

Presidency compromise proposal on the Framework Programme
Food security, sustainable agriculture, marine and maritime research and
the bio-economy

2.1 Specific objective

The specific objective is to secure sufficient supplies of safe, healthy and high quality food and other bio-based products, by developing productive, sustainable and resource-efficient primary production systems, fostering related ecosystem services and the recovery of biological diversity, along side competitive and low carbon supply, processing and marketing chains. This will accelerate the transition to a sustainable European bio-economy, bridging the gap between new technologies and their implementation.

Over the coming decades, Europe will be challenged by increased competition for limited and finite natural resources, by the effects of climate change, in particular on primary production systems (agriculture **including animal husbandry and horticulture**, forestry, fisheries and aquaculture) and by the need to provide a sustainable, safe and secure food supply for the European and an increasing global population. A 70 % increase of the world food supply is estimated to be required to feed the 9 billion global population by 2050. Agriculture accounts for about 10 % of Union greenhouse gases emissions, and while declining in Europe, global emissions from agriculture are projected to increase up to 20 % by 2030. Furthermore, Europe will need to ensure sufficient **and sustainably produced** supplies of raw materials, energy and industrial products, under conditions of decreasing fossil carbon resources (oil and liquid gas production expected to decrease by about 60 % by 2050), while maintaining its competitiveness. Bio-waste (estimated at up to 138 million tonnes per year in the Union, of which up to 40 % is land-filled) represents a huge problem and cost, despite its high potential added value.

For example, an estimated 30 % of all food produced in developed countries is discarded. Major changes are needed to reduce this amount by 50 % in the Union by 2030¹⁰.

In addition, national borders are irrelevant in the **entry and** spread of animal and plant pests and diseases, including zoonotic diseases, and food borne pathogens. While effective national prevention measures are needed, action at Union level is essential for ultimate control and the effective running of the single market. The challenge is complex, affects a broad range of interconnected sectors and requires a **holistic and systemic approach**.

More and more biological resources are needed to satisfy market demand for a secure and healthy food supply, bio-materials, biofuels and bio-based products, ranging from consumer products to bulk chemicals. However the capacities of the terrestrial and aquatic ecosystems required for their production are limited, while there are competing claims for their utilisation, and often not optimally managed, as shown for example by a severe decline in soil carbon content and **fertility and fish stock depletion**. There is under-utilised scope for fostering ecosystem services from farmland, forests, marine and fresh waters by integrating agronomic, environmental **and social** goals into sustainable production **and consumption**.

The potential of biological resources and ecosystems could be used in a much more sustainable, efficient and integrated manner. For examples, the potential of biomass from **agriculture**, forests and waste streams from agricultural, aquatic, industrial, and also municipal origins could be better harnessed

In essence, a transition is needed towards an optimal and renewable use of biological resources and towards sustainable primary production and processing systems that can produce more food,

fibre and other bio-based products with minimised inputs, environmental impact and greenhouse gas emissions, enhanced ecosystem services, zero-waste and adequate societal value. **The aim is establishing food production systems that strengthen, reinforce and nourish the resource base and enable sustainable wealth generation. Responses to the way we generate, distribute, market, consume and regulate food production must be better understood and developed.** A critical effort of interconnected research and innovation is a key element for this to happen, in Europe and beyond **as well as a continuous dialogue between political, social, economic and other stakeholder groups.**

2.2 Rationale and Union added value

Agriculture, forestry, fisheries **and aquaculture** together with the bio-based industries are the major sectors underpinning the bio-economy. This latter represents a large and growing market estimated to be worth over EUR 2 trillion, providing 20 million jobs and accounting for 9 % of total employment in the Union in 2009. Investments in research and innovation under this societal challenge will enable Europe to take leadership in the concerned markets and will play a role in achieving the goals of the Europe 2020 strategy and its Innovation Union and Resource Efficient Europe flagship initiatives.

A fully functional European bio-economy – encompassing the sustainable production of renewable resources from land, **fisheries and aquaculture** environments and their conversion into food, **feed, fibre** bio-based products and bioenergy as well as the related public goods - will generate high European added value. **In parallel to the market related function, the bio-economy sustains also a wide range of public goods functions, biodiversity and ecosystem services.** Managed in a sustainable manner, it can reduce the environmental footprint of primary production and the supply chain as a whole. It can increase their competitiveness, **enhance Europe's self-reliance** and provide jobs and business opportunities **essential** for rural and coastal development.

The food security, sustainable agriculture, **and farming, aquatic production, forestry** and overall bio-economy – related challenges are of a European and global nature. Actions at Union level are essential to bring together clusters to achieve the necessary breadth and critical mass to complement efforts made by a single or groups of Member States.

A multi-actor approach will ensure the necessary cross-fertilising interactions between researchers, businesses, farmers/producers, advisors and end-users. The Union level is also necessary to ensure coherence in addressing this challenge across sectors and with strong links to relevant Union policies. Coordination of research and innovation at Union level will stimulate and help to accelerate the required changes across the Union.

Research and innovation will interface with **and support elaboration of** a wide spectrum of Union policies and related targets, including the Common Agriculture Policy (in particular the Rural Development Policy, **the Joint Programming Initiatives, including “Agriculture, Food Security and Climate Change”, “A Healthy Diet for a Healthy Life” and “Healthy and Productive Seas and Oceans”**) and the European Innovation Partnership 'Agricultural Productivity and Sustainability' and **the European Innovation Partnership on Water,** the Common Fisheries Policy, the Integrated Maritime Policy, the European Climate Change Programme, the Water Framework Directive, the Marine Strategy Framework Directive, the **EU** Forestry Action Plan, the Soil Thematic Strategy, the Union's 2020 Biodiversity Strategy, the Strategic Energy Technology Plan, the Union's innovation and industrial policies, external and development aid policies, plant health strategies, animal health and welfare strategies and regulatory frameworks to protect the environment, health and safety, to promote resource efficiency and climate action, and to reduce waste.

A better integration of **the full cycle of from fundamental research and to innovation** into related Union policies will significantly improve their European added value, provide leverage effects,

increase societal relevance, **provide healthy food products** and help to further develop sustainable land, seas and oceans management and bio-economy markets.

For the purpose of supporting Union policies related to the bio-economy and to facilitate governance and monitoring of research and innovation, socio-economic research and forward looking activities will be performed in relation to the bio-economy strategy, including development of indicators, data bases, models, foresight and forecast, impact assessment of initiatives on the economy, society and the environment.

Challenge-driven actions focusing on social, economic **and environmental** benefits and the modernisation of the bio-economy associated sectors, and markets shall be supported through multi-disciplinary research, driving innovation and leading to the development of new **strategies**, practices, **sustainable** products and processes. It shall also pursue a broad approach to innovation ranging from technological, non-technological, organisational, economic and social innovation to, for instance, **ways for technology transfer**, novel business models, branding and services. **The potential of farmers and SMEs to contribute to innovation must be recognised. The approach to the bioeconomy shall take account of the importance of local knowledge and diversity.**

2.3 Broad lines of activities

(a) Sustainable agriculture and forestry

The aim is to supply sufficient food, feed, biomass and other raw-materials, while safeguarding natural resources, **such as water and soil and biodiversity, in a European and world-wide perspective**, and enhancing ecosystems services, including coping with and mitigating climate change. The activities shall focus on **increasing the quality and value of agricultural products by delivering** more sustainable and productive agriculture, **including animal husbandry** and forestry systems which are resource-efficient (including low-carbon **and water**)-**protect natural resources, are diverse, produce less waste, can adapt to a changing environment and are resilient.** Furthermore, the activities shall focus on developing of services, concepts and policies for thriving rural livelihoods **and encouraging sustainable consumption.**

In particular for forestry, the aim is to sustainably produce biomass and bio-based products and deliver ecosystem services, with due consideration to economic, ecological and social aspects of forestry. Activities will focus on the further development of production and sustainability of resource efficient forestry systems which are instrumental in the strengthening of forest resilience and biodiversity protection, and which can meet increased biomass demand. The interaction of functional plants with health and well being, as well as the exploitation of horticulture and forestry for the development of urban greening will also be considered.

(b) Sustainable and competitive agri-food sector for a safe and healthy diet

The aim is to meet the requirements of citizens **and the environment** for safe, healthy and affordable food, and to make food and feed processing and distribution **and consumption** more sustainable and the food sector more competitive **while also considering the cultural component of food quality.** The activities shall focus on healthy and safe foods for all, informed consumer choices, **dietary solutions and innovations for improved health** and competitive food processing methods that use less resources **and additives** and produce less by-products, waste and greenhouse gases.

(c) Unlocking the potential of aquatic living resources

The aim is to **manage**, sustainably exploit **and maintain** aquatic living resources to maximise social and economic benefits/returns from Europe's oceans, seas **and inland waters while protecting**

biodiversity. The activities shall focus on an optimal contribution to secure food supplies by developing sustainable and environmentally friendly fisheries, **sustainable management of ecosystems providing goods and services**, competitive **as well as environmentally friendly** European aquaculture in the context of the global economy and on boosting marine **and maritime** innovation through biotechnology to fuel smart "blue" growth. **Cross-cutting marine and maritime scientific and technological knowledge will be addressed with a view to unlocking the potential of the seas and inland waters across the range of marine and maritime industries, while protecting the environment and adapting to climate change.**

(d) Sustainable and competitive bio-based industries **and supporting the development of a European bio-economy**

The aim is the promotion of low carbon, resource efficient, sustainable and competitive European bio-based industries.

The activities shall focus on fostering the **knowledge-based** bio-economy by transforming conventional industrial processes and products into bio-based resource and energy efficient ones, the development of integrated **second and subsequent generation** biorefineries, ~~utilising~~ **optimising the use of** biomass from primary production **including residues**, biowaste and bio-based industry by-products, and opening new markets through supporting standardisation **and certification systems**, regulatory and demonstration/field trial activities and others, while taking into account the implications of the bioeconomy on land use and land use changes, **as well as the views and concerns of civil society.**

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