



Manufacturing and sustainability

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New generation of products
DG Research
European Commission

Policy goals

A renewed Lisbon strategy for growth & jobs is the response of the EU to globalisation



MAKING EUROPE A MODEL OF SUSTAINABLE
SOCIAL AND ECONOMIC DEVELOPMENT



The challenge of a sustainable use of resources

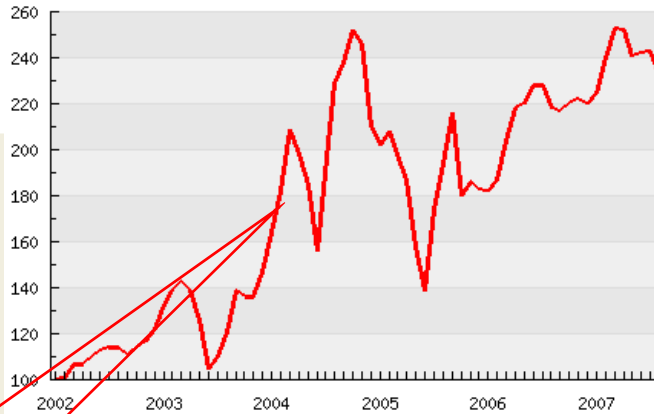
Policy drivers

Indicative Oil Prices
(US \$/b)



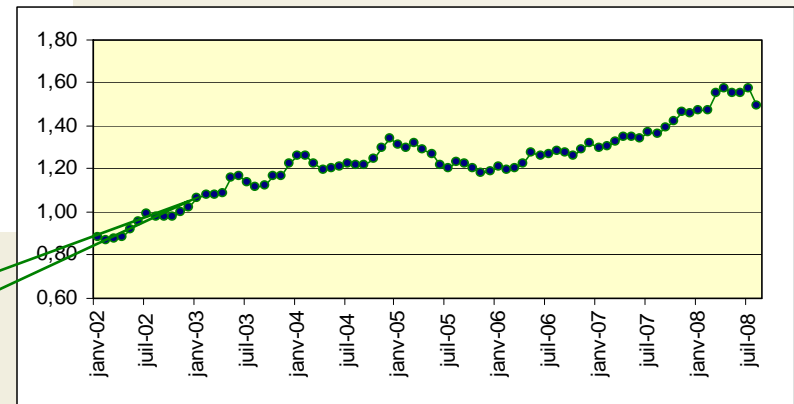
- Increasing prices of energy & raw materials !
- Unfavorable exchange rate (€/ US \$) !

Threats



Indicative Steel Prices
(relative index)

€/US \$
Exchange rate



FP7 - Cooperation

Theme 4: NMP

Overall objective : ***To improve the competitiveness of EU industry and ensure its transformation via:***

- the effective transition from a resource-based to knowledge-based industry, meeting as well sustainability challenges
- generation of new breakthrough knowledge
- strengthening EU leadership in nanotechnologies, materials and production technologies
- emphasis on integrating different technologies and disciplines across many industrial sectors

Agenda objectives

Transformation of industry

Transf. of R&D

Goals
Drivers

Make/delivery products services

Innovating products

Inno-vating research

Competition

Rapid technology renewal

Eco-sustainability

Regulation

Socio economic environment

Values – public acceptability

Time scale

New added value products and services

New business models

Advanced industrial engineering
Processes

Emerging manufacturing sciences and technologies
Standards

Infra-structures and education

Con-tinuous

Short-medium term

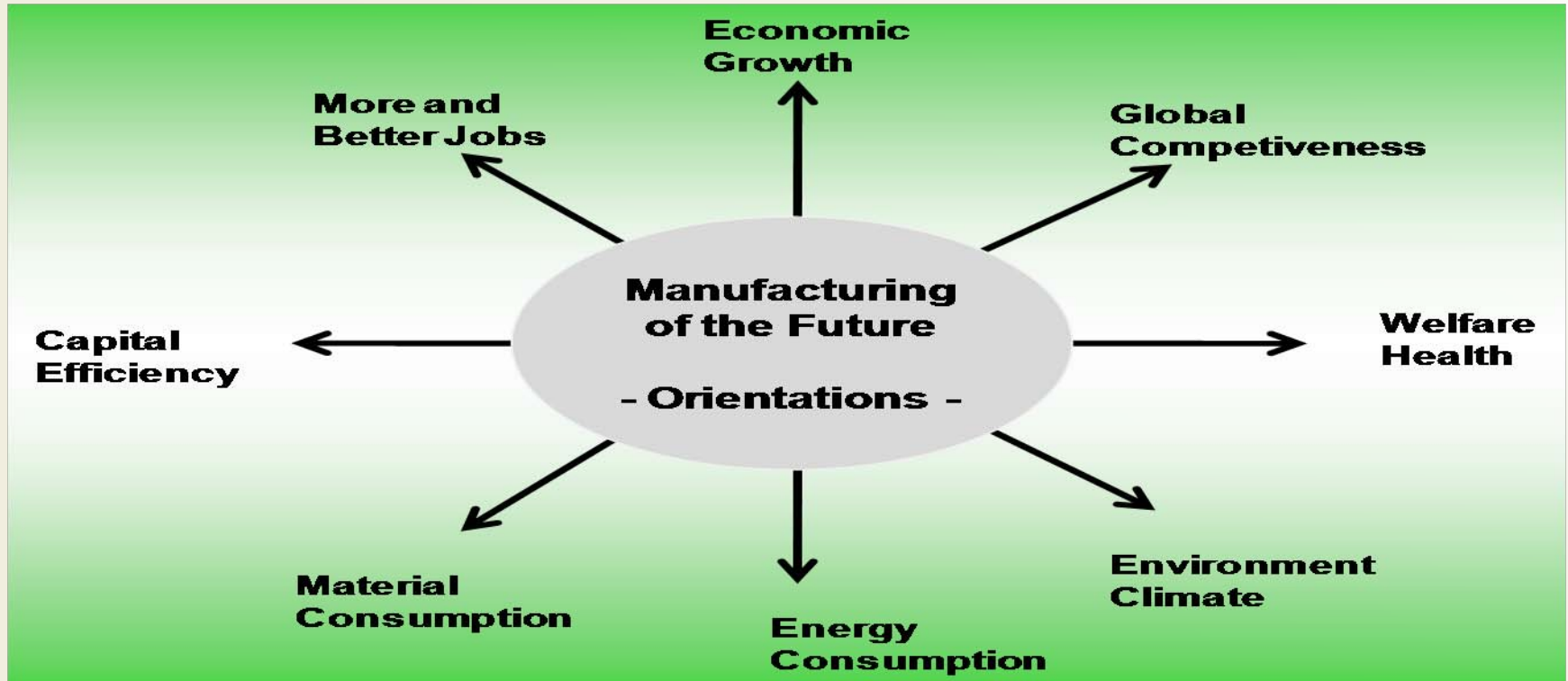
Medium term

Long term

Long term

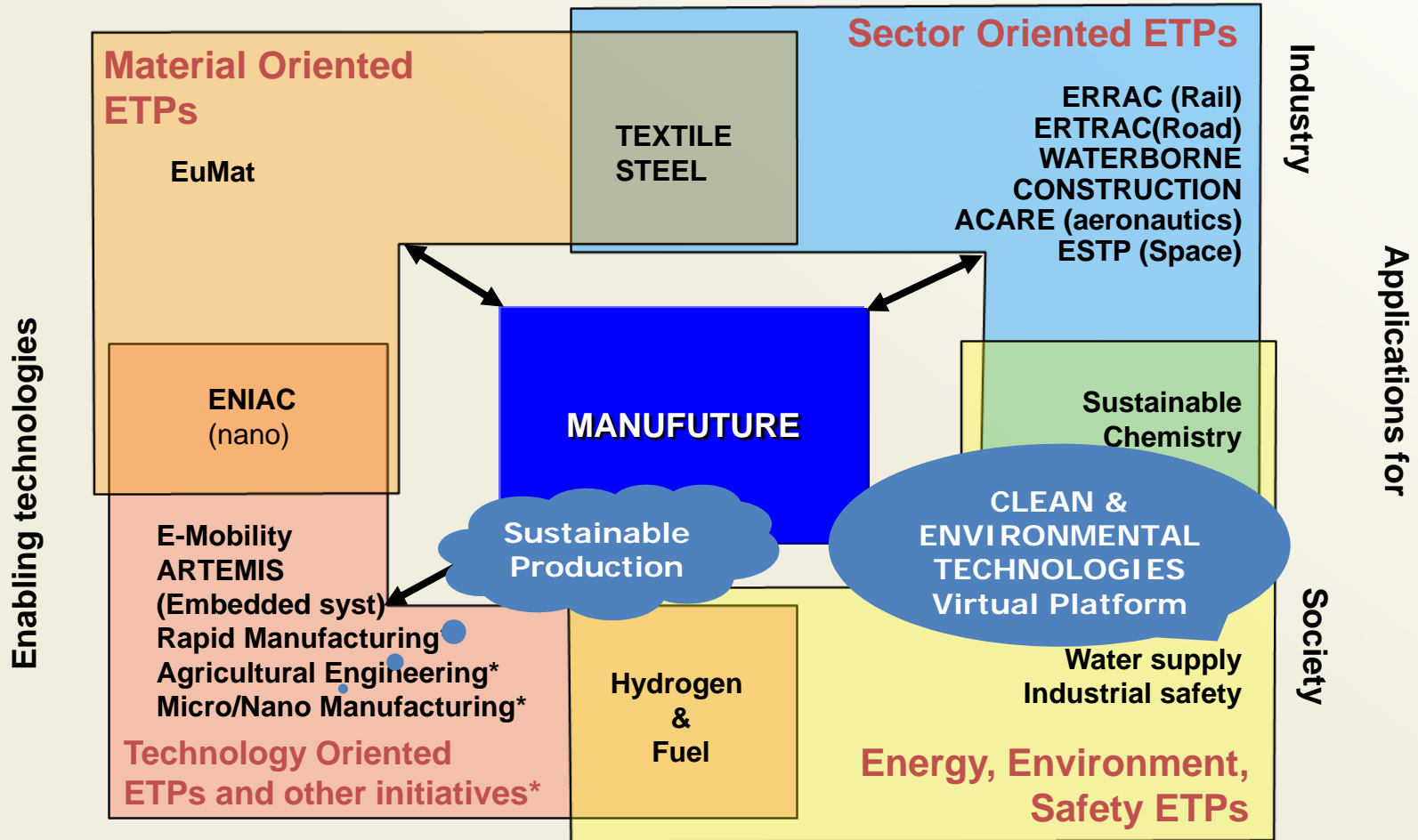
Manufacturing Research Policy Framework

Sustainable development requires a wider approach ...



We must resolve conflicting strategic objectives to deliver the “Green” Knowledge-based Factories of the Future

Manufacture Platform



Energy Intensive Industries (EIs)

The magnitude of the problem: 30 Gtons of CO₂/year

- HEAT and POWER: 12.0
- TRANSPORT: 7.2
- INDUSTRY: 6.6 (or 22%)
- OTHER SECTORS: 4.2

Energy Intensive Industries are 72% of industry's share

Steel and Cement give 3.0 Gtons, or 50% of industry's share

SOLUTIONS: Examples of Industrial Research for the EIs:

- **FP6 : Steel ULCOS (case 1).**
- **FP7 Call NMP2009:**
 - **Cement : Case of co-processing (case 2),**
 - **Pulp & Paper BIOREFINERY (case 3).**

Case 1: ULCOS project in FP6

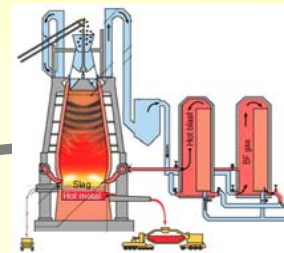
Budget: € 54 Millions (44% is EU funds)

Objective: Identify steel production routes with the potential of mitigating specific CO₂ emissions by a *factor 2* or more

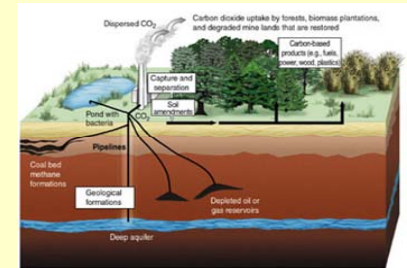
C-based steel production + CO₂ Capture & Storage



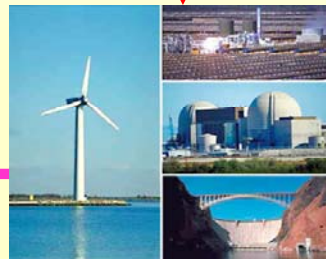
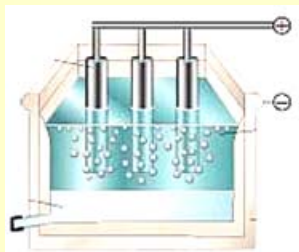
Biomass-based steel production



Natural Gas-based steel production



Electrolysis steel production

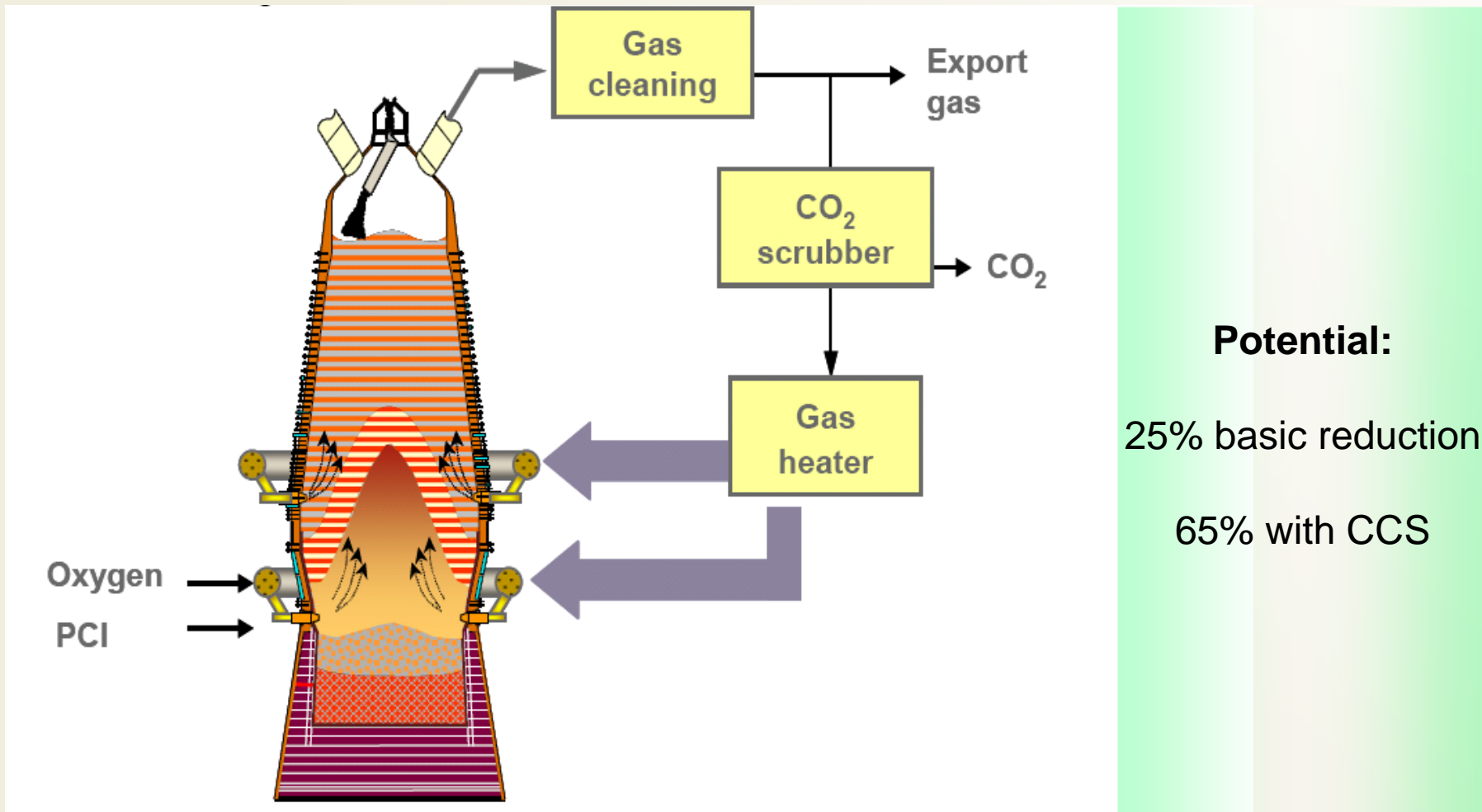


Production of C-clean electricity

Hydrogen-based steel production



TGRBF: Top Gas Recycling Blast Furnace



Case 2 : CEMENT co-processing

- **Waste (Alternative Fuels and Materials)** provides 30-50% of cement energy needs: large reduction on CO₂ emissions;
- The use of this technology could be expanded: mainly in emerging countries;
- Transfer of this technology to other EIs should be encouraged;
- FP7 support: 2009 NMP Call topic on EIs.

WP 2009 - NMP

Reducing the environmental footprint of EIs

- Development of new more cost and energy efficient processes and technologies
- For eco-efficient products contributing to the CO₂ reduction goal
- Large-scale integrating Collaborative Projects
- Industrial leadership, multisectoral approach & large-scale demonstration give added value

Case 3: Flexible Pulp & Paper Biorefinery concept



New products:

- ✓ Bio-Fuels
- ✓ Bio-Composites
- ✓ Speciality Chemicals
- ✓ Heat & Power

Flexible production (best value from production of pulp, chemicals & energy)
Maximizes the utilisation of biomass
Conflict of aims (e.g. energy demand increase as “waste” is not used for heat)

WP 2009 - NMP

Joint Call on Biorefinery

- 4 Themes: Biotech, Energy, Ind. Tech. & Envir.
- Sustainable processing of biomass into value-added products and energy
- Sustainable biorefineries: Large CPs addressing bioproducts & bioenergy – € 55 million
- Enhancing exchange of information & synergies between projects – Coord. Action - € 2 million

Manufuture Platform & FP7-NMP

Expected activities

- Continued interactions with ETPs and other stakeholders for supporting the preparation of the WPs (2009-2013)
- Monitor the implementation at EU, national and regional level
- Find synergies with other programmes (ICT, Energy, etc.)
- Possible establishment of a KIC for the EIT
- Possible launch of JTIs (Manufacturing, Construction)
- New ERANET on Enabling Production Technologies

www.notre-planete.info

“Green Partners”

A global RTD partner in the field

Clean & Environmental Technologies

Status & Partnership ?

The CET Platform wants to carry out its activity in close collaboration with the ETPs, Public Bodies, Networks and Clusters having common goals.

- Preserving water resources from pollution – use technologies with less intensive water request – improving the quality and re-utilisation of liquid effluents.
- **Contributing to the Sustainable Manufacturing by defining new or improved eco technologies and processes.**
- Developing new or improved waste material treatment technologies to preserve natural resources and support the EU economy.
- Reducing harmful and GHG emission in existing and new industrial processes
- Enhancing the application of bio processes in the environmental technologies.



FOCUS

- Metal & plastic forming
- Surface preparation
- Surface coating



“Green Partners”

Observing, Linking, Coordinating & Consolidating RTD actions in Europe in order to support effective & efficient innovation on sustainable production processes with the use of IT technologies (CSA)



- ✓ A Roadmap for innovative high added value sustainable production processes through either:
 - continuing optimisation of critical elements,
 - implementation of dedicated holistic and integrated approach
- ✓ « European Observatory » on Clean Production by a dedicated website

Exploitation by GREENOVATE Europe,
... a dedicated RTD partner

“Green Partners”

- Continued support to clean & sustainable manufacturing at policy level
- Participating in EU manufacturing projects (e.g. under NMP in FP7) by dealing with the environmental & life cycle optimisation aspects
- Providing suggestions for possible NMP topics

Expected activities