



The EU Framework Programme for Research and Innovation

HORIZON 2020

**Leadership in Enabling and
Industrial Technologies**

***NMBP – WP 2017
Oportunidades de
Financiamento***



Didier De Almeida

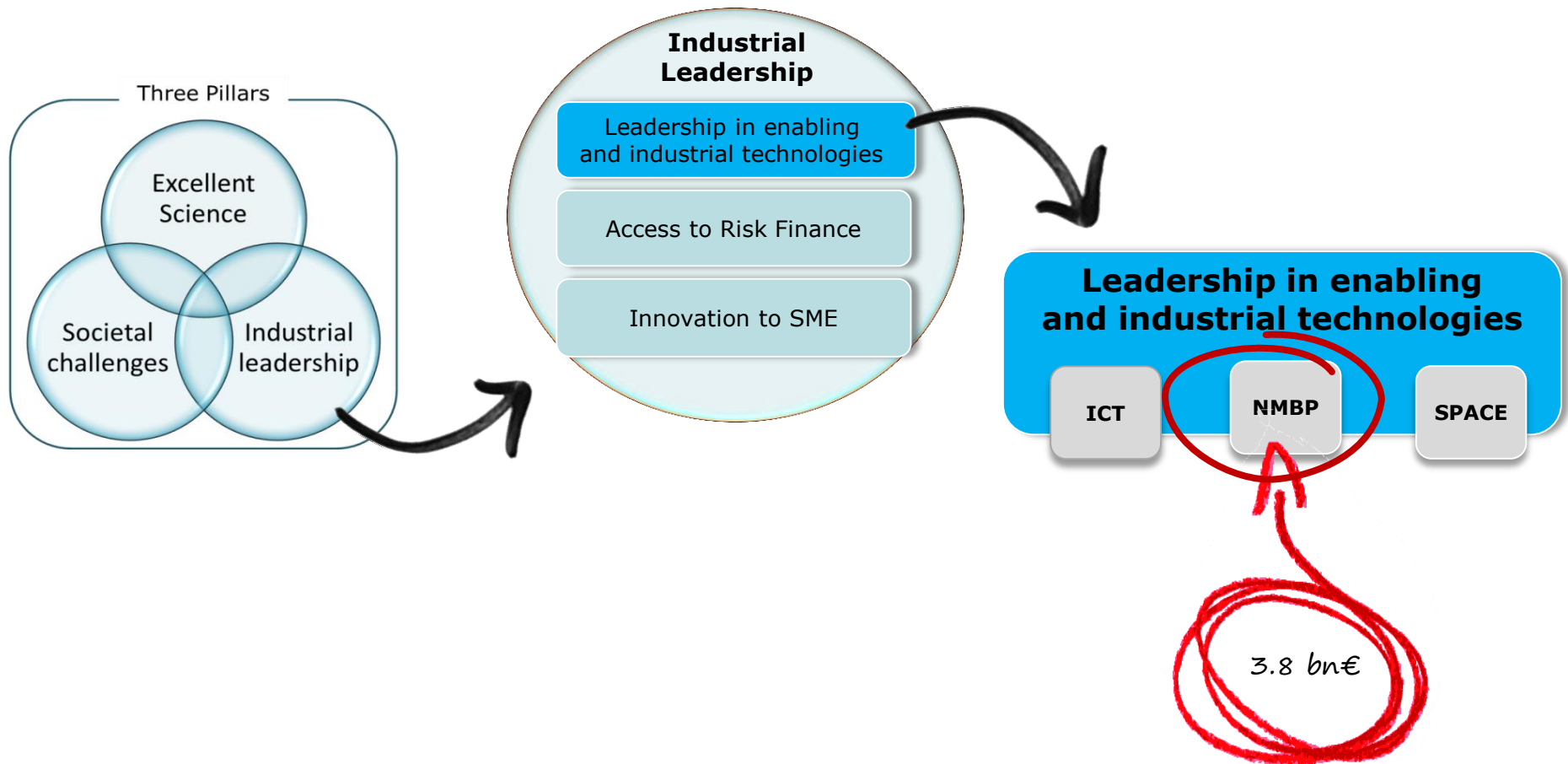
Industrial Technologies – Strategy
DG Research & Innovation
European Commission

Research and
Innovation

Horizon 2020: Key elements

- A single programme with **3** 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 (~74.8 bn€)



Policy Context

Four of President Juncker's priorities

- Jobs, growth and investment
- Digital single market
- Energy Union
- Europe a stronger global actor

Commissioner Moedas' priorities

- Open innovation,
- Open science
- Open to the world



Policy context NMBP

- **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
➔ focus area in 2016-2017 on 'Industry 2020 in the Circular Economy'

Policy context NMBP

- 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, standardization, 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
- Links to societal challenges
- **Business cases and exploitation strategies for industrialization**

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)

WP 2018-2020

- 3 years Work Programme
detailed WP for 2018 – 2019 and outline for 2020
- Will address priorities that have been developed through a process of strategic programming, the aim of which is to maximise the impact of the available funding
- Will integrate the interim evaluation of Horizon 2020 results
- Evidence gathering and consultation (Q4 2015 – Q3 2016)
- Identifying priorities (Q3 2016 – Q4 2016)
- Work programme drafting will begin in earnest in Q4 2016.



NMBP summarised

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 3-4 to 6-7, with emphasis on expected impact (business cases)

Focus on EU Manufacturing

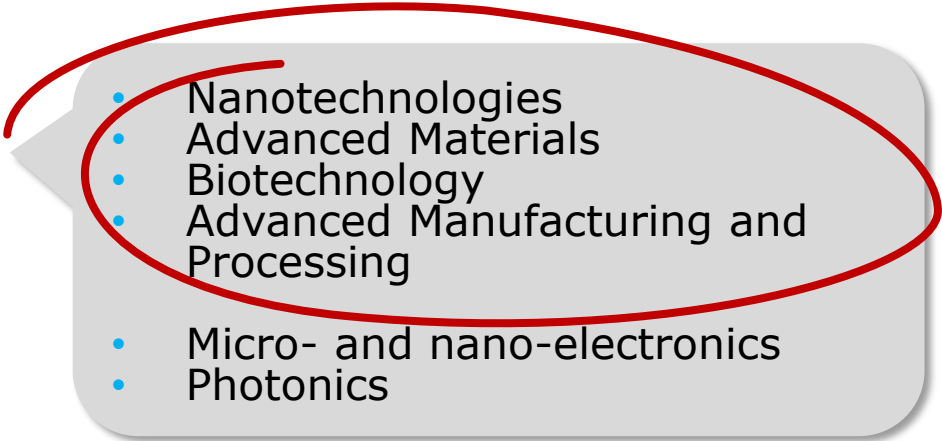
in the context of '4th industrial revolution'

Enhanced synergies with Societal Challenges / FETs

Key Enabling Technologies (KETs)

What are KETs?

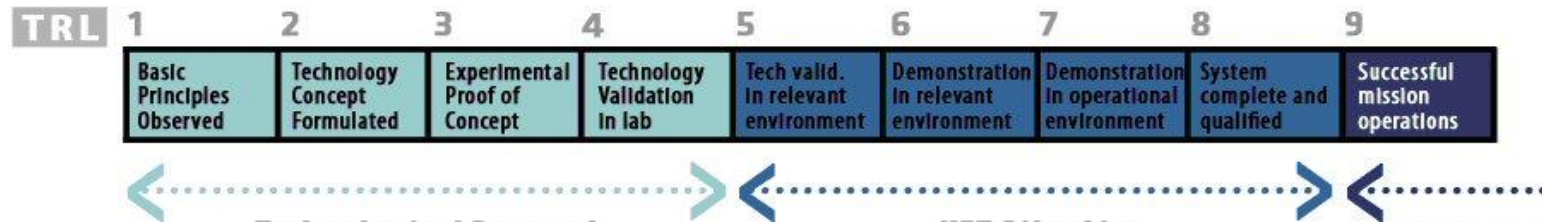
- Six strategic technologies
- Driving competitiveness and growth
- Contributing to solving societal challenges
- Knowledge- and Capital- intensive
- Cut across many sectors

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

European KET Strategy:

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

Technology Readiness Levels (TRLs)



TRLs from 3-4 up to 7

with an overall centre of gravity in the range from 5-6,

highest level reserved for cases where there is strong industrial commitment.

The exact formulation may differ between topics

- Normally ranges of TRLs are given
- Highest TRL represents the target at the end of the project
- Several activities in a project may be at lower TRLs than the target



Evaluators will judge whether the plan to reach the target TRL is convincing

Expected impacts

- Expected impacts as described in topic descriptions
- For most topics , impact to be underpinned by **Business cases and exploitation strategies for industrialisation** (elements 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

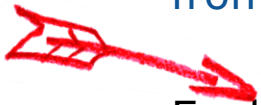


Draft plan for the exploitation and dissemination

- All proposals must include a **draft plan for the exploitation and dissemination of the results**, unless otherwise specified in the call conditions. (Not required for first-stage proposals).
 - There is no pre-defined structure.
 - It should be appropriate to the scale and scope of the envisaged project.
 - It has to fit within the page limit.
 - It is not a separate document.
 - Business planning elements can also be located in different sections of the proposal.
- Not to be confused with the 'Business cases and Exploitation strategies for industrialisation' required for several NMBP topics

Business cases and exploitation strategies for industrialisation

- Only if mentioned in the topic description
- The business case should demonstrate the expected impact of the proposal in terms of enhanced market opportunities and manufacturing capacities for European enterprises, and thus growth and jobs in Europe, in the short to medium term.
- The exploitation strategy should be realistic and identify obstacles, requirements and necessary actions involved in reaching higher TRLs.
- For TRLs 6-7, a credible strategy to achieve future full-scale manufacturing in Europe is expected,
- In the case of demonstrators and pilot lines, the planned use and expected impact from using the final installation should be considered.
- Evaluated under the 'Impact' criterion



Cross-cutting issues (1)

- Social Sciences and Humanities (SSH)

BIOTEC 5-2017 Microbial platforms for CO₂-reuse processes in the low-carbon economy

BIOTEC 7-2017 New Plant Breeding Techniques (NPBT) in molecular farming Multipurpose crops for industrial bio-products

NMBP-34-2017 Governing innovation of nanotechnology through enhanced societal engagement

NMBP-35-2017 Innovative solutions for the conservation of 20th century cultural heritage

- Gender dimension in the content of R&I - question on the relevance of sex/gender analysis is included in proposal templates

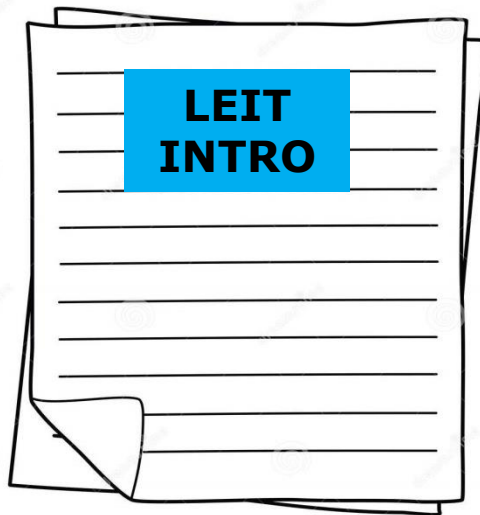
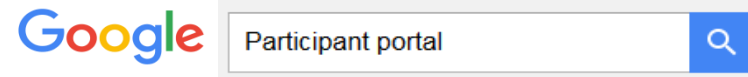
Advanced materials and nanotechnologies for healthcare topics

Cross-cutting issues (2)

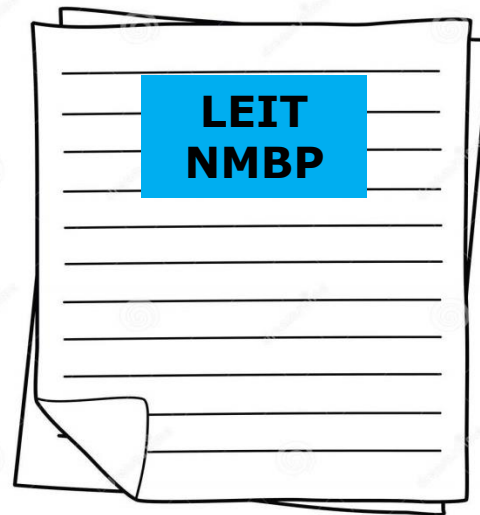
- **International cooperation:** general opening of the WP and targeted activities
- **Other cross-cutting issues** may also be included in the WP:
 - Responsible Research and Innovation (RRI) including science education;
 - ethics...;
 - standardisation;
- **Commitments: climate change and sustainable development**
- ...

NMBP Calls 2017

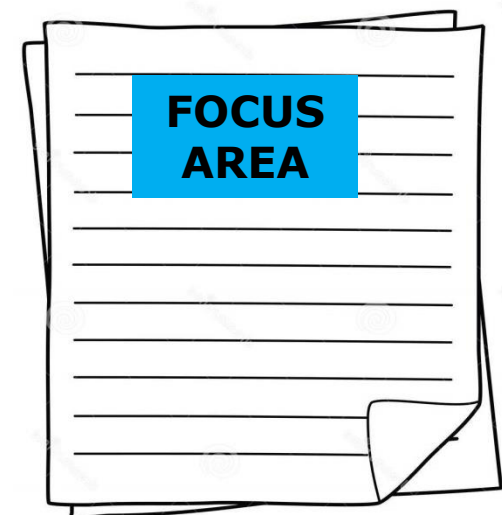
- Participant Portal



section on Business cases,...



**NMBP call
EEB call**



**PILOTS,
FOF,
SPIRE**

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

NMBP Calls 2017

- Publication: Update (2017 calls): end of July 2016
- Deadlines of 2017 calls:

- **Two-stage topics: NMBP + PILOTS**

- 27 Oct 2016 + 4 May 2017

- **Single-stage topics**
EeB, FoF, SPIRE, CSAs

- 19 Jan 2017



NMBP Calls 2017

- Budgets of 2017 calls: (updated figures subject to modification)
 - NMBP: 258,87 M€ (incl. BIOTEC, CSAs)
 - EeB: 54.88 M€
 - PILOTS: 48.66 M€
 - FoF: 86.18 M€ (+ 34 M€ for ICT topics)
 - SPIRE: 82.11 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 (100% funding)

Revision of 2016-17 Work Programme

- Budget for 2017: increased budget
- New topics CSA and studies
- Tightened focus / clarified impact for some 2017 topics
- Stressed links to policy
(Digital Single Market, Energy Union, COP21 and Circular economy)
- Open access data
New provisions (opt-out is still available)



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
- **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 2016 (15/03/16, 01/06/16, 25/10/16)

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
- **EFSD**: 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)

Synergies with ESIF

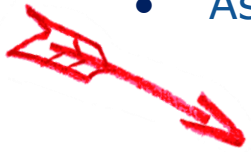
Synergies with ESIF (European Structural and Investment Funds)

- How can support from Horizon 2020 and ESIF be combined in a synergetic manner?
- Examples of synergies at strategic and programming level
- Examples of synergies at project implementation level
- Examples of initiatives with high potential for synergies
- Useful sources for further guidance



Preparing your proposal...

- Timing: prepare and submit proposals well before deadline.
- Respect page limits (evaluators will disregard excess pages).
- Check WP Update – expected late July 2016
- Read the LEIT Introduction – esp. business cases and exploitation strategies.
- **Expected impact can be a decisive factor.**
- 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.



Preparing your proposal...

- *If your proposal is only marginally relevant in terms of its scientific, technological or innovation content relating to the call or topic addressed, (No matter how excellent the science) ...*
*Lower score for the **Excellence criterion***
- *If your proposal does not significantly contribute to the expected impacts as specified in the WP for that call or topic,*
*Lower score for the **Impact criterion***
- *If your proposal would require substantial modifications in terms of implementation (i.e. change of partners, additional work packages, significant budget or resources cut...),*
*Lower score for the **"Quality and efficiency of the implementation" criterion***
- *If cross-cutting issues are explicitly mentioned in the scope of the call or topic, and not properly addressed (or their non-relevance justified),*
*lower score for the **relevant criterion***



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



Pilot lines in Nanotechnology and Materials

- *Cross-cutting KET pilot activities building on previous research that is ready to be processed towards industrial-scale processes.*
- PILOTS-3: Pilot Lines for Manufacturing of Nanotextured surfaces with mechanically enhanced properties, IA
- PILOTS-4: Pilot lines for 3D printed and/or injection moulded polymeric or ceramic microfluidic MEMS, IA
- PILOTS-5: Paper-based electronics, RIA



Factories of the Future PPP

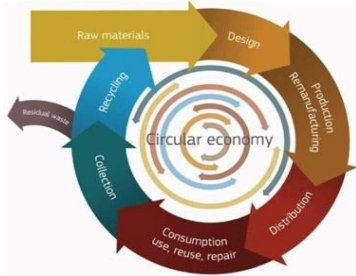
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- FOF-6: New product functionalities through advanced surface manufacturing processes for mass production, RIA
- FOF-7: Integration of unconventional technologies for multi-material processing into manufacturing systems RIA
- FOF-8: In-line measurement and control for micro-/nano-enabled high-volume manufacturing for enhanced reliability, IA
- FOF-9: Novel design and predictive maintenance technologies for increased operating life of production systems, IA
- FOF-10: New technologies and life cycle management for reconfigurable and reusable customised products, IA
- FOF-12: ICT Innovation for Manufacturing SMEs (I4MS) (IA+CSA)



Sustainable Process Industry PPP

- SPIRE-7: Integrated approach to process optimisation for raw material resources efficiency, excluding recovery technologies of waste streams, IA
- SPIRE-8: Carbon dioxide utilisation to produce added value chemicals, RIA
- SPIRE-9: Pilot lines based on more flexible and down-scaled high performance processing, IA
- SPIRE-10: New electrochemical solutions for industrial processing, which contribute to a reduction of carbon dioxide emissions, RIA
- SPIRE-11: Support for the enhancement of the impact of SPIRE PPP projects, CSA
- SPIRE-12: Assessment of standardisation needs and ways to overcome regulatory bottlenecks in the process industry, CSA



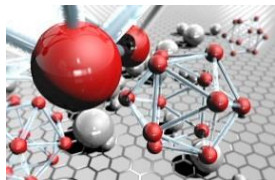
Circular Economy topics

- CIRC-01: Systemic, eco-innovative approaches for the circular economy: large-scale demonstration projects
- b) Systemic services for the circular economy (2017), IA
- CIRC-02: Water in the context of the circular economy
- b) Towards the next generation of water systems and services– large scale demonstration projects (2017), IA



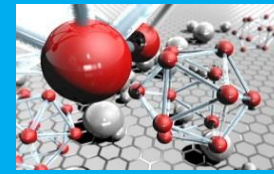
Energy-efficient Buildings PPP

- EEB-5: Development of near zero energy building renovation, IA
- EEB-6: Highly efficient hybrid storage solutions for power and heat in residential buildings and district areas, balancing the supply and demand conditions, RIA
- EEB-7: Integration of energy harvesting at building and district level, IA
- EEB-8: New business models for energy-efficient buildings through adaptable refurbishment solutions, CSA



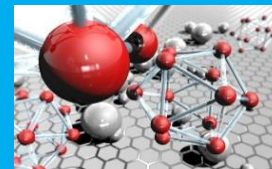
Advanced materials and Nanotechnologies for high added value products & process industries

- NMBP-4: Architected /Advanced material concepts for intelligent bulk material structures ,RIA
- NMBP-5: Advanced materials and innovative design for improved functionality and aesthetics in high added value consumer goods ,IA
- NMBP-6: Improved material durability in buildings and infrastructures, including offshore ,RIA
- NMBP-7: Systems of materials characterisation for model, product and process optimisation ,RIA



Advanced materials and Nanotechnologies for Healthcare

- NMBP-12: Development of a reliable methodology for better risk management of engineered biomaterials in Advanced Therapy Medicinal Products and/or Medical Devices, RIA
- NMBP-13: Cross-cutting KETs for diagnostics at the point-of-care, RIA
- NMBP-14: Regulatory Science Framework for assessment of risk benefit ratio of Nanomedicines and Biomaterials, RIA
- NMBP-15: Nanotechnologies for imaging cellular transplants and regenerative processes in vivo, RIA
- NMBP-16: Mobilising the European nano-biomedical ecosystem, CSA



Advanced materials and nanotechnologies for energy applications

- NMBP-19: Cost-effective materials for “power-to-chemical” technologies, RIA
- NMBP-20: High-performance materials for optimizing carbon dioxide capture, IA



Eco-design and new sustainable business models

- NMBP-22: Business models and industrial strategies supporting novel supply chains for innovative product-services, RIA



Biotechnology

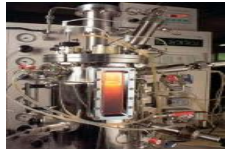
- BIOTEC-5: Microbial platforms for CO₂-reuse processes in the low-carbon economy, RIA
- BIOTEC-6: Optimisation of biocatalysis and downstream processing for the sustainable production of high value-added platform chemicals, IA
- BIOTEC-7: New Plant Breeding Techniques (NPBT) in molecular farming: Multipurpose crops for industrial bioproducts, CSA
- BIOTEC-8: Support for enhancing and demonstrating the impact of KET Biotechnology projects, CSA



Modelling for the development of Nanotechnologies and Advanced Materials

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- NMBP-25: Next generation system integrating tangible and intangible materials model components to support innovation in industry, IA



Science-based risk assessment and management of Nanotechnologies, Materials and Biotechnologies

- NMBP-28-2017: Framework and strategies for nanomaterial characterisation, classification, grouping and read-across for risk analysis, RIA
- NMBP-29-2017: Advanced and realistic models and assays for nanomaterial hazard assessment, RIA



Innovative and responsible governance of new and converging enabling technologies

- NMBP-31: Presidency events, CSA
- NMBP-34: Governing innovation of nanotechnology through enhanced societal engagement, CSA
- NMBP-35: Innovative solutions for the conservation of 20th century cultural heritage, RIA