



# **NMP in FP7: Overview of the WP and future calls**

*"Improve the competitiveness of the European Industry"*

**Milan GROHOL**  
**Industrial technologies**  
**DG Research**  
**European Commission**

12-13 November 2008

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## Manufacturing ... ... still driving Europe's economy

**EU-25 manufacturing industries  
employ about 34 million (30.4%) people  
and generate annually €1,535 billion  
(41.5%) of value added**

Source: Eurostat (2005)

### Industrial economy

- **Tangible resources**
- **Certainty, little change**
- **Traditional skills**
- **Mass markets**
- **Simple products  
& processes**



### Knowledge Economy

- **Tangible + intangible resources**
- **Uncertainty, highly dynamic**
- **New skills**
- **Mass-customization**
- **Complex products  
& processes**



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# Constrains of EU industry

**No margins of competitiveness:**

**By using more natural resources**

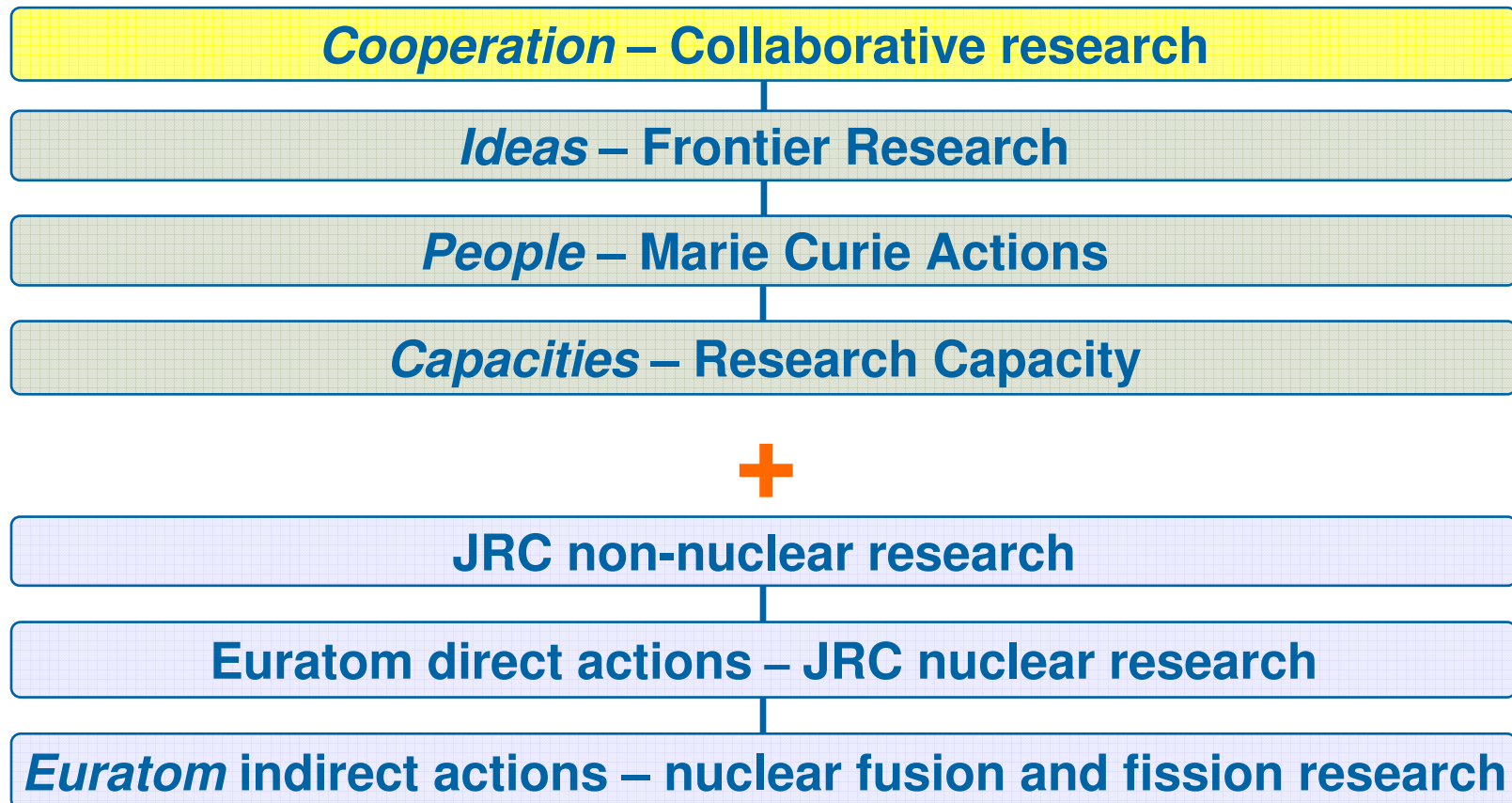
**Against the environment**

**Against social standards**



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# FP7 2007–2013 Specific Programmes



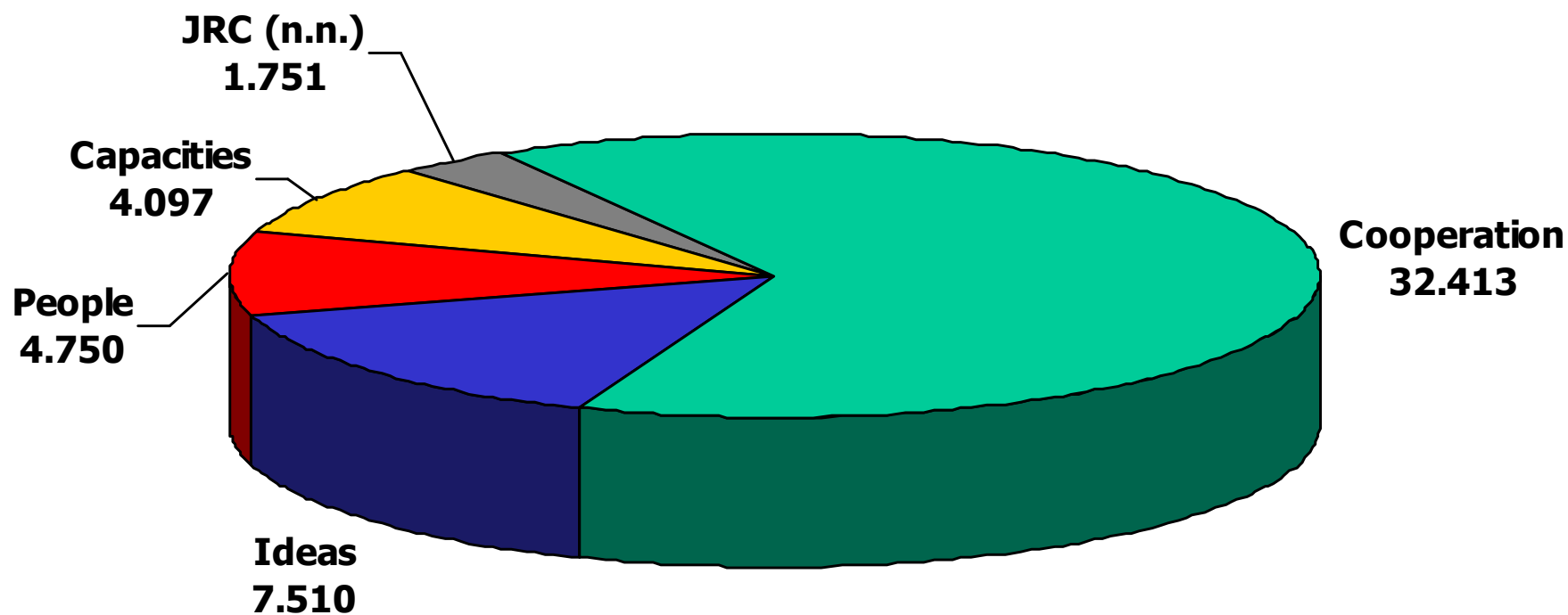


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# FP7 budget

(in billion €, total 50.521)



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# FP7 – Cooperation

## 10 Themes

(€ million)

1. Health	6 100
2. Food, agriculture and fisheries, and biotechnology	1 935
3. Information and communication technologies	9 050
<b>4. Nanotechnologies, materials and production (NMP)</b>	<b>3 475</b>
5. Energy	2 350
6. Environment	1 890
7. Transport	4 160
8. Socioeconomic research	623
9. Space	1 430
10. Security	1 400
Total	32 413



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## NMP aim

**Products with more added-value** - especially by moving from:

- **Individual to system competitiveness**
- **Resource-based to knowledge-based economies**
- **Macro → micro → nano**
- **Mono-disciplinarity → inter-disciplinarity → convergence**



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# Objectives FP6 to FP7

- **FP7 same as in FP6 : improve the competitiveness of EU industry (including SMEs) and ensure its transformation through:**
  - effective transition from a resource-based to knowledge-based industry
  - generation of new breakthrough, applicable, knowledge
  - strengthening EU leadership in nano, materials and production technologies
  - emphasis on integrating different technologies and disciplines across many sectors
- **BUT Importance of Technology Platforms in establishing common research priorities and targets**



# NMP - Priorities

- **Policy input**
  - the EC and Member States policies for Industry, Environment, Social Affairs, Health...
- **European Technology Platforms - Strategic Research Agendas**
  - Strong involvement of Industry / Research / Academia
- **Foresight studies**
- **Advisory bodies / Stakeholders / Public Consultations**
- **On-going projects**



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# NMP - Industrial Focus

- **NMP addresses all industrial sectors**
- **Industrial partner participation** - key for all research activities;
- **SMEs importance** in generating value added in the networks;
- Oriented to **multi-sectoral benefits**



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# NMP - Expected Impact

- **Significance** of new Products/processes in Industry/Society;
- **Competitiveness & Sustainable Advantages** of new Products/Processes in Industry/Society;
- **Technological Innovation** in terms of breakthrough / enabling / step change;
- **New Products/Processes value-added services** to Society (Consumer, Environment);
- **Follow-up of Industrial development** through indicators:
  - Increased level of investment
  - Potential for Industrial development
  - Growth in new sectors
  - Level of Scientific & technological breakthrough and/or renewal.



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# NMP - Funding Schemes

- **Collaborative projects**
  - Small or medium scale focussed projects  
< € 4 million EC funding requested
  - Large scale integrating projects  
> € 4 million EC funding requested
  - SME-targeted projects: at least 35% to SMEs
- **Networks of Excellence (not in these calls)**
- **Coordination and Support actions**

# NMP Calls 2009-2010

**2009 – Calls to be launched in Nov 2008**

**Total ~ 250 M€**

**2010 – Calls to be launched in July 2009**

**Total ~ 350 M€**

# Budget by funding schemes NMP 3rd call - 2009

Funding schemes	2009	2010 (< 25% of 2010 budget)
<b>Large scale integrating projects</b>	<b>65</b>	<b>60</b>
<b>Small or medium scale focused research projects</b>	<b>39</b>	<b>41</b>
<b>SME targeted projects</b>	<b>15</b>	<b>10</b>
<b>CSAs</b>	<b>5</b>	
<b>ERANET</b>	<b>1,5</b>	
<b>Joint call Environment</b>	<b>5</b>	
<b>Coordinated call Russia</b>	<b>5</b>	
<b>Total (mio €)</b>	<b>136</b>	<b>111</b>



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# Topics NMP 3rd CALL - 2009

	Large scale cooperative projects	SME-focused cooperative projects	Collaborative projects	Coordination & Support Actions (CSA)	ERA Net
<b>NANO (8)</b>			3+ 2 Joint	2+1Joint	
<b>MATERIALS (6)</b>	2	1	2+ 1 Joint		
<b>PRODUCTION (4)</b>	2	1	1		
<b>INTEGRATION (7)</b>	2	1	1 Joint	1 + 1 Joint	1
<b>Totals (25)</b>	<b>6</b>	<b>3</b>	<b>10</b>	<b>5</b>	<b>1</b>



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# NMP - Call Features

## Until now...

- **Calls by funding scheme (Large, Small and SME collaborative projects, CSA)**
- **One scheme per topic**
- **Budget allocation by call (NOT by Activity / Area)**
- **Two stage submission for all projects except CSA**





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# WP 2009 still draft

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# NMP - Structure

## Four activities: (**Draft WP**)

1. Nanosciences and nanotechnologies
2. Materials
3. New production
4. Integration of technologies for industrial applications

**... continuity with « NMP » activities in FP6 !**



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## Activity 4.1: Nano S&T

4.1.1: Nanosciences and converging sciences

4.1.2: Nanotechnologies and converging  
technologies

4.1.3: Health, Safety and Environmental Impacts

# Activity 1: Nano S&T

## 1.1: Nanosciences and converging sciences

- Nanobiotechnology: Applying life science principles as model for new nanotechnology-based mechanisms, processes, devices and/or systems - SMFRP



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# Activity 1: Nano S&T

- **1.2: Nanotechnologies & converging technologies**
  - Nanotechnology for harvesting energy via photovoltaic technologies - SMFRP
  - Molecular factory: manufacturing objects with predictable and controllable properties – SMFRP
  - Best practices to lower the barriers for commercialisation of nanotechnology research - CSA



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# Activity 1: Nano S&T

## 1.2: Nanotechnologies & converging technologies(2)

- Coordinated call with Russia – SMFRP
  - Optical chemical sensing with nano-particles, nano waveguides and photonic structures
  - Wireless surface acoustic wave physical sensors for operation in a wide temperature range
  - Sensing of toxic and explosive agents in air based on M.O.S. nano-structured materials
- Mapping of nanotechnology and nanostructured materials research infrastructures in Russia – CSA



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# Activity 1: Nano S&T

## 1.3: Health, Safety and Environment Impacts

- Activities towards the development of appropriate solutions for the use, recycling and final treatment of nanotechnology-based products – SMFRP – Joint call with Theme Environment
- Exposure scenarios to nanoparticles – CSA

# Activity 2: Materials

**2.1: Mastering nano-scale complexity in materials**

**2.2: Knowledge-based smart materials with tailored properties**

**2.3: Novel biomaterials and bioinspired materials**

**2.4: Advances in chemical technologies and materials processing**

**2.5: Using engineering to develop high performance materials**

**2.6: Coordinated activities and Int. Cooperation**





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## Activity 2: Materials

### 2.1: Mastering nano-scale complexity in materials

- Nano-structured materials based on graphene - SMFRP

### 2.2: Knowledge-based smart materials with tailored properties

- Oxide materials for electronics applications - LSIP

## Activity 2: Materials

### 2.3: Novel biomaterials and bioinspired materials

- Biomimetic gels and polymers for tissue repair – SMFRP

### 2.4: Advances in chemical technologies and materials processing

- New biomass-based composite materials and their processing - SME-TP



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## Activity 2: Materials

### **2.5: Using engineering to develop high performance knowledge-based materials**

- Light high-performance composites – LSIP

### **2.6: Coordinated activities and international cooperation**

- Novel membranes for water technologies – SICA for African countries and Mediterranean partner countries



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# Activity 3: New Production

3.1: Development and validation of new industrial models and strategies\*

**3.2: Adaptive production systems**

3.3: Networked production\*

**3.4: Rapid transfer and integration of new technologies into the design and operation of manufacturing processes**

3.5: Exploitation of the convergence of technologies\*

\*No topics for the year 2009



## Activity 3: New Production

### 3.2: Adaptive production systems

- Innovative pathways for sustainable chemical production - LSIP
- Adaptive control systems for responsive factories - SMFRP

### 3.4: Rapid transfer and integration of new technologies into the design and operation of manufacturing processes

- Automation and robotics for sustainable crop and forestry management – LSIP
- Holistic and integrated approach to high performance, reliable and adaptive machine tool design and production - SME-TP



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## Activity 4: Integration

- **Joint call on Biorefinery**
  - Sustainable biorefineries – CP
  - Enhancing exchange of information, synergies and cross-fertilisation between projects in the field of Biorefineries – CSA
- **Development of nanotechnology-based systems for molecular diagnostics and imaging – LSIP**
- **Reducing the environmental footprint of energy intensive industries – LSIP**
- **Innovative and knowledge-based tooling industry - SME-TP**
- **Organisation of NMP events of EU Presidencies – CSA**
- **ERA-Net on high value added textiles and fibre-based materials**

# Time schedule Collaborative Projects

- **Closure 1st stage**
    - Evaluation 1st stage
    - Quick info:
  - **Closure 2nd stage**
    - Evaluation 2nd stage
    - Quick info:
  - **Start negotiation:**
  - **Contracts:**
- 17 February 2009**  
9-27 March 2009  
17 April 2009
- 22 July 2009**  
7-18 September 2009  
9 October 2009
- Nov-December 2009**
- Spring 2010 and later**

## **Time schedule - other 2009 calls**

- **Joint call on Biorefinery (Launch 3 SEP 08)**
  - Closure dates: 2 DEC 08 and 5 MAY 09
- **CSAs & Coordinated call with Russia**
  - Closure date: 31 MAR 09 (?) – Single stage





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# WP 2010 draft

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## WP 2010 draft

Nanosciences and Nanotechnologies (Nano)	<i>N &amp; C sciences</i>	✓ Benchmarking and embed best practices of ethics governance in nanotechnologies (CSA)
	<i>N &amp; C technologies</i>	✓ Substitution of materials and components by environmentally friendly nano-solutions (SM)
		✓ Components for energy converters based on nanotechnology (LA)
		✓ Novel tools integrating individual techniques for real time nanomaterials characterisation (SM)
		✓ New nanotechnology-based high performance insulation systems for energy efficiency (SM)
	<i>Nano Impacts</i>	✓ Regulatory scenarios (CSA)
		✓ Establishment of a risk assessment methodology for engineered nanoparticles (LA)



# WP 2010 draft

<b>Materials</b>	<i>Knowledge based smart materials</i>	✓ Organic-inorganic hybrids for electronics and photonics (SM)
	<i>Biomaterials and bio inspired materials</i>	✓ Development of standard scaffolds for the rational design of bioactive materials (LA)
	<i>Chemistry and materials processing</i>	✓ Materials functionalisation and selective membranes for catalytic reactors (LA)
	<i>Engineering for high performance materials</i>	✓ Modelling of degradation and reliability of crystalline materials (SM)
		✓ Economic foresight study on the materials needed to support European industry's competitiveness in 2020 (CSA)



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# WP 2010 draft

New Production	<i>New industrial models and strategies</i>	✓ New industrial models for a sustainable and efficient production (SM)
	<i>Adaptive production systems</i>	✓ Plug-and-play components based on adaptive smart materials (SM)
		✓ Embedded intelligence of products and systems to use in building's life cycle management (SM)
	<i>Networked production</i>	✓ Supply chain approaches for small series industrial production (SME)
	<i>Integration of technologies into manufacturing processes</i>	✓ Manufacturing systems for multilayered products with flexible materials (LA)
	<i>Exploitation of technology convergence</i>	✓ Intelligent Scalable Manufacturing Platforms for components with micro-and nano-scale functional features (LA)

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# WP 2010 draft

Integration of technologies for industrial applications	✓ Nanomedicine: selection of appropriate therapy or drug and therapy monitoring (LA)
	✓ Complex nanotech-based sensors for multi-parameter detection (LA)
	✓ Multi-functional fibre-based products produced with flexible manufacturing concepts (SME)
	✓ High throughput technologies for the development of products with particulate structure (LA)
	✓ ERANET on manufacturing (Manunet II)
	✓ ERANET on nanosciences and nanotechnologies including nanotoxicology (ERA)
	✓ Support to coordination activities of NMP related European Technology Platforms
INCO	✓ Advanced materials architectures for efficient energy storage (Potential Coordinated call with US - DoE and/or NSF) (SM)
	✓ Research on Health and Environmental Impact of Nanoparticles (Potential Coordinated call with US) (SM)
	✓ Adding value to metals, rare earth elements and their derivatives through novel applications at the nano-scale level with Mexico and other Latin American countries (SM)

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# NMP – 2 Stage Approach

- **NMP call** publication on **NOV 2008**
- **Collaborative Projects** (Small, Large, SME) will be evaluated using the **2-stage process**
- **Stage 1: remote evaluation**
  - **10 +2 pages;**
  - **deadline 17 FEB 09 (?)**
  - Evaluation against 2 **limited criteria** (S&T Quality, Impact)
  - **“GO”** proposals will be invited to submit at Stage 2
- **Stage 2: partially remote evaluation, consensus meetings in BXL**
  - **full proposals** evaluated against **all 3 criteria**
  - **deadline 22 JUL 09 (?)**
  - Large, SME: 5 expert readings
  - Small, CSA: 3 expert readings
- **Evaluation results**

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# Evaluation criteria and thresholds

<b>S&amp;T quality</b>	<b>4/5</b>
<b>Implementation</b>	<b>3/5</b>
<b>Impact</b>	<b>3/5</b>
<b>Overall</b>	<b>12/15</b>

- **Implementation is not considered in stage 1 and the overall threshold is 8**
- **For LSIP and SMFRP, in stage 2 the threshold for Impact is 4**

## Some advice

1. **Begin early** (but there will be further calls)
2. **Read carefully** the contents of the **Work Programme!**
3. Make sure that your **proposal is concise and clear, in relation to all the evaluation criteria:**
  - Are the **concept, innovation and methodology** clearly explained?
  - Is the **impact quantified and measurable?**





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## Some advice (contd)

4. **Do not assume that the independent experts know everything that you know.**
5. **Give it to another** person to review your proposal
6. **Submit a draft version** on EPSS at least 2 weeks before the deadline!
7. Do not leave it until the last minute to push the « **Submit** » button!



# Reading work programme

- **NMP-2009-4.0-4 Reducing the environmental footprint of energy intensive industries**
- The overall objective is to achieve radical improvements in both the competitiveness and the environmental performance of energy intensive industries (e.g. non-ferrous metals, pulp and paper, cement, glass and ceramics industries - as this call is a part of a multi-annual strategy, the chemical, petrochemical and/or iron and steel sectors are not addressed specifically to avoid overlaps with running activities covered by specific calls) by developing more cost efficient and eco efficient processes and technologies in a multi-sectoral context. Health and safety issues related to the new process should be addressed.
- The developed new processes will not necessarily produce the same materials/products as the conventional processes. Research is needed not only in the development of these new processes but also in the development of the new materials that they will produce.



# Reading work programme

**Technical content/scope: The research should aim at developing new more cost and energy efficient routes and technologies for eco-efficient products contributing to the CO<sub>2</sub> reduction goal with:**

- new or modified reactors and furnace design,
- use of less energy intensive or recycled materials as feedstock,
- use of renewable and alternative energy resources, like bio-based resources and secondary materials,
- the technical scope includes the development and optimisation of materials and the use of these based on understanding of micro/nano scale processes,
- heat, water and other media recovery, as well as advanced solid, liquid and gaseous waste management,
- better process control



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# Reading work programme

- **Funding scheme:** Large-scale integrating Collaborative Projects.
- **Specific features:** In order to ensure industrial relevance and impact of the research effort, the active participation of industrial partners, a clear industrial leadership and a multisectoral approach to CO<sub>2</sub> abatement represent an added value to the activities and this will be reflected in the evaluation. Large-scale demonstration of the new processes and materials is needed to increase the exploitation potential.



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# Reading work programme

**Expected Impact:** New cost-efficient technologies and processes will target:

- **energy efficiency increase higher than 20%,**
- **reduction of emissions of CO<sub>2</sub> and other greenhouse Gases (GHG) higher than 20%,**
- **feedstock savings higher than 20%,**
- **operating cost reduction of at least 10%,**
- **productivity increase of at least 10%.**

## What proposals should avoid

- **Pure software** development with no research
- **Pure methodology** with no research and innovation on technology and/or pilot cases
- **Consultancy activities**, without any real/proven industrial participation (both solution providers and end users)
- **'Local' applications** with no added value at European level

# Some experiences of NMP 2008

- **Proposal length**
  - 1st stage 10 pages
  - 2nd stage 60-100 pages (320 pages is demotivating)
- **Word – PDF conversion**
  - check if conversion is complete
- **Check if A-forms are filled out completely**
  - We can not give more funding than requested
  - 0 Euro in the table A3 means no funding...



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# The evaluators

- **Selection from EC expert database by EC**
- **Everybody can register themselves in our database:**

**<https://cordis.europa.eu/emmfp7/>**

- **Balanced representation from Industry, Research organisations and Higher education**
- **Gender balance**
- **No vested interest allowed (negative or positive)**



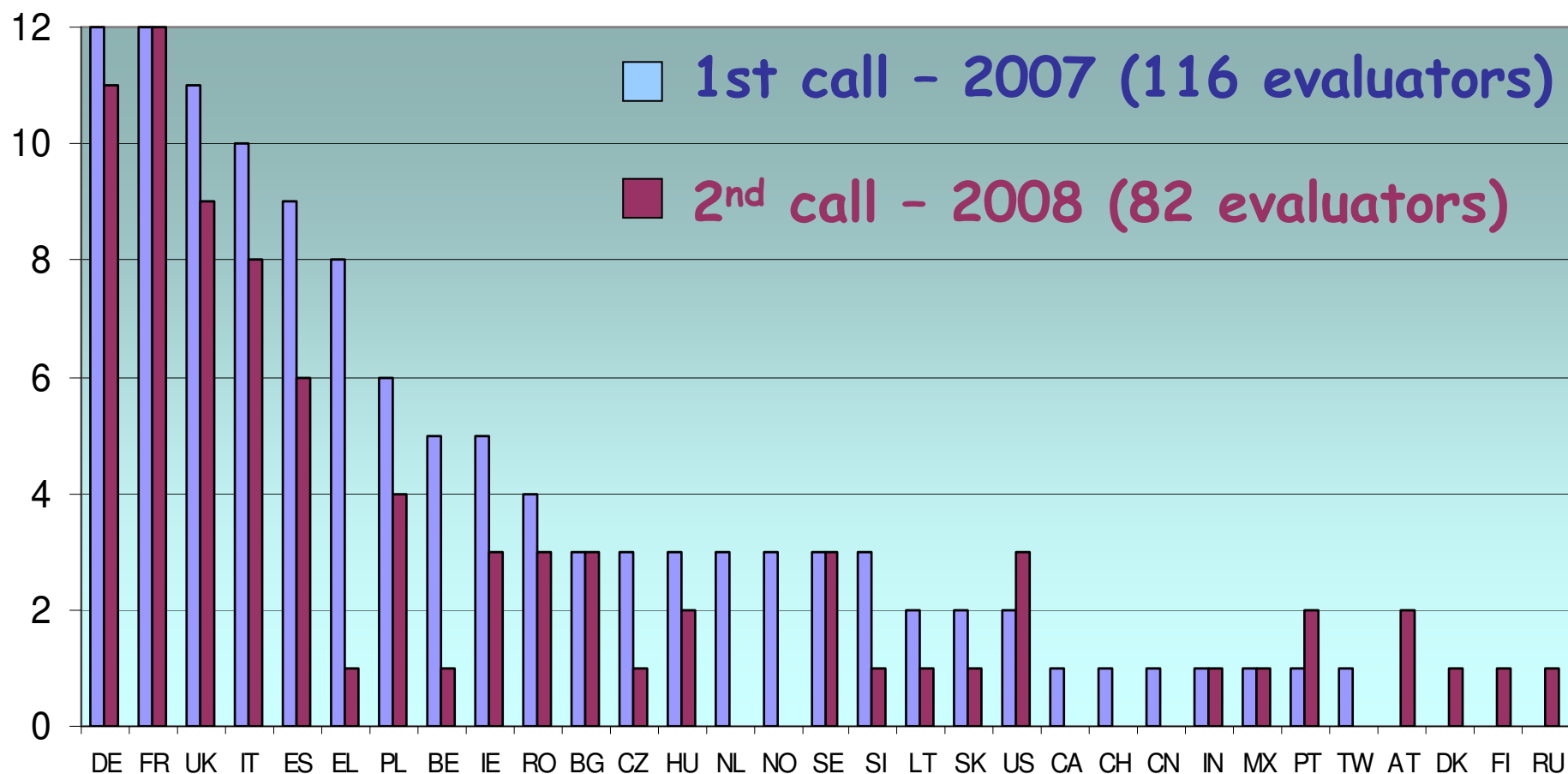


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# Evaluators' nationality

NMP SMALL Calls 2007 & 2008



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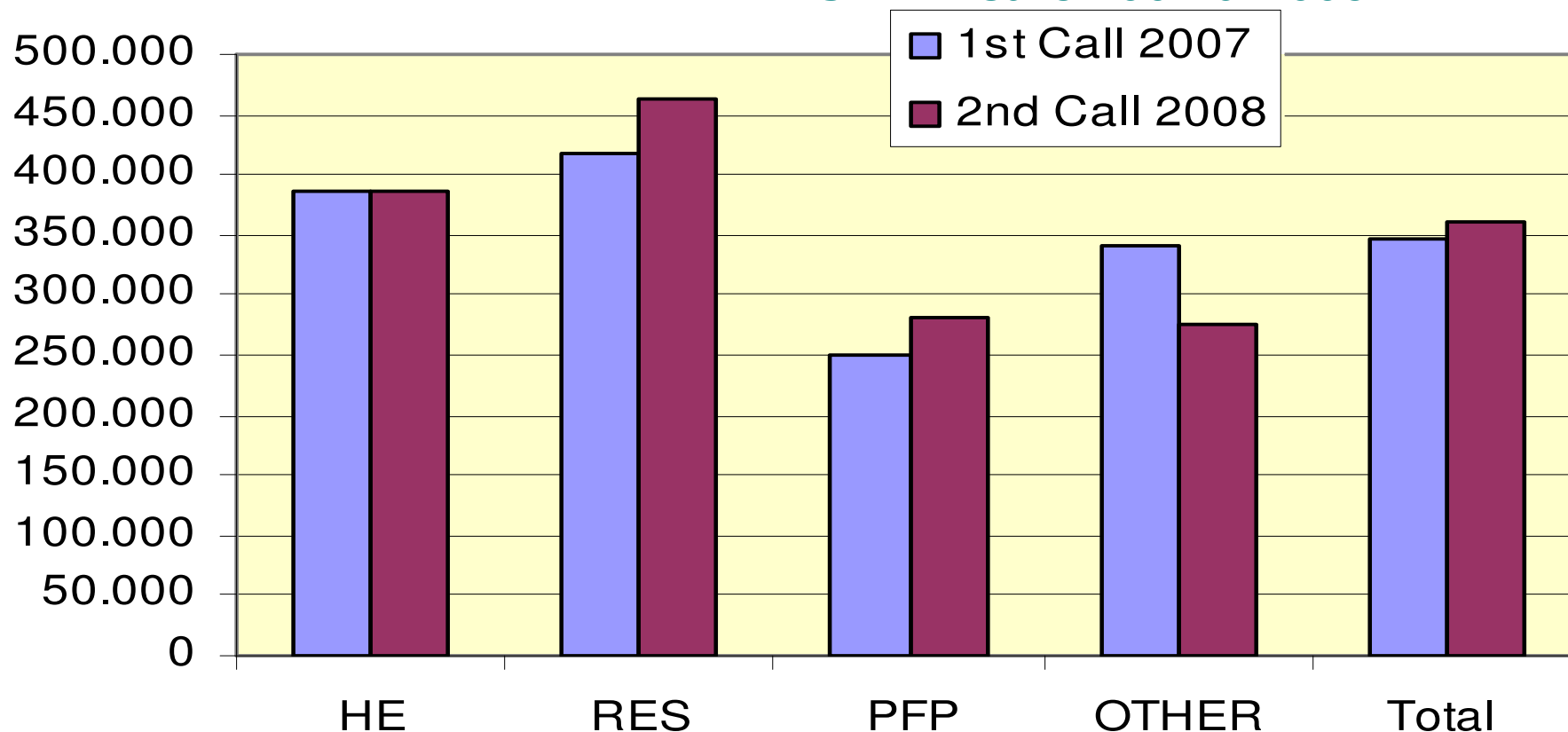
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## Average EC funding requested per participant

*Proposals above threshold*

NMP SMALL Calls 2007 & 2008



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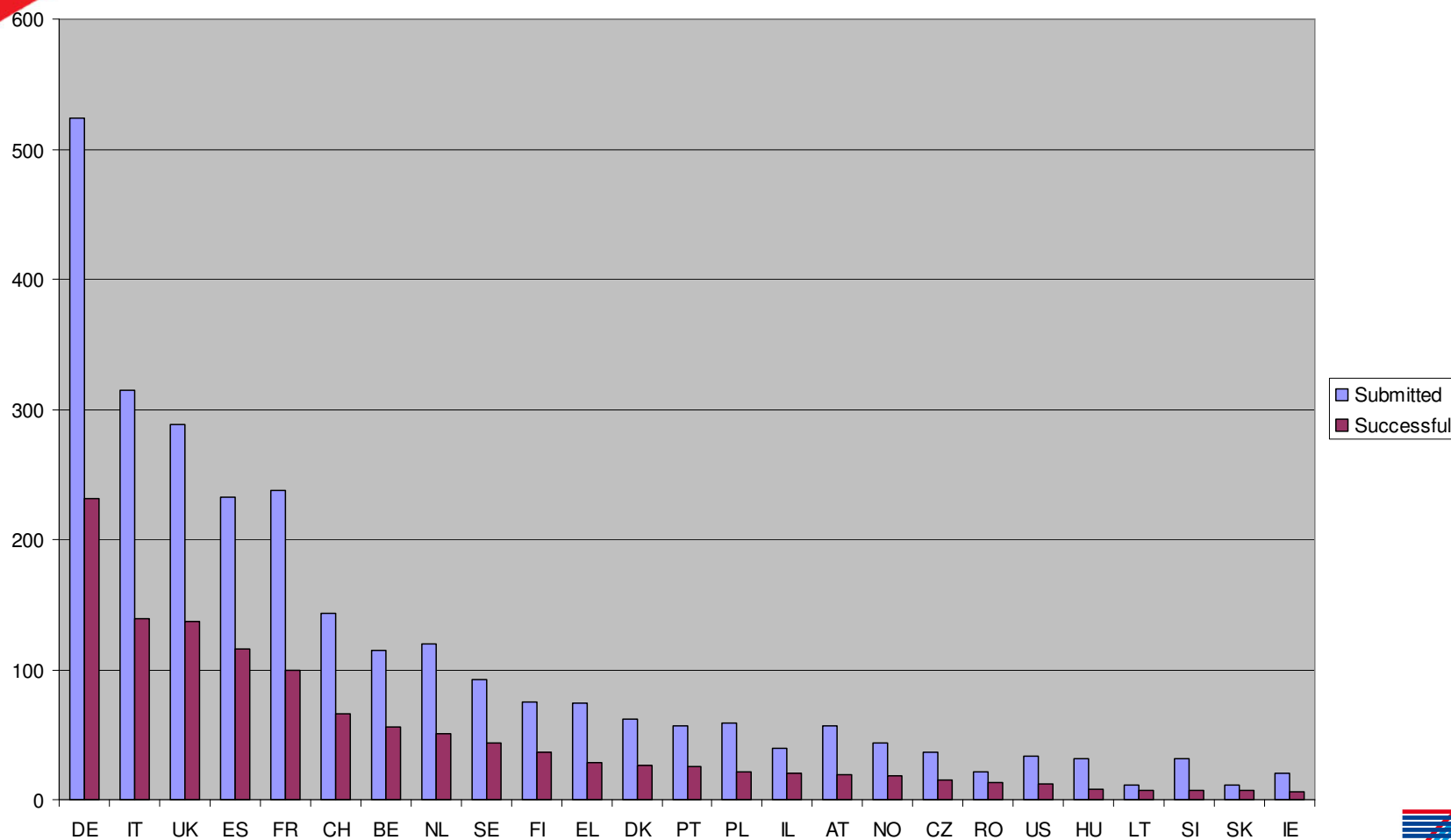
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# Number of submitted and successful participations NMP 2008



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## Information

### Theme 4 - NMP

- **Cordis NMP activity service - Calls info!**  
<http://cordis.europa.eu/nmp/home.html>
- **Industrial Technologies website**  
[http://ec.europa.eu/research/industrial\\_technologies/index\\_en.html](http://ec.europa.eu/research/industrial_technologies/index_en.html)
- **Commission Nanotechnologies homepage**  
<http://cordis.europa.eu/nanotechnology>
- **New theme 4 enquiry service (helpdesk)**  
<http://ec.europa.eu/research/enquiries/>





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**Thank you  
for your attention!**

## **Contact:**

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**Backup**

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# European Technology Platforms (ETPs) and JTIs (Art. 171)

- Bottom-Up Approach with Industry in lead
- Wide Stakeholder Involvement
- Flexibility: No “One Size Fits All”
- EU Role: Facilitating and Guiding but not Leading or Owning
- Majority of TP “Strategic Research Agendas”, where appropriate, are taken into account in Themes of FP7 – particularly in Theme 4 “NMP”
- A very few Strategic Research Agendas: Identified with industry according to specific criteria may become “Joint Technology Initiatives” – much larger political commitment
- EC European TPs website <http://cordis.europa.eu/technology-platforms/>





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# ETPs in NMP

- Strong collaboration with the following platforms: **Construction, Sustainable Chemistry, Textiles, Forest Based Industries, Sustainable Mineral Resources, Manufuture and Industrial Safety, Materials**
- and is consulting also with the **Photonics, Robotics and Steel platforms**