An integrated approach to Key Enabling Technologies

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What are KETs

- **Six strategic technologies** with economic potential, contribution to solving societal challenges and knowledge intensity
  - Nanotechnologies
  - Advanced Materials
  - Micro- and nano-electronics
  - Photonics
  - Biotechnology
  - Advanced Manufacturing
- **Knowledge- and Capital intensive**
- **Cut across many sectors**
Horizon 2020

Total indicative budget: 87 740 M€*

**Excellent science**
- European Research Council
- Future and Emerging Technologies
- Marie Curie actions
- Research infrastructures

**Indicative Budget:**
- 24 598 M€*

**Industrial leadership**
- Leadership in enabling and industrial technologies
- Access to risk finance
- Innovation in SMEs

**Indicative Budget:**
- 17 938 M€*

**Societal challenges**
- Health, demographic change and wellbeing
- Food security, sustainable agriculture, marine and maritime research & the bioeconomy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and secure societies

**Indicative Budget:**
- 31 748 M€*

* Proposal of the Commission COM(2011)809
30.11.2011; 2014-20, in constant 2011 prices
Leadsership in Enabling and Industrial Technologies: Indicative budget (M€, 2014-20, in constant 2011 prices)

<table>
<thead>
<tr>
<th>Leadership in Enabling and Industrial Technologies - of which</th>
<th>13 781</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT, other than KETs</td>
<td>6 351</td>
</tr>
<tr>
<td>Total for 6 KETs</td>
<td>5 894</td>
</tr>
<tr>
<td>Space</td>
<td>1 536</td>
</tr>
<tr>
<td>Access to risk finance</td>
<td>3 538</td>
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<tr>
<td>Innovation in SMEs</td>
<td>619</td>
</tr>
</tbody>
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The issues regarding KETs

- Europe has strong position in science and in patenting activity
  (~1/3 of global KET patents)
- EU actors at top of patent ranking in each KET
- Manufacturing in Europe lags behind: gap between the technology and the manufacturing base
- Need to add product development (e.g. demonstrators) and competitive manufacturing to technology
- Successful products often combine different KETs
Concerning patent activity
Europe is still in the KET’s race

Shares of EPO/PCT patents
by regions (percent)
All KETs cumulated

Disconnection between patents share and manufacturing share Case Study: Li-ion battery production

Li-ion battery cell production share in 2008

Advanced Material Patent Share

USA 1% 30% 12%

Europe 31% 0%

Asia 87% 35%

Others 4%

Combining several key enabling technologies for advanced products

New successful products combine different KETs in one

Societal Challenge

Information

Digital Society

Smartphone

Advanced materials

Microelectronics

Nanotechnologies

Photonics

Biotechnologies

Substrate

Chip

Mems

Camera

Next?
Combining several key enabling technologies for advanced products

Satellite & communication

Advanced materials

Microelectronics

Nanotechnologies

Photonics

Biotechnologies

Societal Challenge

Information

New services & applications (navigation, environment, security, GMES, telecommunications, meteorology)
Societal Challenge

Advanced materials
Microelectronics
Nanotechnologies
Photonics
Biotechnologies

New nanotechnology-based diagnostics
New target drug delivery and release
Regenerative medicine

Combining several key enabling technologies for advanced products

New successful products combine different KETs in one
The “three pillars bridge” to pass across the “valley of death”
Leadership in Enabling and Industrial Technologies in Horizon 2020

A common approach to KETs (also covering ICT and Space)

Activities based on R&D&I agendas defined with industry and business, together with the research community, in a transparent way

Emphasis on technology development, larger-scale pilots and demonstrators, prototyping and product validation

Specific support for cross-cutting KETs (multi-KETs)

Strong focus on leveraging private sector investment

Complementarity with national programmes and structural funds
Public-Private Partnerships (PPPs) – Present & Future

3 PPPs of recovery package in FP7 (WPs 2010-13)

Special features

- Leading role of industry in defining research priorities
- Ad-hoc Industrial Advisory Groups
- Multi-annual Roadmap allows long-term investment plans
- Increased use of SME-targeted and Demonstration projects
- ~45-50% industry participation, of which ~20-25% SMEs

Only 20-30% of funding for members of PPPs industry associations
Thank you for your attention!

Find out more:

www.ec.europa.eu/research/horizon2020