UKRO Horizon 2020 Condensed

NMBP in the Industrial Leadership Pillar

What is Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing (NMBP) in Horizon 2020?

NMPB (**N**anotechnology, Advanced **M**aterials, **B**iotechnology and Advanced Manufacturing and **P**rocessing) is a programme based around four of the six Key Enabling Technologies (KETs), which are areas seen as having huge potential to fuel economic growth and provide jobs. NMBP forms part of the Leadership in Enabling and Industrial Technologies (LEIT) programme and falls under the second pillar of Horizon 2020, which focuses on Industrial Leadership. This gives it a particular emphasis on strengthening European industrial capacity and encouraging industry participation, although opportunities for university collaboration do exist. Activities are based on research and innovation agendas defined both by the private sector and by the research community.

What will be funded?

The 2018 to 2020 NMBP Work Programme part has three focus areas, each with a series of calls:

NMBP Calls 2018-2020		
Foundations For Tomorrow's Industry	**Transforming European Industry**	**Industrial Sustainability**
Open Innovation Test Beds	**Factories of the Future**	**Sustainable Process Industry**
Materials Characterisation and Computational Modelling	**Biotechnology**	**Catalysing the Circular Economy**
Governance, Science-Based Risk Assessment and Regulatory Aspects	**Medical Technology Innovations**	**Clean Energy Through Innovative Materials**
		Cultural Heritage
		Energy-Efficient Buildings

Foundations for Tomorrow's Industry

This call encourages growth and the creation of jobs through the design development and upscaling of advanced materials and nanotechnology. It includes:

Open Innovation Test Beds

These calls are expected to create about 20 physical facilities for materials development and upscaling covering six technology domains. These are expected to collaborate in order to create a European ecosystem, with each individual facility spread across at least three Member States/Associated Countries. The Test Beds are intended to provide a service to their users, helping them move their projects form TRL 4 to 7. This should be achieved by developing new or upgrading existing facilities, both private and public, and making them accessible to users for the development, testing and upscaling of nanotechnologies and advanced materials in industrial environments. The Test Beds will also set up networks among themselves and with industry. They are also expected to

become self-sustaining and generate a turnover equal to four times the value of the grant five year after the grant has finished.

Materials Characterisation and Computational Modelling

These calls are intended to encourage the development of characterisation tools and computational modelling to reduce the current requirement for massive experimental testing of new products and make it easier for advanced and custom production to comply with safety and quality testing requirements. Included will be four Open Innovation Test Beds for materials characterisation and four more for computational modelling.

Governance, Science-Based Risk Assessment and Regulatory Aspects

These calls seek to establish a suitable form of nanotechnology governance to reduce risk, increase public confidence and allow scientific and technologically development. This requires (i) a scientific research layer, for sound scientific foundations (pre-normative research), (ii) a regulatory research layer to translate the scientific findings into appropriate frameworks and (iii) a market layer to deal with the daily management of risk and safety. International collaboration is strongly encouraged.

Transforming European Industry

This call promotes European industry through digitisation and the incorporation of other enabling technologies in the manufacturing process, and the development of bio and medical technologies.

Factories of the Future (FoF)

These calls support Europe's shift from cost-based to high-value-added manufacturing by increasing options for high-quality and custom production while reducing energy consumption and waste generation.

Biotechnology

These calls support the developing biotechnology sector by improving key biotechnology processes which address global challenges, and aiding in the standardisation and regulation of biotechnology. It also supports efforts to create environmentally friendly and sustainable biotechnology processes which can outcompete conventional methods.

Medical Technology Innovations

These calls aim to encourage the development of user-centric medical technologies, including implants, tissue regeneration and smart nano- and bio-materials. They also support technology which simplifies the transition of technologies from bench to bedside.

Industrial Sustainability

These calls promote the environmental sustainability of European industry by developing new technologies for the process industry, advancing catalysis, developing new energy materials and promoting energy-efficient buildings.

Sustainable Process Industry (SPIRE)

These calls seek to optimise industrial processes, reduce energy and resource consumption and minimise waste through adapting process industry technologies to renewable resources and use finite resources more efficiently.

Catalysing the Circular Economy

These calls seek to develop sustainable chemistries, smart materials and intelligent recycling through mature and disruptive technologies, to help progress the circular economy and decarbonise industry.

Clean Energy Through Innovative Materials

These calls seek to develop advanced materials for energy storage (both battery and non-battery storage) and sustainable energy production (off-shore and energy harvesting). Certain calls from this topic linked to the EU Battery Alliance have been moved to the call "Building a low-carbon, climate

resilient future: Next-generation Batteries" in the "Cross Cutting Activities" part of the Horizon 2020 Work Programme.

Energy Efficient Buildings

These calls seek to develop, demonstrate and validate breakthrough technologies for energy-efficient buildings and districts to decarbonise building stock and reduce energy demand.

Funding, eligibility and project details

Funding is available largely for collaborative Research and Innovation Projects, which specify both a Technology Readiness Level (TRL) starting point and target; different stages of each project will be funded at either 70% or 100% depending on the TRL and the nature of the institution participating. Funding for Co-ordination and Support Actions and ERANET actions are also offered.

2019-2020 Call Types and Timings

All call topics for2020 are available in the 2018-2020 Work Programme. The submission deadlines (or the first stage submission deadlines) of NMBP calls generally occur almost exclusively in the first quarter (January, February, March) of the year. There is a mix of one- and two-stage calls.

Relevant EU policy areas and developments

In 2010 the Commission adopted the Communication "An Integrated Industrial Policy for the Globalisation Era", a flagship initiative of the Europe 2020 strategy. The Communication set out a strategy aiming to boost growth and jobs by maintaining and supporting a strong, diversified and competitive industrial base in Europe, and highlights the urgent development of Europe's research strengths in the form of the Key Enabling Technologies. More recently, the Communications 'Towards a Circular Economy: a zero waste programme for Europe' and 'European Industrial renaissance' provided important background for the programme. The 2018-2020 calls frequently reference the 2030 Agenda for Sustainable Development, adopted by the UN in 2015.

On 1 January 2016, the 17 UN Sustainable Development Goals (SDGs) officially came into force, and many topics within the 2018-2020 NMBP Work Programme align with these goals. Where relevant the Expected Impact section will make specific mention to the SDGs, however applicants should be aware that it is advisable to have a broad understanding of the SDGs and integrate these into proposals even when they are not specifically mentioned in the Work Programme.

Two further Communications have been instrumental in the formation of the KETs strategy: "A European strategy for Key Enabling Technologies - a bridge to growth and jobs", and "A Stronger European Industry for Growth and Economic Recovery". Also relevant to this area are the Commission Communications: the "Second Regulatory Review on Nanomaterials"; and the "Final Assessment of the Research PPPs in the European Economic Recovery Plan".

More information:

- European Commission Research and Innovation Participant Portal for:
  - **Calls for proposals** https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home
  - **Work programmes** https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents
  - **2018-2020 NMBP work programme part** http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf
- **European Commission Horizon 2020 website** http://ec.europa.eu/programmes/horizon2020/en
- **Commission web pages on Industrial Policy** https://ec.europa.eu/growth/industry/innovation_en
- **PPP Factories of the Future (FoF)** http://ec.europa.eu/research/industrial_technologies/factories-of-the-future_en.html
- **PPP Energy Efficient Buildings (EoB)** http://ec.europa.eu/research/industrial_technologies/energy-efficient-buildings_en.html
- **PPP Sustainable Process Industry (SPIRE)** http://ec.europa.eu/research/industrial_technologies/sustainable-process-industry_en.html
- **The 2030 Agenda for Sustainable Development** https://ec.europa.eu/europeaid/policies/european-development-policy/2030-agenda-sustainable-development_en
- **The UN Sustainable Development Goals -** https://sustainabledevelopment.un.org/
- Sign up to the UKRO Portal to stay up to date on Horizon 2020 general developments, calls, events and results: **ukro.ac.uk**
- For specific questions, contact your UKRO European Advisor.