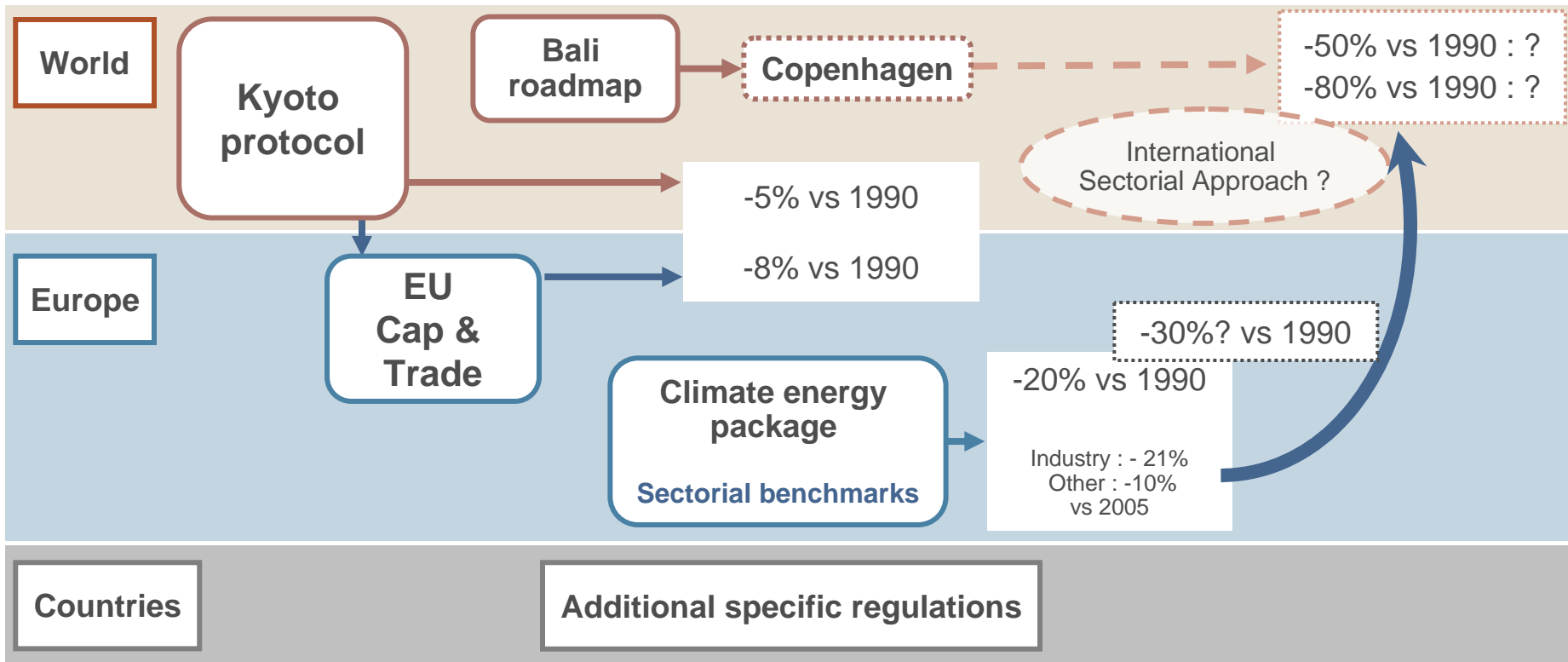
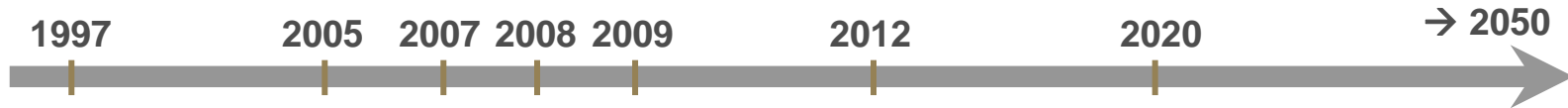
- Increasing the efficiency of liquefaction

Heavy oil



- A challenging resource to extract and to produce
- R&D needed
- Water management and soil remediation

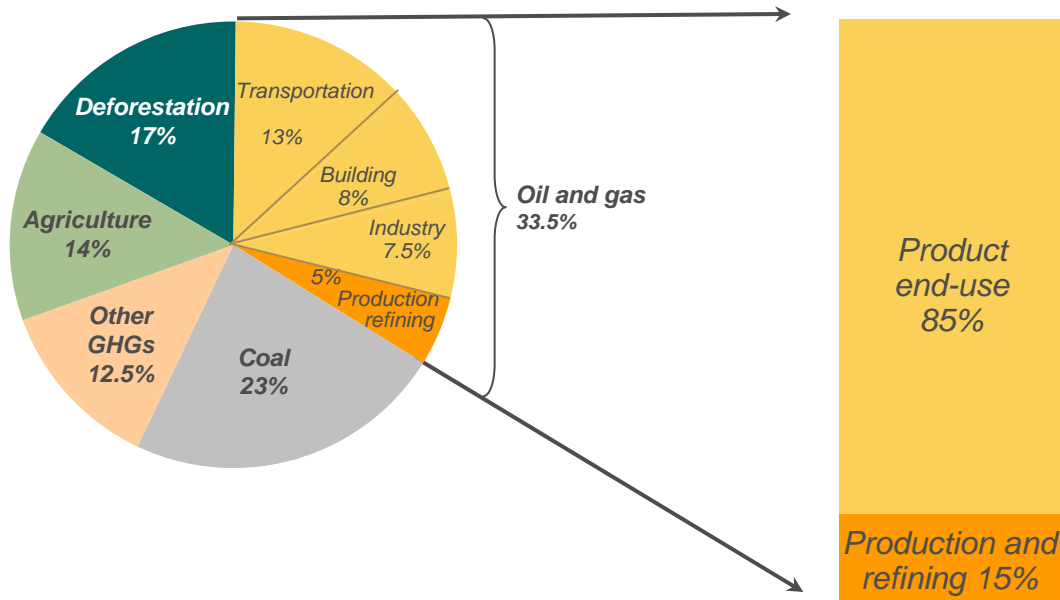
Complex and evolving climate regulatory framework



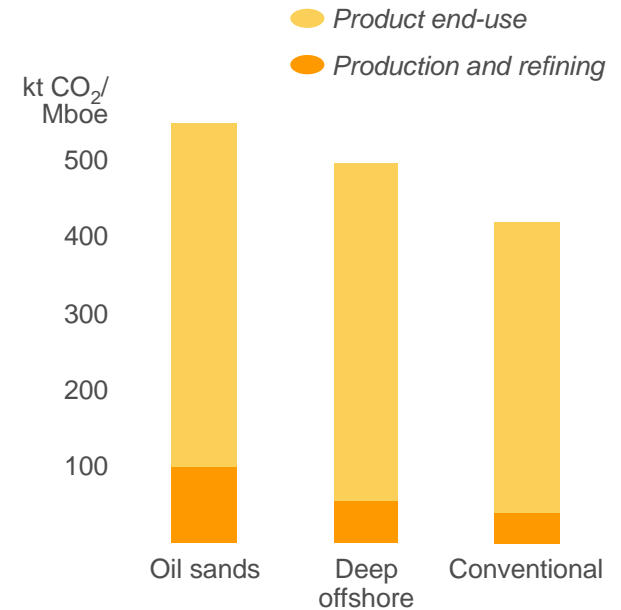
***International negotiations need to define global framework that is fair and avoids distortion of competition
Total early involved in sectorial mechanism, through professional associations***

Oil and gas GHG emissions

Global GHG emissions by origin*



GHG emissions by oil source**



Working on solutions for production and refining
Need to work with industry and consumers
on greater efficiency in end-use phase

* International Panel on Climate Change (IPCC) 2007 and IEA 2007

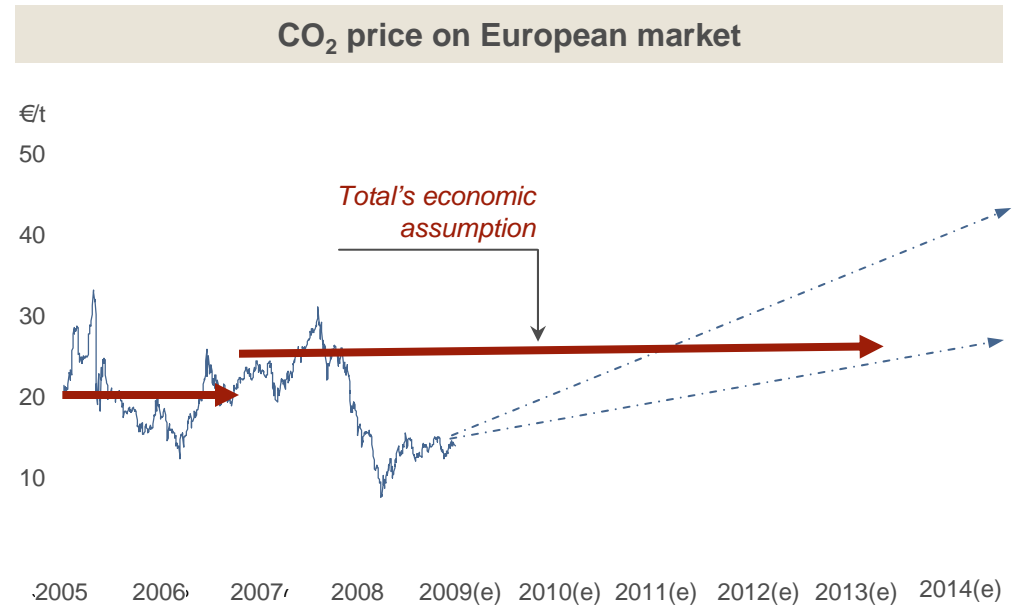
** Total

Total's response

- *Reduce flaring*
- *Improve energy efficiency (industry and customers)*
- *Develop CO₂ capture and storage and low CO₂ energy to meet energy challenge*

Cost of CO₂ integrated in our strategy

- › Consider CO₂ emissions of each project
- › Economic assumption of 25 €/t CO₂ in our new projects since 2008
- › Price signal linked to regulatory framework and technology development



- › EU market price estimations for 2020 between 20-50 €/t

***Long-term visibility required
to define sustainable investment and R&D strategy***

Exploration & Production : no flaring on new projects and flaring reduction on existing fields

- › **Flaring reduction technologies :**
 - Valorization of associated gas through LNG
 - Increase reinjection

- › **Context of projects on existing fields (Nigeria, Libya, Russia)**
 - Local context
 - Partnership decision
 - Economic conditions

- › **Success in associated gas treatment without flaring :**
 - **on new projects**
 - Currently producing : Girassol, Dalia and Akpo
 - Ongoing projects : Pazflor, Usan, Egina
 - **on existing fields**
 - ABK (OKDG project) : new compression unit to recover low pressure associated gas
 - Nkossa : improvement of compression capacity and reliability
 - Amenam : gas valuation by export to Bonny LNG

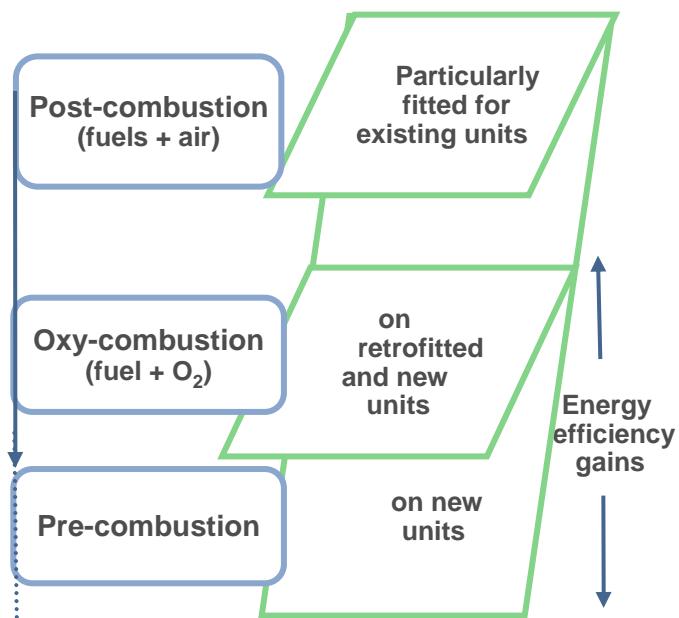


***Flaring reduction target : -50% in 2014 vs 2005
subject to partners' support***

CO₂ Capture and Storage : a chain of potential technologies

Capture

For industrial units, power generation, gas treatment, LNG, gas turbines, unconventional crude production...

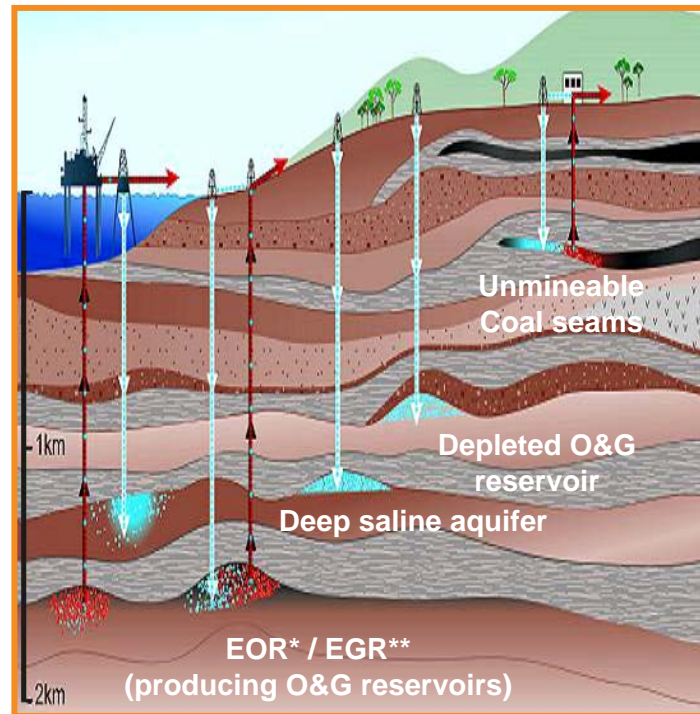


on industrial units, power generation, gas treatment, LNG, gas turbines, unconventional crude production, ...

Transport



Geological storage



Committed to making CCS sustainable

Cooperation strongly needed with private and public stakeholders

Geological storage image source : IPCC

* EOR : Enhanced oil recovery

** EGR : Enhanced gas recovery

Total CCS pilot in France : the first fully integrated project

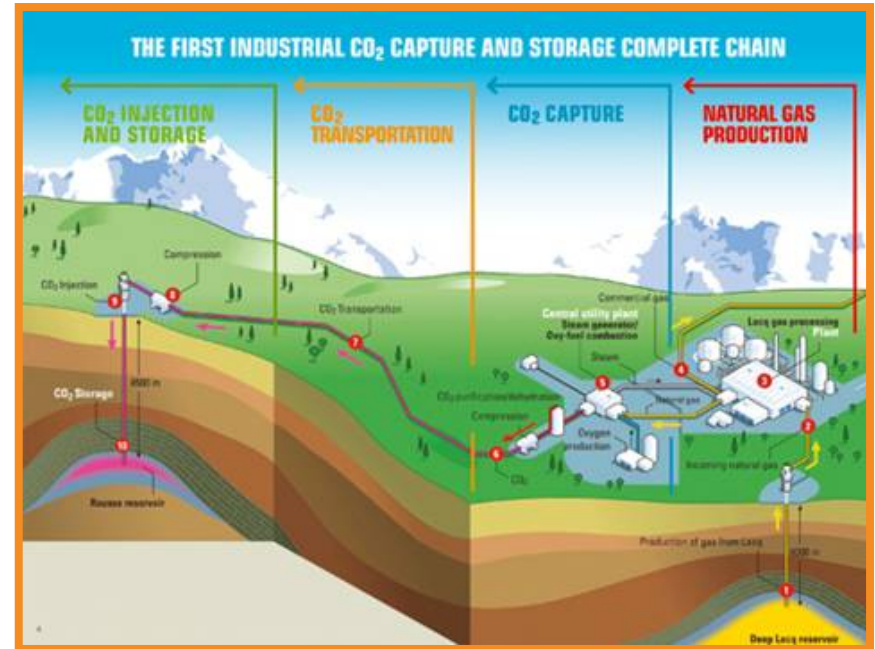
> Innovative approach

- Technology (oxy-combustion, monitoring...)
- License to operate on existing gas field
- Public dialogue

> Project budget : 60 M€ Capex

> Objectives following the start-up of oxy-combustion and capture (June 2009)

- Start up injection end-2009
- 120 kt CO₂ injected during 2 years equivalent to emissions of 40,000 vehicles
- Oxy-combustion from laboratory (30 MW) to industrial scale (300-500 MW) in 2015+



***Acquire expertise and reduce costs
for future industrial deployment***

Total strategy on energy efficiency

ON OUR INSTALLATIONS

- › Operational optimization including monitoring, reliability and maintenance
- › More energy efficient new projects
- › Sharing best practices and technologies
- › R&D partnerships

***Targets for optimization :
-1% per year for Refining and
-2% per year for E&P and Petrochemicals***

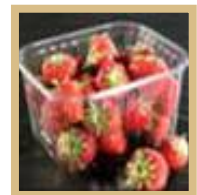


INNOVATIVE SOLUTIONS FOR END-USERS

- › More energy efficient and environment friendly products and services
- › Labeling process
 - ISO 14021 principles
 - External audits
- › 12 products already labeled



Lubricants

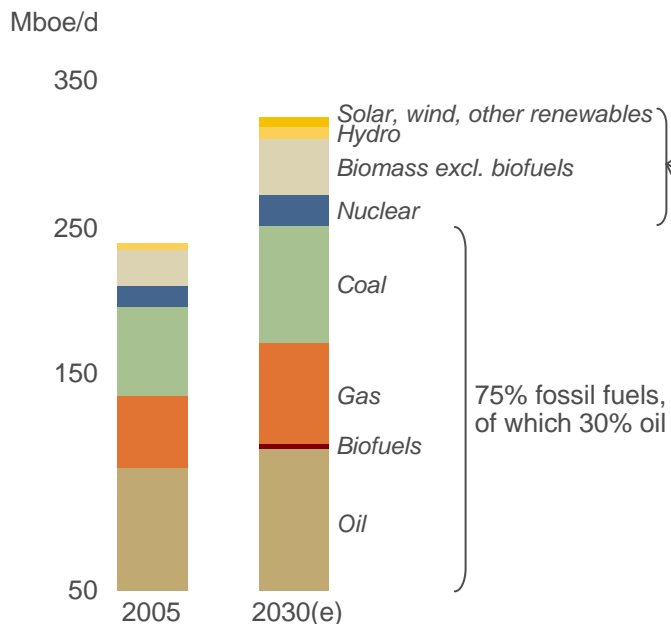


Packaging

Total Ecosolutions products avoid up to 500 kt/y CO₂

Developing low CO₂ energies to meet the energy challenge

Global energy supply mix by 2030(e)*



Main axes selected by Total to develop low CO₂ energies

Solar	
<ul style="list-style-type: none"> > Differentiating technology > Reducing cost > Integrating along the PV** chain 	
Biomass	
<ul style="list-style-type: none"> > Strong R&D commitment for advanced biofuels 	
Nuclear	
<ul style="list-style-type: none"> > Learning via Penly EPR > Developing new projects in producing countries 	

Capitalizing on industrial assets and R&D to develop solar, nuclear and biomass
Participating in the energy diversification of oil and gas producing countries

* Total estimates

** PV : photovoltaic