



Horizon 2020

Leadership in Enabling and Industrial Technologies (LEITs)



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*Research and
Innovation*



Horizon 2020

Total indicative budget: 77 Bio. €*

Excellent science

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

Indicative Budget:
24.4 Bio. €*

Industrial leadership

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

Indicative Budget:
17.0 Bio. €*

Societal challenges

- *Health, demographic change and wellbeing*
 - *Food security, sustainable agriculture, marine and maritime research and the bioeconomy*
 - *Secure, clean and efficient energy*
 - *Smart, green and integrated transport*
 - *Climate action, resource efficiency and raw materials*
 - *Inclusive, innovative and reflective societies*
 - *Secure societies*
- Indicative Budget:
29.7 Bio. €***

* 2014-20, actual budget (tentative)
Includes EIT, JRC, "widening", "science with and for society", not shown above



Priority 2.

Industrial leadership

Why:

- **Strategic investments in key technologies (e.g. advanced manufacturing, micro-electronics) underpin innovation across existing and emerging sectors**
- **Europe needs to attract more private investment in research and innovation**
- **Europe needs more innovative small and medium-sized enterprises (SMEs) to create growth and jobs**



Proposed funding (€ million, 2014-2020)

<p><i>Leadership in enabling and industrial technologies (LEITs)</i> (ICT, nanotechnologies, materials, biotechnology, manufacturing, space)</p>	13 557
<p><i>Access to risk finance</i> Leveraging private finance and venture capital for research and innovation</p>	2 842
<p><i>Innovation in SMEs</i> Fostering all forms of innovation in all types of SMEs</p>	616 + complemented by expected 20% of budget of societal challenges + LEITs and <i>'Access to risk finance'</i> with strong SME focus

Mastering and industrial deployment of Key Enabling Technologies (KETs)

What are KETs?

- Six strategic technologies
- Driving competitiveness and growth opportunities
- Contributions to solving societal challenges
- Knowledge- and Capital-intensive
- Cut across many sectors

- **Nanotechnologies**
- **Advanced Materials**
- **Micro- and nano-electronics**
- **Photonics**
- **Biotechnology**
- **Advanced Manufacturing**

European KET Strategy:

- **EC Communications**
(2009)512 & (2012)341
- **KET High-level Group**



The issues regarding KETs

- Europe has strong position in science and in patenting activity
- EU actors are at top of patent ranking in each KET
- But there is a gap between the technology base and the manufacturing base
- We need to add demonstrators, competitive manufacturing and product development to the technologies

From Lab to Industry to Market

Industrial Leadership: Leadership in Enabling and Industrial Technologies

What are KETs?

Six strategic technologies

Driving competitiveness and growth opportunities

Contributions to solving societal challenges

Knowledge- and Capital-intensive

Cut across many sectors

- Micro- and nano-electronics
- Photonics
- **Nanotechnologies**
- **Advanced Materials**
- **Biotechnology**
- **Advanced Manufacturing**

H2020 WP2014-2015

5. Leadership in enabling and industrial technologies
ii. Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing



Nanotechnologies, Advanced Materials, Biotechnology and Production

- *Part of Leadership in Enabling and Industrial Technologies (LEIT)*
- *Focuses on new opportunities for industrial leadership in four Key Enabling Technologies (KETs):*
 - Nanotechnologies
 - Advanced Materials
 - Biotechnology
 - Advanced Manufacturing and Processing (Production)
- *Covers research and innovation, including pilot activities and demonstrators*



Nanotechnologies, Advanced Materials, Biotechnology and Production - Scope

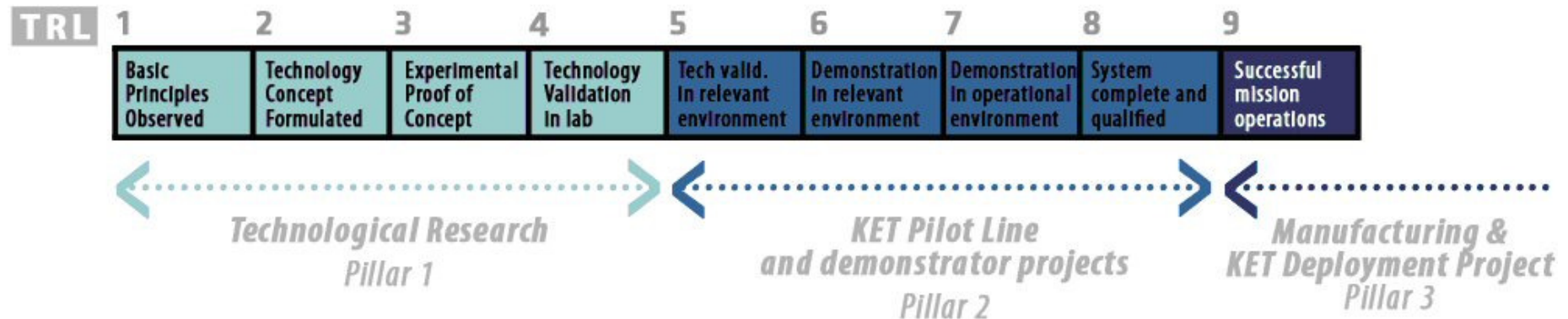
- *Research and Innovation actions*
- *Innovation actions (for pilots and demonstrators)*
- *Coordination and Support Actions (to support deployment)*
- *SME Instrument (bottom up)*
- *Implementation of three contractual Public-Private Partnerships (PPPs):*
 - *Factories of the Future (FoF)*
 - *Energy-efficient Buildings (EeB)*
 - *Sustainable Process Industry (SPIRE)*
- *Contribution of Biotechnology to JTI on Bio-based Industries*



Nanotechnologies, Advanced Materials, Biotechnology and Production - Scope

- *Emphasis on project outcomes, including industrial deployment*
- *Aim is to bridge "valley of death" between R&D and markets*
- *Focus on Key Enabling Technologies with applications in several sectors (platform development/value chain approach)*
- *Includes*
 - Nanotechnology pilot lines
 - Applications in Health and Energy
 - New materials
 - Cutting-edge biotechnologies and industrial bio-processes
 - PPPs for Manufacturing, Construction and Process Industries

Technology Readiness Levels (TRLs) – a useful tool in development and deployment of KETs



- NMP in FP7: TRLs 1 – 4;
up to 5-6 in 2012-13 (pilots and demonstrators)
- LEIT KETs: TRLs 3/4 – 8; centre at TRLs 5-7



H2020 – LEIT/KETs: From R&D to close-to-market activities

Use of Technology Readiness Levels (TRLs from 3-4 to 8)

Two funding rates

100% funding: TRLs 3-6

70% funding: TRLs 5-8

(Non-profit participants can claim 100% funding)

Cross-cutting KETs (combinations of KETs)

Seamless coverage provided by FETs/ERC – LEIT – Societal Challenges

Ground prepared in FP7 (first pilots and demonstrators, innovation activities)



KET Biotechnology

Boosting cutting-edge biotechnologies as a future innovation driver

Development of emerging tools such as synthetic biology, bioinformatics, systems biology and exploiting the convergence with other enabling technologies such as nanotechnology (e.g. bionanotechnology) and ICT (e.g. bioelectronics).

BIOTEC 1 – 2014: Synthetic biology – construction of organisms for new products and processes

BIOTEC 2 – 2015: New bioinformatics approaches in service of biotechnology

Biotechnology-based industrial processes

Industrial biotechnology for competitive industrial products and processes (e.g. chemical, health, mining, energy, pulp and paper, textile, starch, food processing) and its environmental dimension.

BIOTEC 3 – 2014: Widening industrial application of enzymatic processes

BIOTEC 4 – 2014: Downstream processes unlocking biotechnological transformations

BIOTEC 5 – 2014/2015: SME-boosting biotechnology-based industrial processes driving competitiveness and sustainability

Innovative and competitive platform technologies

Development of platform technologies (e.g. genomics, meta-genomics, proteomics, molecular tools) to enhance leadership and competitive advantage in a wide number of economic sectors.

BIOTEC 6 – 2015: Metagenomics as innovation driver



Find out more on Horizon 2020:

<http://www.ec.europa.eu/research/horizon2020>

Participant Portal:

<https://ec.europa.eu/research/participants/portal/page/home>