



The EU Framework Programme for Research and Innovation

HORIZON 2020

**Leadership in Enabling and
Industrial Technologies**

***Policy Mix for NMBP –
policy aspects for
proposals and projects***



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Horizon 2020: Key elements

- A single programme with three pillars:
 - *Excellent Science*
 - *Industrial Leadership*
 - *Societal Challenges*
- **Less prescriptive topics – strong emphasis on expected impact**
- More emphasis on **innovation and involvement of industry** e.g. industrial deployment of key enabling technologies, Public-Private Partnerships
- **Strategic approach, two-year work programmes**
- **Focus areas** bring together different technologies
- **Simplification** – in access and in participation rules

NMBP in Horizon 2020

Priority 1: Excellent Science

Priority 2: Industrial Leadership

Leadership in enabling and industrial technologies (LEIT)

(i) ICT including micro- and nano-electronics and photonics

(ii) Nanotechnologies

(iii) Advanced Materials

(iv) Biotechnology

(v) Advanced Manufacturing & Processing

(vi) Space

**NMBP part
of Work Programme**

Access to risk finance

Leveraging private finance and venture capital for R&I

Innovation in SMEs

Fostering all forms of innovation in all types of SMEs

Priority 3: Societal Challenges

Mastery and deployment of Key Enabling Technologies (KETs)

What are KETs?

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

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

European KET Strategy:

- EC Communications (2009)512 & (2012)341
- KET High-level Group: final report '*KETs: Time to Act*', June 2015

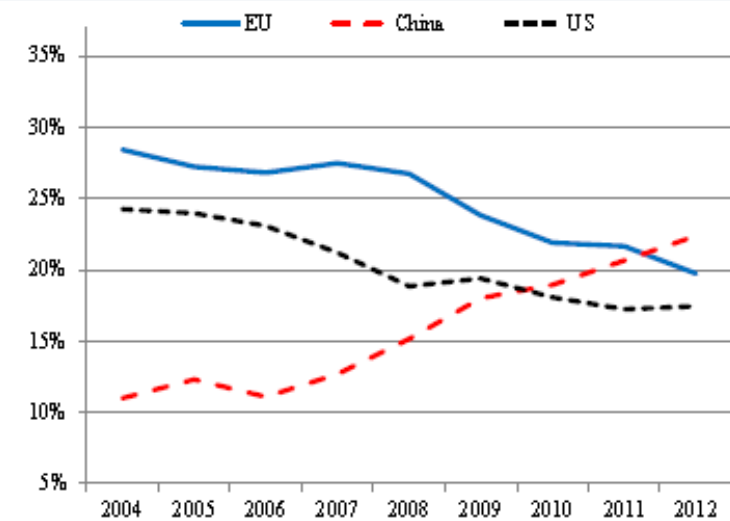
Strategic context: Importance of EU Manufacturing

- **66% of private R&D investment**
- **2.1 million enterprises** (10% of total)
- **33 million jobs** (20% of total)
+ twice as many indirect jobs via related services
- **Turnover:** €7.1 trillion
- **Value added:** €1.7 trillion (27% of European value added)
- **Biggest purchaser and user of KETs**
Huge potential for innovation

Source: Eurostat ES 2011 "Structure of the business economy" EU-27, 2008, NACE Section D

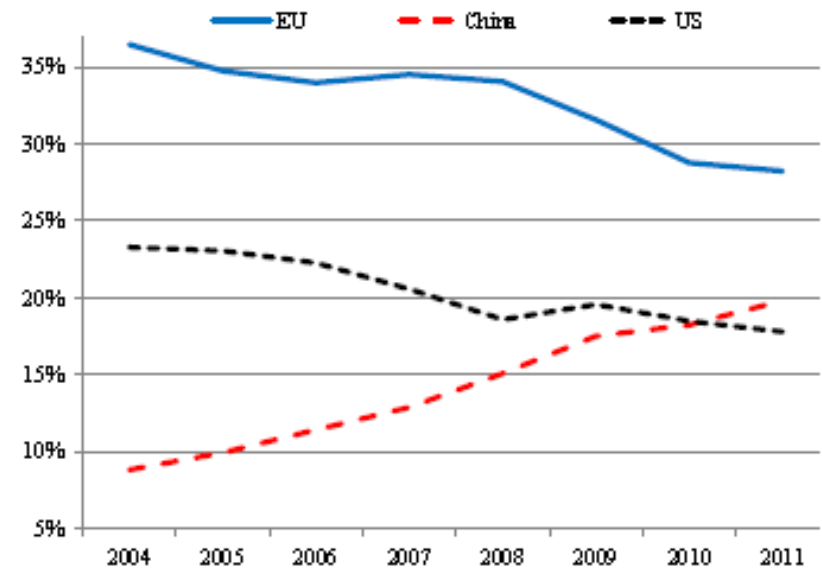
EU Manufacturing in a global context

Figure 1.3a: EU, Chinese and US shares of world manufacturing production value, 2004–2012



Source: Own calculations based on UN National Accounts Main Aggregates Database

Figure 1.3b: EU, Chinese and US shares of world manufacturing value added, 2004–2011



Source: Own calculations based on Timmer et al. (2013)

Source: *Helping firms grow. European Competitiveness Report 2014*

EU Policy Context

Five of the President's priorities:

- To boost jobs, growth and investment;
- To realise a connected digital single market;
- To implement a resilient Energy Union with a forward looking climate change policy;
- To develop a deeper and fairer internal market with a strengthened industrial base;
- To make Europe a stronger global actor

Strategic priorities of Commissioner Moedas:

- Open innovation, Open science, Open to the world

Policy context: interplay of Horizon 2020 with EU agenda

- **Sustainable jobs and growth:**
Boost jobs, growth and investment
Deeper and fairer internal market with a strengthened industrial base
- **Re-industrialisation of EU:**
towards a strong industrial base
- **Digital Single Market:**
Factories of the Future, '4th industrial revolution'
- **EU Energy Union:**
Energy-efficient Buildings, Materials for Energy, etc.
- **Circular economy:** boosting growth and renewing industrial capacities in a world of finite resources
➔ new focus area on 'Industry 2020 in the Circular Economy'

LEIT - NMBP part of Horizon 2020

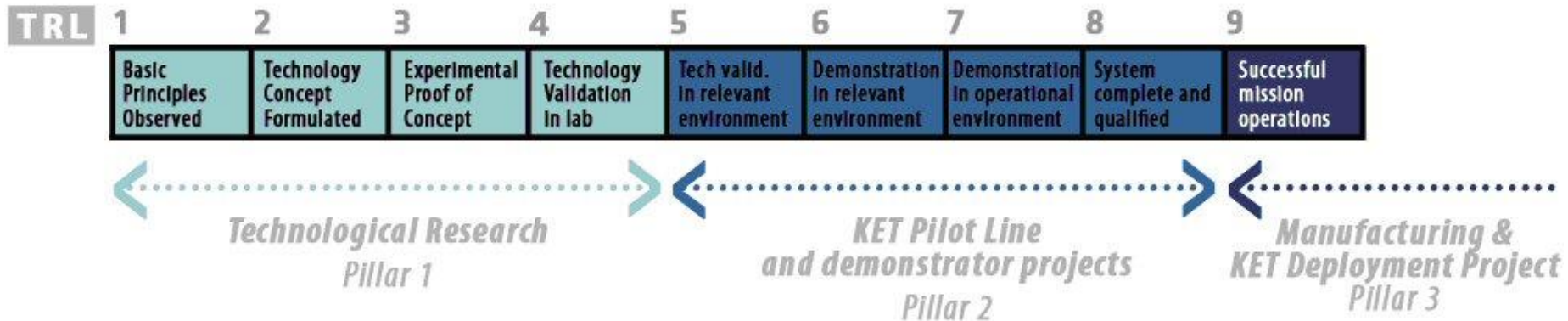
- **Guiding principles:**
 - Partnership with industry, to stimulate private investment
 - Targeting value chains
 - Demonstration and piloting
- **Support for 4 of the 6 Key Enabling Technologies (KETs)**
 - Nanotechnologies
 - Advanced Materials
 - Biotechnology
 - Advanced Manufacturing / Processing
 - Technology Readiness Levels: Bridging TRLs from 3 to 6-7, *with emphasis on expected impact (business cases)*
 - Total budget under Horizon 2020: **3.8 billion €**
- **Focus on EU Manufacturing**
in the context of '4th industrial revolution'
- **Enhanced synergies with Societal Challenges / FETs**

Public-Private Partnerships in Horizon 2020

Institutional PPPs	Contractual PPPs
<ul style="list-style-type: none">• Innovative Medicines (IMI)• Clean Sky• Single European Sky ATM Research (SESAR)• Fuel Cells and Hydrogen (FCH)• Electronic Components and Systems (ECSEL)• Bio-based Industries (BBI)• Shift2Rail	<ul style="list-style-type: none">• Factory of the Future (FoF)• Energy-efficient Buildings (EeB)• Sustainable Process Industry (SPIRE)• Green Vehicles (EGVI)• Future internet (5G)• Robotics• Photonics• High Performance Computing• Big Data

Technology Readiness Levels (TRLs)

- The LEIT part of Horizon 2020 targets TRLs from 3-4 up to 7 with a centre of gravity on 5-6
- Highest TRLs for cases with a strong industrial commitment



- Beyond TRL 7: *explore paths to commercial exploitation, to deploy technologies funded under Horizon 2020*

Leveraging further investment

- **Public** – through:
 - Synergies with ESIF (European Structural and Investment Funds)
 - EMPIR (European Metrology Programme for Innovation and Research)
300M€
- **Private** – through contractual PPPs and JTIs:
 - Factories of the Future 1,150M€, leverage 5-10
 - Sustainable Process Industries (SPIRE) 900M€, leverage 5-10
 - Energy-efficient Buildings (EeB) 600M€, leverage at least 4
 - Bio-based Industries JTI (BBI), 150M€ contribution from NMBP
- European Investment Bank instruments: Loan / Equity, InnovFin
- **EFSI**: European Fund for Strategic Investments, to mobilise 315 billion € in support of innovation, infrastructure and SMEs
- Prepare ground for IPCEIs (important projects of common European interest)

How is NMBP developed?

- **NMBP Advisory Group:**
 - 30 members - [Members and recommendations](#)
- **Relevant European Technology Platforms (ETPs)**
- **Public-Private Partnership Boards:**
 - [EFFRA](#) for Factories of the Future
 - [A.SPIRE](#) for SPIRE
 - [E2B](#) for Energy-Efficient Buildings
- **Industry-driven initiatives**
 - Emerging and Strategic Technologies for Healthcare (ESTHER)
 - Energy Materials for Europe – Research & Industry innovating Together (EMERIT)
- **NMBP Programme Committee (Member States)**

Policy and impact orientation in the Work Programme and topics

- **Policy context and requirements set out in the LEIT Introduction to the Work Programme**
- **Focus Area: "*Industry 2020 in the Circular Economy*"**
- **'Expected impact' in the topic descriptions**
- **Plan for dissemination and exploitation of the project's results: admissibility condition**
- **Communication**

Policy context and requirements in the H2020 LEIT Introduction

- Strengthen industrial capacities including SMEs, including through synergies with other funds
- Bring innovative technologies closer to the market
 - ➔ Technology Readiness Level, value chains - partnership, demonstration – transfer – piloting, standardisation, business development & market understanding, activities to address acceptance and “convince” users, non-technical & regulatory issues, health – safety – environmental issues, social sciences & humanities
- Cross-cutting KETs, including pilot lines
- Addressing societal challenges
- Business cases and exploitation strategies for industrialisation

Focus Area: Industry 2020 in the Circular Economy

- “Systemic approaches to sustainably boost economic growth and renew Europe's industrial capacities in a world of finite resources”
- Contributions from NMBP, ICT and Societal Challenges
- Encompasses:
 - Pilot lines in Nanotechnology and Materials
 - Factories of the Future PPP
 - Factories of the Future – ICT Part
 - Sustainable Process Industry – SPIRE PPP
 - Circular Economy

“Expected Impact” in NMBP Work Programme 2016-2017

- Expected impacts as described in topic descriptions
- For most topics , impact to be underpinned by ***Business cases and exploitation strategies for industrialisation*** (outlined in LEIT Introduction)
- Should be realistic and credible
- Exploitation strategies are to be developed further during projects
- In NMBP calls, the impact criterion is always the first criterion used to resolve proposals with equal overall scores
- For IAs, the impact criterion is weighed by 1.5

European R&I Policy and H2020: Cross-cutting issues in the work programme (WP)

- **Social Sciences and Humanities (SSH)**
- **Gender dimension** in the content of R&I - question on the relevance of sex/gender analysis
- **International cooperation:** general opening of the WP and targeted activities
- **Other cross-cutting issues** may also be included in the WP:
 - Responsible Research and Innovation (RRI) including science education,
 - open access to scientific publications, ethics...;
 - standardisation;
- **Commitments: climate change and sustainable development**
- ...

Communication

- Obligatory to address and implement in proposals /projects (work package or part of package)
- Evaluated under "Impact" – section 2.2
- Applicants should demonstrate how they will promote the action and its results, by providing targeted information to multiple audiences (including the media and the public)
- Communication activities need to address the "public policy perspective"
- Type of communication activities may be freely chosen

NMBP Calls 2016-2017

- Work Programme and calls published on the Participant Portal:
http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-work-programmes-2016-17
- LEIT Introduction, including section on *Business cases and exploitation strategies for industrialisation*
 - **LEIT-NMBP part**, including EeB call and main NMBP call
 - **Cross-Cutting part**, including PILOTS, Factories of the Future (FoF), and Sustainable Process Industries (SPIRE) in the Focus Area 'Industry 2020 in the Circular Economy'
- Publication: 14 October 2015 / Update (2017 calls): July 2016
- Deadlines of 2017 calls:
 - » NMBP two-stage: 27 Oct 2016 / 4 May 2017
 - » PILOTS (two-stage): 27 Oct 2016 / 4 May 2017
 - » EeB, FoF, SPIRE: 19 Jan 2017
 - » NMBP CSAs : 19 Jan 2017

NMBP Calls 2016-2017

- Budgets of 2017 calls:
 - » NMBP: 254,39 M€ (incl. BIOTEC, CSAs)
 - » EeB: 54 M€
 - » PILOTS: 48 M€
 - » FoF: 85 M€ (+ 33 M€ for ICT topics)
 - » SPIRE: 80 M€
 - » SME Instrument (NMP + Biotech): 42,82 M€
- Types of action
 - RIA: Research and innovation actions (100% funding)
 - IA: Innovation actions (70% funding for profit-making partners)
 - CSA: Coordination and support actions
 - ERA-NET Co-fund: to support public-public partnerships

SME Instrument & Fast Track to Innovation (FTI)

- **SME Instrument** - support to SMEs for innovation projects, to help them grow in Europe and beyond
 - 7% of budget of LEIT and Societal Challenges (~3B€)
 - Bottom-up topics in each area
 - Phase 1 for feasibility studies (50 000€ lump sums)
 - Phase 2 for innovation development and demonstration (grant 0.5 – 2.5 M€) – independent of Phase 1
 - Phase 3 – specific services for commercialisation
 - 4 cut-offs per year for Phases 1 and 2
- **Fast Track to Innovation (FTI)** - fully-bottom-up support for close-to-market innovation activities
 - open to all types of participants (indicative grant 1-2 M€)
 - Pilot in 2015 and 2016, 200M€
 - 3 cut-offs in 2015 and in 2016 (15/03, 01/06, 25/10/16)

R&I Policy developments, to create favourable conditions

- Stimulate demand-side actions
- Better collaboration between the public/private sectors to stimulate investments
(e.g. links between Horizon 2020 and European Fund for Strategic Investments – EFSI)
- Financing (e.g. new approaches for SMEs, risk-sharing, risk-financing)
- Better regulation
- Standardisation
- New skills / training / education
- Promoting entrepreneurship (e.g. KIC on Added Value Manufacturing)
- Knowledge and risk management for products and industries
- Public procurement
- Programme evaluation of FP7 / Mid-term review of Horizon 2020

European Innovation Council (EIC)

The EU is making major efforts to boost innovation but is losing the race on scaling up disruptive, market-creating innovation

EIC could ...

- ❖ Bring together and simplify access to current EU innovation support ?
- ❖ Fill gaps in current EU support for innovation (e.g. more support for 'scale-ups', mentoring, bridging the 'valley of death') ?
- ❖ Provide strategic advice to improve innovation environments (e.g. on regulation, policies, practices) ?

Call for ideas

<http://ec.europa.eu/research/eic/>

Reminders for proposal preparation

- **Timing:** prepare and submit proposals well before deadline.
- Respect **page limits** (evaluators will disregard excess pages).
- Read the LEIT Introduction – esp. business cases and exploitation strategies.
- Read other relevant cross-cutting WP documents.
- Ask peers other than the authors to review your proposal.
- No negotiation phase – no room for improvements during grant preparation.
- Expected impact can be a decisive factor.

Further information

Horizon 2020: http://ec.europa.eu/research/horizon2020/index_en.cfm

Key Enabling Technologies, R&I website :

http://ec.europa.eu/research/industrial_technologies/index_en.cfm

Participant Portal - Funding Opportunities and support services

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

National Contact Points in your country (NMP)

http://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html#c,contact=country/sbg//1/1/0&+person.last_name/desc

National Contact Points website - webinars, presentations, guidance :

<http://www.nmpteam.eu/>

Research Enquiry Service: <http://ec.europa.eu/research/index.cfm?pg=enquiries>

CORDIS database with EU funded research projects :

http://cordis.europa.eu/projects/home_en.html