

## PRESIDENCY COMPROMISE PROPOSAL ON THE FRAMEWORK PROGRAMME

### 5. CLIMATE ACTION, RESOURCE EFFICIENCY AND RAW MATERIALS

#### 5.1. Specific objective

The specific objective is to achieve a resource - and water - efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources. and ecosystems. Activities will contribute to increasing European competitiveness, raw materials security and improving well being, whilst assuring environmental integrity, resilience and sustainability, with the aim of keeping average global warming below 2°C and enabling ecosystems and society to adapt to climate change. and other environmental changes.

During the 20th century, the world increased both its fossil fuel use and the extraction of material resources by of the order of a factor of ten. This era of seemingly plentiful and cheap resources is coming to an end. Raw materials, water, air, biodiversity and terrestrial, aquatic and marine ecosystems are all under pressure. Many of the world's major ecosystems are being degraded, with up to 60 % of the services that they provide being used unsustainably. In the Union, some 16 tonnes of materials are used per person each year, of which 6 tonnes are wasted, with half going to landfill. The global demand for resources continues to increase with the growing population and rising aspirations, in particular of middle income earners in emerging economies. There needs to be a decoupling of economic growth from resource use.

The average temperature of the Earth's surface has increased by about 0.8°C over the past 100 years and is projected to increase by between 1.8 to 4°C by the end of the 21st century (relative to the 1980-1999 average) 2917. The likely impacts on natural and human systems associated with these changes will challenge the planet and its ability to adapt, as well as threatening future economic development and the well being of humanity.

The growing impacts from climate change and environmental problems, such as ocean acidification, changes in ocean circulation, increase of seawater temperature, ice melting in the Arctic and decreased seawater salinity, land degradation and use, loss of soil fertility; water scarcity, droughts and floods, seismic and volcanic hazards, changes in spatial distribution of species, chemical pollution, resources over-exploitation and biodiversity loss, indicate that the planet is approaching its sustainability boundaries. For example, without improvements in efficiency across all sectors, including through innovative water systems, water demand is projected to overshoot supply by 40 % in 20 years time, which will lead to severe water stress and shortages. Forests are disappearing at

an alarmingly high rate of 5 million hectares per year. Interactions between resources can cause systemic risks – with the depletion of one resource generating an irreversible tipping point for other resources and ecosystems. Based on current trends, the equivalent of more than two planet Earths will be needed by 2050 to support the growing global population.

The sustainable supply and resource- efficient management of raw materials, including their exploration, extraction, processing, re-use, recycling and substitution, is essential for the functioning of modern societies and their economies. European sectors, such as construction, chemicals, automotive, aerospace, machinery and equipment, which provide a total added value of some EUR 1.3 trillion and employment for approximately 30 million people, heavily depend on access to raw materials. However, the supply of raw materials to the Union is coming under increasing pressure. Furthermore, the Union is highly dependent on imports of strategically important raw materials, which are being affected at an alarming rate by market distortions.

Moreover, the Union still has valuable mineral deposits, whose exploration, extraction and processing is limited by a lack of adequate technologies and poor waste cycle management, by lack of investment and hampered by increased global competition. Given the importance of raw materials for European competitiveness, the economy and for their application in innovative products, the sustainable supply and resource efficient management of raw materials is a vital priority for the Union.

The ability of the economy to adapt and become more climate change resilient, resource efficient and at the same time remain competitive depends on high levels of eco-innovation, of both a societal, economic, organisational and technological nature. With the global market for eco-innovation worth around EUR 1 trillion per annum and expected to triple by 2030, eco-innovation represents a major opportunity to boost competitiveness and job creation in European economies.

## **5.2. Rationale and Union added value**

Meeting Union and international targets for greenhouse gas emissions and concentrations and coping with climate change impacts requires a transition towards a low-carbon society and the development and deployment of cost-effective and sustainable technological and non-technological solutions, and mitigation and adaptation measures., and a stronger understanding of societal responses to these challenges. Union and global policy frameworks must ensure that ecosystems and biodiversity are protected, valued and appropriately restored in order to preserve their ability to provide resources and services in the future. Water challenges in the rural, urban and industrial environments need to be addressed to promote water system innovation and resource efficiency and to protect aquatic ecosystems. Research and innovation can help secure reliable and sustainable

access to and exploitation of raw materials on land and sea bed and ensure a significant reduction in resource use and wastage. The focus of Union actions shall therefore be on supporting key Union objectives and policies covering the whole innovation cycle and the elements of the knowledge triangle including: the Europe 2020 strategy; the Innovation Union; the Industrial Policy for a globalised era, Resource-Efficient Europe and the corresponding Roadmap; the Roadmap for moving to a competitive low carbon economy in 2050.

Adapting to climate change: Towards a European framework for action; the Raw Materials Initiative; the Union's Sustainable Development Strategy; an Integrated Maritime Policy for the Union; the Marine Strategy Framework Directive; the Water Framework Directive and daughter Directives; the Flood Directive; the Eco-innovation Action Plan and the Digital Agenda for Europe and the General Union Environment Action Programme to 2020. These actions shall, when appropriate, interface with relevant European Innovation Partnerships and Joint Programming Initiatives.

Given the transnational and global nature of the climate and the environment, their scale and complexity, and the international dimension of the raw materials supply chain, activities have to be carried out at the Union level and beyond. The multi-disciplinary character of the necessary research requires pooling complementary knowledge and resources in order to effectively tackle this challenge in a sustainable way. Reducing resource use and environmental impacts, whilst increasing competitiveness, will require a decisive societal and technological transition to an economy based on a sustainable relationship between nature and human well-being. Coordinated research and innovation activities will improve the understanding and forecasting of climate and environmental change in a systemic and cross-sectoral perspective, reduce uncertainties, identify and assess vulnerabilities, risks, costs and opportunities, as well as expand the range and improve the effectiveness of societal and policy responses and solutions.

Actions will also seek to improve research and innovation delivery and dissemination to support policy-making and to empower actors at all levels of society to actively participate in this process.

Addressing the availability of raw materials calls for co-ordinated research and innovation efforts across many disciplines and sectors to help provide safe, economically feasible, environmentally sound and socially acceptable solutions along the entire value chain (exploration, extraction, processing, sustainable use and re-use, recycling and substitution). Innovation in these fields will provide opportunities for growth and jobs, as well as innovative options involving science, technology, the economy, society, policy and governance. For this reason, a European Innovation Partnerships on Water Efficiency and Raw Materials has been launched. Responsible eco-innovation may provide valuable new opportunities for growth and jobs. Solutions developed

through Union level action will counter key threats to industrial competitiveness and enable rapid uptake and replication across the Single Market and beyond. This will enable the transition towards a green economy that takes into account the sustainable use of resources. Partners for this approach will include: International, European and national policy makers; international and Member State research and innovation programmes; European business and industry; the European Environment Agency and national environment agencies; and other relevant stakeholders.

In addition to bilateral and regional cooperation, Union level actions will also support relevant international efforts and initiatives, including the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) and the Group on Earth Observations (GEO).

### **5.3. Broad lines of the activities**

#### *(a) Fighting and adapting to climate change*

The aim is to develop and assess innovative, cost-effective and sustainable adaptation and mitigation measures and strategies, targeting both CO<sub>2</sub> and non-CO<sub>2</sub> greenhouse gases and aerosols, and underlining both technological and non-technological green solutions, through the generation of evidence for informed, early and effective action and the networking of the required competences.

Activities shall focus on: improving the understanding of climate change and the risks associated with extreme events and abrupt climate-related changes with a view to providing reliable climate projections; assessing impacts at global, regional and local level, vulnerabilities and developing innovative cost-effective adaptation and risk prevention and management measures; supporting mitigation policies and strategies, including studies that focus on impact from other sectoral policies.

#### *(b) Protection of the environment, sustainably managing natural resources, water, biodiversity and ecosystems*

The aim is to provide knowledge and tools for the management and protection of natural resources that achieves a sustainable balance between limited resources and the present and future needs of society and the economy. Activities shall focus on: furthering our understanding of biodiversity and the functioning of ecosystems, their interactions with social systems and their role in sustaining the economy and human well-being; developing integrated approaches to address water-related challenges and the transition to sustainable management and use of water resources and services;

and providing knowledge and tools for effective decision making and public engagement.

*(c) Ensuring the sustainable supply of non-energy and non-agricultural raw materials*

The aim is to improve the knowledge base on raw materials and develop innovative solutions for the cost-effective, resource efficient and environmentally friendly exploration, extraction, processing, use, re-use, recycling and recovery of raw materials and for their substitution by economically attractive and environmentally sustainable alternatives with a lower environmental impact. Activities shall focus on: improving the knowledge base on the availability of raw materials; promoting the sustainable and efficient supply, and use and re-use of raw materials, including mineral resources, from land and sea; finding alternatives for critical raw materials; and improving societal awareness and skills on raw materials.

*(d) Enabling the transition towards a green economy and society through eco-innovation*

The aim is to foster all forms of eco-innovation that enable the transition to a green economy. Activities shall build upon and enhance those undertaken in the Eco-Innovation Programme and focus on: strengthening eco-innovative technologies, processes, services and products, including exploring ways to reduce the quantities of raw materials in production and consumption, and overcoming barriers in this context, and boosting their market uptake and replication, with special attention for SMEs; supporting innovative policies, sustainable economic models and societal changes; measuring and assessing progress towards a green economy; and fostering resource efficiency through digital systems.

*(e) Developing comprehensive and sustained global environmental observation and information systems*

The aim is to ensure the delivery of the long-term data and information required to address this challenge. Activities shall focus on the capabilities, technologies and data infrastructures for Earth observation and monitoring from both remote sensing and in situ measurements that can continuously provide timely and accurate information and permit, forecasts and projections. Free, open and unrestricted access to interoperable data and information will be encouraged. Activities shall help define future operational activities of the European Earth Monitoring programme (Copernicus) and enhance the use of Copernicus data for research activities.

*(f) Cultural heritage*

The aim is to research into the strategies, methodologies and tools needed to enable a dynamic and

sustainable cultural heritage in Europe in response to climate change. Cultural heritage in its diverse physical forms provides the living context for resilient communities responding to multivariate changes. Research in cultural heritage requires a multidisciplinary approach to improve the understanding of historical material. Activities shall focus on identifying resilience levels via observations, monitoring and modelling as well as provide for a better understanding on how communities perceive and respond to climate change and seismic and volcanic hazards.

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