2019 Energy call scope to be approved by EMPIR committee

The strategic aim of the Targeted Programme “Metrology for Energy” (TP Energy) under the EMPIR Call 2019 is to support and accelerate – through metrological research and development – the on-going Energy Transition in order to achieve a low-carbon economy based on secure, clean and efficient energy.

The TP Energy focusses on metrology R&D in four core priority areas. Three are set by the EU Energy Union Strategy: renewable energy, smart energy systems, and energy efficiency. In this way, this Call will leverage the EU efforts in complementary H2020 programmes. An additional priority is storage and energy conversion: crucial to achieve the EU energy aims but with very limited EU-funded metrology research so far.

These TP Energy priorities are aligned with the EU ambitions as set out in the 20/20/20 targets of the 2020 EU climate and energy package, as well as the even more challenging targets set for 2030.

The overarching focus should be to contribute to the central TP objective of supporting the Energy Transition towards a low-carbon, smart, and efficient energy landscape.

Energy efficiency is a crucial theme for the complete energy chain, and the *first core priority* of this Call: any energy that is not used or wasted does not have to be generated and thereby saves precious resources. Therefore, projects focussing on quantifying and improving energy efficiency are particularly encouraged.

It is envisaged that metrology R&D can contribute significantly to tackling several other challenges in the energy chain:

- Improving the energy mix via the uptake of renewable energy sources (RES) is the *second core priority* of this Call. Next to already existing metrology R&D on biofuels and photovoltaics (PV), this Call welcomes proposals on other renewable energy sources such as wind and thermal solar energy.

- Storage and energy conversion is an area where EMRP- and EMPIR-funded metrology research has been limited. However, the variable nature of RES makes energy storage and conversion crucial for achieving the EU energy aims. This Call therefore has storage and energy conversion as its *third core priority* and explicitly asks for proposals in these highly-relevant areas, for example on batteries, fuel cells, conversion of power to gas or to other energy carriers.

- Energy grids play an important role in the security of supply, the uptake of RES in the energy mix, and in making our energy system smart (the *fourth core priority* of this Call). This Call therefore invites proposals that further the development of smart electricity and gas grids, and encourages research that includes links between these grids, with heating/cooling grids, and with the area of storage and conversion.

- Attention to energy use has grown significantly in recent years, resulting in several projects related to the transport sector in the 2016 TP Energy Call. In recognition of this trend, this Call invites proposals on energy use such as transportation, buildings, heating/cooling, lighting, etc. It is expected that several of the metrology challenges in this area will relate to energy efficiency (the *first core priority* of this Call).

- Energy recovery helps to minimise the use of precious energy sources. Therefore, proposals on energy recycling (re-use of waste energy) and energy harvesting are within the scope of this call.

Materials, modelling, and data science are three cross-cutting disciplines relevant for energy-metrology R&D and therefore are expected to be parts of or even the main subject of proposals in this Call. In particular, metrology contributions to big data and data analytics are welcomed since this is key to make our energy system smart (the *fourth core priority* of this Call). This could include an integrated view of the energy system, with all production, generation, transmission and distribution paths optimised and flexible, serving the energy consumer and empowering them to style their own energy management as desired.

This Targeted Programme is related to the previous calls on Metrology for Energy in EMRP and EMPIR and welcomes project proposals that build on previous projects. This call complements the call within TP Environment – launched in parallel – which includes metrological R&D on energy-related subjects such as measurement and control of emissions.

To enhance the impact of the R&D work, the involvement of the user community such as industry, academia, meteorology and climate research, standardisation and regulatory bodies, as appropriate, is strongly recommended.

An overarching objective of this Targeted Programme is to stimulate collaborative research and development of a coordinated European landscape of energy metrology capabilities, especially on challenges where an interdisciplinary approach is required, beyond the capabilities of single NMIs and DIs. It strongly encourages the establishment of links with other H2020 programmes and the collaboration with user communities, especially in new areas with limited metrology effort so far.

2019 Environment call scope to be approved by EMPIR committee

The strategic aim of the Targeted Programme "Metrology for the Environment" (TP Environment) under the EMPIR call 2019 is to develop metrological solutions required in response to the associated European policies and strategies. Those are documented e.g. in the Europe 2020 strategy or the Paris Agreement on Climate, and are also documented in a number of EU regulations.

Metrology research develops the ability to measure physical and chemical quantities and parameters in our environment. It delivers methods, reference data, and technologies that allow for correct, reliable and precise measurements. These are needed to monitor and quantify climate change, the status of the oceans, pollution of air, water and soil, and risks due to radioactivity in the environment.

The TP "Metrology for the Environment" addresses both global metrological challenges for climate control such as those related to:

- the essential climate variables of the atmosphere, land and water, including their constituents, atmospheric contaminations, transport and other parameters, and their time evolution and comparability
- remote sensing methods for environmental and climate monitoring

and local environmental challenges such as those related to:

- pollution[1] of air, water and soil
- measurement of emissions and immissions
- radioactivity in the environment

It is the overarching strategy of EURAMET to establish and develop a joint, sustainable metrological infrastructure in Europe. This requires both distributed networks to provide the coherent availability of metrological services across Europe, such as required by several related regulations, and the establishment of pooled, combined competences that bring European metrological research into an internationally leading and recognised position. Climate-related research in particular, must have an international dimension in order to deliver impact. Therefore, proposers shall describe, how the research will lead or contribute to a sustainable metrological infrastructure.

This Targeted Programme will enable collaborative research for large and transnational monitoring systems. EURAMET wishes to put a focus on reliable climate data and especially welcomes proposals enabling the establishment of a long-term European NMI/DI network coordinating the measurement infrastructure in this area and links to global networks in collaboration with user communities.

This Targeted Programme is related to the previous calls on Metrology for Environment in EMRP and EMPIR and welcomes project proposals that build on previous projects. By contributions to measure and control emissions this call complements the call within TP Energy – launched in parallel – which includes metrological R&D on environment-related subjects such as metrological contributions to reduce harmful emissions.

[1] Pollution can take the form of chemical substances or energy, such as noise, heat or light.

To enhance the impact of the R&D work, the involvement of the user community such as industry, academia, meteorology and climate research, standardisation and regulatory bodies, as appropriate, is strongly recommended.

An overarching objective of this Targeted Programme is to stimulate collaborative research and development of a coordinated European landscape of environmental metrology capabilities, especially on challenges where an interdisciplinary approach is required, beyond the capabilities of single NMIs and DIs. It strongly encourages the establishment of links with other H2020 programmes and the collaboration with user communities, especially in new areas with limited metrology effort so far.