

WORK PROGRAMME 2011

COOPERATION

THEME 2

FOOD, AGRICULTURE AND FISHERIES, AND BIOTECHNOLOGY

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OBJECTIVE

Building a European Knowledge Based Bio-Economy¹ by bringing together science, industry and other stakeholders, to exploit new and emerging research opportunities that address social, environmental and economic challenges: the growing demand for safer, healthier, higher quality food and for sustainable use and production of renewable bio-resources, the increasing risk of epizootic and zoonotic diseases and food related disorders; threats to the sustainability and security of agricultural, aquaculture and fisheries production; and the increasing demand for high quality food, taking into account animal welfare and rural and coastal context and response to specific dietary needs of consumers.

I CONTEXT

- Approach for 2011

The Work Programme 2011 (WP2011) supports the development of a sustainable European **Knowledge Based Bio-Economy (KBBE)** and offers a convergent and coordinated approach to address the challenges facing society today as highlighted in Europe 2020 strategy² and in Lund declaration³. In this respect, all topics published in the WP2011 contribute to at least one of the following five societal challenges:

1. Primary production mitigating and adapting to climate change – Topics address the challenges raised in the Commission's White Paper on "Adapting to climate change: towards a European framework for action"⁴ and in relation to the development of the Common Agriculture Policy⁵. The topics of adaptation potential of cropping, husbandry and forestry systems are also covered. WP2011 provides support to the EU' Soil Thematic Strategy and the Waste Framework Directive, with topics focusing on "soils and bio-waste" and the plant-soil relationship. Specific actions support the new EU Animal Health Strategy⁶ and Action Plan⁷, with the emphasis on international collaboration and the "One health" approach in zoonotic diseases.

2. Greening the industry – The biotechnology toolbox is applied to support the move from fossil resource-based industries to more sustainable, efficient and competitive bio-industries. In parallel to developing and using novel sources of biomass and bioproducts, advances in biorefinery and industrial biotechnology are leading to the development of bioprocesses for high value and large volume bio-chemicals and include the use of biological waste as a renewable feedstock. This provides a critical technological push to the Lead Market in Biobased products. Topics on emerging trends in biotechnology focus on bioinformatics and synthetic biology. Research supporting innovation in the food industry also contributes to

¹ The term 'bio-economy' includes all industries and branches of the economy that produce, manage or otherwise harness biological resources (and related services, supply or consumer industries), such as agriculture, food, fisheries and other marine resources, forestry, etc.

² <http://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

³ http://www.se2009.eu/polopoly_fs/1.8460!menu/standard/file/lund_declaration_final_version_9_july.pdf

⁴ COM(2009) 147 final

⁵ CAP health check: COM(2007) 722 final; SCAR: COM(2008) 862 final

⁶ COM(2007) 539

⁷ COM (2008) 545

addressing this challenge and - particularly in relation to SMEs - focuses on environmental sustainability of the total food chain, novel processing, cleaning technologies and food packaging.

3. Food security and safety for Europe and beyond – the challenge of securing the availability of safe, nutritious and affordable food has taken on a new dimension in view of increase in global demand, environmental restrictions on agricultural production and intensified competition for land for feed, food and non-food production. Several topics examine the impact of climate change on food security in Europe, and address the reduction of post-harvest losses and the use of micronutrients and food fortification for targeted interventions at the level of poor households world-wide. Many topics address food security, directly or indirectly, and poverty alleviation for both European and non-European settings.

4. A socially inclusive and healthy Europe - Topics address the challenge for Europe to shift from a defensive health policy in combating illness to a preventive approach promoting the health of every citizen, and by paying special attention to the needs of the aging population and the most vulnerable in our society (e.g. children and people on low incomes).

5. Oceans for the future – Topics promote a scientific basis for the responsible, ecosystem-based and sustainable management of Europe's fisheries in support of the reform of the Common Fisheries Policy and provide research for a sustainable and competitive culture of healthy and safe aquatic products. Efforts are dedicated to the generation of knowledge on the functioning of marine ecosystems and its biotechnological potential.

Across all activities, the issue of preventing, reducing and reusing bio-waste is addressed. Reducing and preventing the generation of waste along the whole production-consumption chains within the agriculture, fisheries, forestry and food sectors, as well as bio-valorisation, i.e. adding value to a waste stream through recycling (e.g. linking biowaste with soil systems) or reprocessing (e.g. generating bioenergy and other bio based products), are essential elements of the Bio-Economy concept.

- The ERA dimension: The structuring of ERA is enhanced through specific actions targeting the enlarged Europe and candidate countries. A number of topics specifically indicate that supported projects are expected to lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries⁸. In addition training component is included in the number of topics (e.g. topics on Efficiency of ruminant digestive systems and reduction of the ecological footprint through a combination of systems biology, 'omics' and nutrition; Pan-European Total Diet Study).

Six new ERANETs, an ERA-NET preparatory action on Marine Biotechnology, a support action to strengthen networking between ERA-NETs relevant to the KBBE and a coordination action on Energy Efficiency in Agriculture are included in the WP2011.

⁸ KBBE.2011.1.2-10, KBBE.2011.1.2-11, KBBE.2011.1.3-06, KBBE.2011.1.4-02, KBBE.2011.1.4-03, KBBE.2011.1.4-04, KBBE.2011.1.4-05, KBBE.2011.3.1-01, KBBE.2011.3.1-02, KBBE.2011.3.2-01, KBBE.2011.3.3-01, KBBE.2011.3.3-02, KBBE.2011.3.3-03, KBBE.2011.3.4-01, KBBE.2011.3.4-02, KBBE.2011.3.5-01, KBBE.2011.3.6-06

ERA-NET topics⁹ are part of FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 to the Cooperation Programme.

Joint Programming initiatives: WP2011 includes two topics¹⁰ to support the Joint Programming initiatives on 'Agriculture, Food Security and Climate Change' and 'A Healthy Diet for a Healthy Life'. These topics are included in call FP7-JPROG-2011-RTD, open in coordination with the Theme Environment (including climate change) and published in Annex 4 to the Cooperation Programme. Complete information on funding scheme, eligibility criteria and expected impact can be found in Annex 4 to the Cooperation Programme.

- Cross -Thematic cooperation:

Call "The ocean of tomorrow" - Joining research forces to meet challenges in ocean management: a special attention is paid in the 2011 work programme to encourage multidisciplinary in marine sciences and technologies which cuts across themes as mentioned in the Specific Programme "Cooperation" and in the Communication on "A European strategy for Marine and Maritime Research". Such a cross-thematic approach is addressed through a new call "The ocean of tomorrow: Joining research forces to meet challenges in ocean management", following the call launched in 2010. The current call involves four Cooperation Themes: Theme 2 – Food, Agriculture and Fisheries, and Biotechnologies, Theme 5 - Energy, Theme 6 – Environment (including climate change) and Theme 7 – Transport. The call is implemented through four different topics, out of which two are of generic nature and two of particular relevance to the Mediterranean and the Black Sea. The four topics are published in the Work Programmes of all participating Themes. These topics are subject to the separate call fiche.

Coordination with Theme 1 – 'Health' is foreseen in the field of nutrition and prevention of diet-related diseases, in particular diabetes and obesity. Coordination with Theme 5 – 'Science in Society' of the Specific Programme 'Capacities' is foreseen in relation to the initiative on 'Mobilisation and Mutual learning on societal challenges', in particular in the field of 'Food, nutrition, emerging technologies and related health issues'.

- The innovation dimension: In line with the strong importance attached to developing an integrated approach to research and innovation in the Europe 2020 strategy, effective communication, dissemination, knowledge transfer and strengthening participation of industry, in particular SMEs, is reflected throughout all topics of WP2011.

Communication, dissemination and knowledge transfer: Special emphasis is placed on dissemination and take-up of research results at project level. Each proposal is asked to present well-defined dissemination and implementation plans, including, whenever appropriate, (i) appointing a "Communication manager"; (ii) setting aside dedicated budget for communication activities (iii) designing activities according to the needs of the different target groups; (iv) linking research results to 'Bulletin Board System' database¹¹; and (v) communicating the research results to the authorities managing the Cohesion Policy Funds¹²,

⁹ ERA-NET topics: KBBE.2011.1.1-05; KBBE.2011.1.2-08; KBBE.2011.1.3-05; KBBE.2011.2.6-02; KBBE.2011.3.3-01; KBBE.2011.3.6-06

¹⁰ JPI support actions: KBBE.2011.1.4-01 and KBBE.2011.2.6-01

¹¹ <http://www.enterprise-europe-network.ec.europa.eu/services/technology-transfer>

¹² http://ec.europa.eu/regional_policy/atlas2007/fiche_index_en.htm

the European Fisheries Fund¹³ and the European Agricultural Fund for Rural Development¹⁴. Details of these activities may be further defined during contract negotiations.

Strengthening SME participation: A novelty of WP2011 is that substantial part of topics call for mandatory SME participation. The aim is to spend 15% of the total call budget on SMEs.

In a number of topics, different budget thresholds for SME(s) participation are indicated (as % of total EU contribution going to SME(s)). This will be applied strictly as an eligibility criterion.

In addition, a topic "KBBE.2011.1.3-06: Development of next generation European system for cattle evaluation" follows the procedures of the funding scheme "Research for the benefit of SMEs" and requires mandatory participation of at least 3 SME's. The aim of this funding scheme is to support research and technological development projects where the bulk of the research is carried out by RTD performers for the benefit of SMEs. Eligibility criteria are explained in the call fiche. Evaluation criteria are explained in Annex 2 to the Work Programme and the Guide for Applicants for "Research for the benefit of SMEs".

As in the previous work programmes, a number of SME relevant topics are designed to encourage participation by SMEs and industry in research and innovation. In these topics, the project results are expected to be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself is expected to contribute to the realisation of that benefit.

Demonstration activities: Demonstration activities are part of several topics, where technologies are more mature and their practical implementation is expected in the short to medium term (e.g. in the areas of industrial biotechnologies and biorefineries). Proof-of-concepts and assessments of the technical and economic viability of the know-how produced is also in the scope of several topics.

- **International cooperation:** International cooperation with participants from third countries is supported and encouraged throughout all the areas of WP2011, and all topics are open to cooperation with third countries.

In WP2011, selected topics (SICAs and topics with mandatory ICPC participation) aim to foster research both for and with *developing countries*, thereby contributing to achieving of the Millennium Development Goals (e.g. post-harvest losses, aquaculture for food security). Training components in selected topics aim to foster capacity building (e.g. topic on New/next generation of researchers for Neglected Zoonoses at the animal-human interface). Involvement of local stakeholders/users is an important aspect of these topics.

Co-operation with the *BRIC countries* (Brazil, Russia, India and China) is fostered via selected topics (SICAs and topics with mandatory ICPC participation) to tackle issues of mutual interest and benefit, identified through bilateral and regional dialogues. EU-India Partnering Initiative is supported in the areas of biomass & biowaste, in order to promote programme-level co-operation between the EU and India, in line with the scope and priorities of the SFIC (Strategic Forum for International S&T Co-operation)¹⁵.

Cooperation with *industrialised countries* focuses on emerging new scientific fields. In this respect, several topics have been specifically highlighted as research areas that are particularly

¹³ http://ec.europa.eu/fisheries/cfp/structural_measures/arrangements_2007_2013_en.htm

¹⁴ http://ec.europa.eu/agriculture/rurdev/index_en.htm

¹⁵ OJ C18 of 24.1.2009, pp. 11-13.

suited for international cooperation. In these topics, the participation of partners from selected industrialised countries is considered to be important to achieve the expected impact of the research to be undertaken.

A financial contribution may be granted by the European Union in the case of a participating international organisation other than an international European interest organisation, or a legal entity established in a third country other than an international cooperation partner country, such as Australia, Canada, New Zealand, United States, etc, provided that such a contribution is essential for carrying out the indirect action.¹⁶

WP2011 includes a topic to support the international activities of this theme, in particular International KBBE Forum: multipartner cooperation initiative between the European Commission and Australia, Canada and New Zealand, and the activities of the EC-US Task Force on Biotechnology Research¹⁷.

Cooperation with Latin America and the Caribbean: In 2010, EU-Latin America and Caribbean (LAC) Summit¹⁸ focused on bi-regional cooperation on "Innovation and technology for sustainable development and social inclusion". The Summit's Action Plan calls for boosting science and technology cooperation between the EU and LAC countries. In KBBE WP2011, a number of topics contribute to sustainability as advocated by the Summit and could, therefore, be of strong interest to LAC countries. In these topics, special attention should be paid to environmental, economic and social dimensions and the uptake and use of the new knowledge generated. Where relevant, synergies and/or complementarities among projects are encouraged within the same theme and/or across themes. In these cases, a dedicated budget for coordination or joint outreach activities could be foreseen. For information on topics in other themes which are of possible interest to LAC, see the corresponding work programme chapters¹⁹.

All topics are open to participation of LAC countries. Examples of topics of possible interest to Latin America countries and the Caribbean in KBBE WP2011: KBBE.2011.1.4-07: Role of aquaculture in improving food security and eradicating poverty worldwide – Mandatory ICPC; KBBE.2011.2.5-02: Reducing post-harvest losses for increased food security – SICA; KBBE.2011.3.4-01: BioWASTE - Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts – SICA.

Twinning of projects: With a view to promoting international cooperation with third countries that have signed bilateral S&T agreements with the European Union, initiatives for collaboration between projects under Theme 2 of FP7 and related research programmes in these third countries are encouraged on the basis of mutual benefit and reciprocity. The Commission reserves the right to ask the coordinators of FP7 projects, during the grant agreement negotiations, to include collaboration activities with projects financed by these third countries. The costs of these activities are expected to be approximately 1% of the total European Union contribution to these projects. Parallel funding is expected from the related research programmes in the third countries for counterpart projects. Twinning are currently

¹⁶ For more information please see Article 29 of the EC FP7 Rules for Participation.

¹⁷ http://ec.europa.eu/research/biotechnology/ec-us/index_en.html

¹⁸ Madrid, 18-19 May 2010. See also www.ec.europa.eu/research/inco - Latin America and Caribbean

¹⁹ 'Health', 'Food, Agriculture and Fisheries, and Biotechnology' (KBBE), 'Information and Communication Technologies', 'Nanosciences, Nanotechnologies, Materials and New Production Technologies' (NMP), 'Environment (including climate change)', 'Transport (including aeronautics)' and 'Social Sciences and Humanities'.

on going with Canada on bio-products and food and with Argentina and Mercosur on plants, soil and food research.

- Socio-economic dimension of research: Where relevant, account should be taken of possible socio-economic impacts of research, including its intended and unintended consequences and the inherent risks and opportunities. A sound understanding of this issue should be demonstrated at the level of both research design and research management. In this context, where appropriate, the projects should ensure engagement of relevant stakeholders (e.g. user groups, civil society organisations, policy-makers) as well as stimulate a multi-disciplinary approach (including, where relevant, researchers from social sciences and humanities). Projects raising ethical or security concerns are also encouraged to be attentive to wider public outreach. The work programme encourages participation by civil society organisations in all topics.

- Participation by women and gender dimension in research: Seeking scientific knowledge and using it to serve society calls for talent, perspectives and insight that can only be secured by increasing diversity in science and the technological workforce. Therefore, equal representation of women and men at all levels in research projects is encouraged.

Gender aspects in research are of particular relevance to Theme 2. For example, there may be differences between men and women as regards risk factors, biological mechanisms, behaviour, causes, consequences, management of and communication on diet-related diseases and disorders. Furthermore, roles and responsibilities, the relationship to the resource base (land management, agricultural and forest resources, etc.) and the perception of risks and benefits could have a gender dimension. Applicants should systematically address whether, and to what extent, gender aspects are relevant to the objectives and the methodology of projects.

In addition, specific actions to promote gender equality in research can be financed as part of the proposal, as specified in Appendix 7 of the Negotiation Guidance Notes [http://ftp.cordis.europa.eu/pub/fp7/docs/negotiation_en.pdf].

- Use of animals in research: Research activities should take into account the Protocol on the Protection and Welfare of Animals, and reduce - with a view to ultimately replacing - the use of animals in research and testing (Decision 1982/2006/EC). The principle of the three Rs (Replacement, Reduction and Refinement) should be applied in all research funded by the European Commission.

- Theme-specific information:

The EU contribution limits indicated for each topic in the work programme and in the call fiche are eligibility criterion. The proposals not meeting the indicated thresholds will be declared ineligible.

Up to one ranked proposal may be retained per topic, except for the following topics:

Topic number	Topic title	Maximum number of proposals
Call: FP7-KBBE-2011-5		
KBBE.2011.1.2-01	Sustainable management of agricultural soils in Europe for enhancing food and feed production and contributing to climate change mitigation	Up to 2 projects may be funded

Topic number	Topic title	Maximum number of proposals
KBBE.2011.1.2-02	Reducing mineral fertilisers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products	Up to 2 projects may be funded
KBBE.2011.1.2-05	Root signalling, growth and development under abiotic stress conditions	Up to 2 projects may be funded
KBBE.2011.1.4-06	Towards land management of tomorrow – Innovative forms of mixed farming for optimized use of energy and nutrients	Up to 2 projects may be funded
KBBE.2011.2.3-03	Advanced and flexible technologies for active, intelligent and sustainable food packaging	Up to 3 projects may be funded
KBBE.2011.2.3-05	Processed foods with lower salt, fat and sugar content	Up to 2 projects may be funded
KBBE.2011.2.4-01	Safety and quality of ready-to-eat foods	Up to 3 projects may be funded
KBBE.2011.2.5-01	Environmental sustainability in the European food and drink chain	Up to 2 projects may be funded
KBBE.2011.2.5-02	Reducing post-harvest losses for increased food security – SICA	Up to 2 projects may be funded
KBBE.2011.3.1-02	Perennial grasses: optimising biomass production – SICA	Up to 3 projects may be funded
KBBE.2011.3.3-03	Cellular, metabolic and genetic engineering for novel compounds	Up to 2 projects may be funded
KBBE.2011.3.4-01	BioWASTE – Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts – SICA	Up to 3 projects may be funded
KBBE.2011.3.6-01	Increasing the accessibility, usability and predictive capacities of bioinformatics tools for biotechnology applications	Up to 3 projects may be funded
KBBE.2011.3.6-04	Applying Synthetic Biology principles towards the cell factory notion in biotechnology	Up to 2 projects may be funded
Call: FP7-OCEAN-2011		
OCEAN.2011-1	Multi-use offshore platforms	Up to 3 projects may be funded

There may be competition between proposals submitted on different topics and proposals submitted on the same topic. This may result in some topics not being supported.

II. CONTENT OF CALLS

Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environment

Area 2.1.1 Enabling research

Enabling research on the key long term drivers of sustainable production and management of biological resources (micro-organisms, plants and animals) including the exploitation of biodiversity and of novel bioactive molecules within these biological systems. Research will include 'omics' technologies, such as genomics, proteomics, metabolomics, and converging technologies, and their integration within systems biology approaches, as well as the development of basic tools and technologies, including bioinformatics and relevant databases, and methodologies for identifying varieties within species groups.

KBBE.2011.1.1-01: Promoting conifer genomic resources

Call: FP7-KBBE-2011-5

Conifers represent most of the natural (primary) woods in the Northern hemisphere and are of high economic and ecological importance. They are exposed to threats caused by climatic events and related increases in biotic and abiotic stresses such as diseases and pests, fires, drought and frosts. More knowledge as regards genome organization and the genetic basis of important ecological and economic traits is required to make more efficient use of the genetic diversity and adaptive capacity of forests. The project will develop an integrative genomic research programme in conifer species using e.g. high-throughput (HT) sequencing, genotyping and gene expression platforms to identify genes and gene networks relevant for tree improvement and sustainable forest management (such as those associated with adaptation). The project will also undertake comparative studies within species complexes and between conifer species with different adaptive and/or reproductive responses. The genomic information generated shall be of further use in conifer conservation and breeding activities to support the genetic diversity required in sustainable forest management.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Additional information: The project shall take into consideration outputs and resources from related initiatives such as FP6 Evoltree Network of Excellence, FP7 projects FoResTTraC (Forest ecosystem genomics Research: supporting Transatlantic Cooperation) and NovelTree (Novel Tree breeding strategies); the Swedish Picea Genome Initiative; and the ongoing international conifer genome initiative.

Expected impact: The project will generate genomic and genetic resources as well as develop novel strategies for germplasm deployment, conifer tree breeding and forest management, taking into account current and predicted environmental conditions in Europe. By creating an array of pre-breeding and selection tools it will help to develop improved conifer reproductive material and contribute to sustaining healthy, multifunctional and

productive European forests. In this way the project will contribute to implementing international and European commitments for the protection of forests.

Participation of relevant partners from Canada and the US will add to the scientific and/or technological excellence of the project and ensure effective uptake of on-going international efforts in the area of conifer genome sequencing.

KBBE.2011.1.1-02: Integrated approach to studying effects of combined biotic and abiotic stress in crop plants

Call: FP7-KBBE-2011-5

Field conditions show a combination of biotic and abiotic stresses, appearing sequentially all along the growing period but, more frequently, combined. In the context of climate change, where for instance higher variability of rainfall in space and time is foreseen, more variability of pathogens combined with more frequent stresses could be particularly harmful for crop yield in Europe. The project aims at gaining a more integrated understanding of the interactions between biotic and abiotic stress signalling pathways and those of growth control, at local or/and systemic level. The project will progress in moving from studies undertaken in model and semi-model species to crop plants, and will particularly focus on having a direct application in plant breeding programmes. The project should also advance the development of phenotyping methodologies and predictive models.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: Results will support the development of breeding and adaptation strategies to maintain and/or optimise yields under varying growth conditions. Better understanding of multi-stress problems and their use in breeding shall contribute to adapting European agriculture to forecasted climatic challenges, and allow a better adaptation of varieties to their environment. The project will also contribute to technology development related to phenotyping and modelling. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.1-03: Efficiency of ruminant digestive systems and reduction of the ecological footprint through a combination of systems biology, 'omics' and nutrition

Call: FP7-KBBE-2011-5

A more eco-efficient economy is an important component of Europe 2020. The global demand for animal products is expected to increase by 50% by 2050 and there is a pressing need to improve the efficiency of livestock production to support food security and reduce its environmental footprint. In this environmental discussion, the role of ruminant species is crucial. The gastrointestinal tract (GIT) is a key biological system that exhibits variation in efficiency of digestion and absorption of nutrients and is very important to animal health. This

variation has its origin in several different factors, including genetic variation, diet, diet and genotype interactions, microflora and variation in gut integrity and health.

The rumen plays a central role in the conversion of feed, especially forages, into valuable animal products, principally milk and muscle, as well as the production and emission of greenhouse gases (notably CH₄). The microbial diversity present in the rumen and feeding strategies have a significant influence on nutrient utilisation in ruminant animals. Increasing the understanding of factors that influence the functioning of the GIT in ruminant species will provide new perspectives for improving the efficiency of the digestive system and thereby of the production systems.

The knowledge of livestock genome sequences, in particular that of cattle, and recent developments in the area of host-microbe interactions, offers exciting new opportunities to study the interaction between the genome of the animal, GIT function and feed efficiency. Additionally, metagenomics is coming of age and offers new opportunities for studying the diversity and efficiency of microorganisms in the GIT.

The project will bring together systems biology, 'omics' and metagenomics, microbiology and genetics to increase our understanding of the interplay between livestock nutrition, GIT microbiota and the genome, and how this interplay affects the efficiency of feed utilisation (energy and proteins), animal metabolism, product quality and the production of greenhouse gases.

The project will focus on ruminant species and define key indicator traits to measure the health and efficiency of the digestion tract and explore the genetic basis of these traits. It should complement and collaborate with other related EU projects dealing with livestock GIT function for improved nutrition efficiency or environmental footprint.

The project should include the development of bioinformatics resources/tools for possible use by scientists beyond the beneficiaries in the project.

It should also include a training component with the aim of increasing research capacities in the enlarged EU, candidate countries and developing countries. This could include, for example, participation in training programmes, short-term exchanges of staff and training workshops (e.g. summer schools).

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Expected impact: The expected outcomes of this research are improved understanding of the variation in the digestive system, new systems models and tools applicable to selective breeding and nutrition for improved gut health and functionality. This is a multi-disciplinary project which will improve collaboration between different disciplines of animal production and between academia and industry, in particular SMEs. A strong participation of industry and SMEs in the project itself should help ensure that the knowledge generated will be converted into tools and technologies for use by industry and SMEs.

KBBE.2011.1.1-04: Sustaining and managing forest tree genetic resources

Call: FP7-KBBE-2011-5

Forests are one of Europe's most important renewable resources and provide multiple benefits to society and the economy including conservation of European nature. Forests and other wooded land in the EU cover approximately 40 % of the EU territory and the wider forestry

sector provides employment for about 3.4 million people. Biodiversity plays a major role in maintaining the vitality, resilience and productivity of forests stands and in optimising the various services provided by forests. Management practices have a direct influence on genetic diversity in forest tree species and their populations. The project will capitalize on existing inventories of forest tree genetic resources in Europe (*comprising dynamic conservation units as well as DNA samples of* conifers and broadleaved species) and develop these resources further, e.g. by devising methodologies to promote, assess and monitor patterns and levels of genetic diversity. In addition, the project work will review and study the impact of various forest management practices on forest genetic diversity.

Funding scheme: Collaborative Project (small or medium-scale focused research project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 3 000 000.

Expected impact: Knowledge and information resources created within the project will contribute to providing the forest sector with adequate tools (including methodologies and guidelines) to help adapting forests to varying environmental conditions through sustainable forest management practices. This will ensure that forests continue meeting the diverse demands coming from economic activities, biological diversity conservation and other services with wider benefits for the society. At a more global level, the project will contribute to implementing international and European commitments for the protection of forests.

KBBE.2011.1.1-05: Deepened and enlarged European cooperation in the area of Molecular Plant Sciences - ERA-NET²⁰

Call: FP7-ERANET-2011-RTD

Cooperation between European research funding bodies in the area of plant genomics started in FP6 under the ERA-NET umbrella (ERA-NET Plant Genomics) and provided a successful forum for exchange of information between Member States and most importantly for setting-up joint, transnational calls.

The proposed network of National Funding Bodies in the area of Molecular Plant Sciences will build upon the previous ERA-NET Plant Genomics and capitalise on its achievements such as the establishment of mechanisms for the evaluation of joint calls and for the management of transnational projects.

The overall aim of the network is to further increase the level of coordination between European research funding bodies in the area of plant genomics and related molecular plant sciences, seeking complementarities between national activities and pooling resources to undertake joint funding of transnational projects. Research collaborations shall serve to tackle scientific questions, to better integrate and rationalise genetic, genomic and bioinformatic resources as well as to improve the use of existing infrastructures in Europe. The network shall seek to expand the previous ERA-NET Plant Genomics membership to include funding bodies from enlarged Europe, thus increasing participation of research institutions from enlarged Europe in transnational activities. Depending on the financial and administrative arrangements between the network members, cooperation with research teams outside Europe shall be encouraged where deemed relevant for the tasks.

²⁰ This topic is subject to FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, special eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 to the Cooperation Programme.

In setting priorities for the network's activities it is important that complementarity with other FP7 initiatives is sought and that interactions are established with related ERA-NETs and ETPs.

Funding scheme: Coordination and Support Action (coordinating action).

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Work programme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Expected impact: It is expected that further coordination efforts in the area of molecular plant sciences will consolidate the initiated process of identifying major research needs, extending the partnership, pooling resources for funding and implementing research activities in a synergistic manner. Ultimately, the cooperation shall lead to a self-sustainable and long-lasting network of funders in the area of plant molecular sciences, enabling the translation of information gained from innovative fundamental research into social and economic benefits. The European added value lies in supporting and enhancing the ERA on molecular plant sciences.

Area 2.1.2 Increased sustainability of all production systems (agriculture, forestry, fisheries and aquaculture); plant health and crop protection

Increased sustainability and competitiveness, while safeguarding consumer health, decreasing environmental impacts and taking account of climate change, in agriculture, horticulture, forestry, fisheries and aquaculture through the development of new technologies, equipment, monitoring systems, novel plants and production systems, crop management through selected plant breeding, plant health and optimised production systems, the improvement of the scientific and technical basis of fisheries management, and a better understanding of the interaction between different systems (agriculture and forestry; fisheries and aquaculture) across a whole ecosystem approach. Research into maintenance of autochthonous ecosystems, development of biocontrol agents, and microbiological dimension of biodiversity and metagenomics will be undertaken.

For land based biological resources, special emphasis will be placed on low input (e.g. pesticides and fertilisers), and organic production systems, improved management of resources and novel food and feeds, and novel plants (crops and trees) with respect to their composition, resistance to stress, ecological effect, nutrient and water use efficiency, and architecture. This will be supported through research into biosafety, co-existence and traceability of novel plants systems and products, and monitoring and assessment of impact of genetically modified crops on the environment and human health as well as the possibility of their broader benefit and risk for society. Plant health and crop protection will be improved through better understanding of ecology, biology of pests, diseases, weeds and other threats of phytosanitary relevance and support to controlling disease outbreaks and enhancing sustainable pest and weed management tools and techniques. Improved methods will be developed for monitoring, preservation and enhancement of soil fertility.

For biological resources from aquatic environments, emphasis will be placed on essential biological functions, safe and environmentally friendly production systems and feeds of cultured species and on fisheries biology, dynamics of mixed fisheries, interactions between fisheries activities and the marine ecosystem and on fleet-based, regional and multi-annual management systems.

KBBE.2011.1.2-01: Sustainable management of agricultural soils in Europe for enhancing food and feed production and contributing to climate change mitigation

Call: FP7-KBBE-2011-5

If properly managed, agricultural soils can enhance farm productivity and also contribute to climate change mitigation by providing carbon sequestration opportunities.

The project will explore the complexity of agricultural soils in a novel and truly integrated interdisciplinary perspective, to ensure a holistic approach and genuine collaboration between relevant scientific domains, such as agronomy, agro-ecology, microbiology, plant sciences, soil sciences and socio-economic sciences. A well integrated interdisciplinary approach will help firstly to better understand the complex and dynamic nature of agricultural soil ecosystems, including soil and plant health related aspects, secondly, to improve farming practices and farm land uses for increasing productivity, and finally, to enhance carbon sequestration capacity, thus limiting the environmental impact of agriculture in terms of GHG emissions.

Taking into account the diverse agricultural soil types across Europe, and with the overall objective of identifying suitable soil and crop management practices to increase yields and keep soil fertility, the project will combine modelling and field experimentation and will privilege holistic approaches to unveil, capture and harness the complexity of crop/soil relations in different farming systems, from intensive to low-input and organic farming. The proposed research should facilitate the exchange of experiences and information between all involved actors from the different disciplines, and help better plan and analyse future scenarios with a view to the expected medium and long-term climate change impact on crop production in Europe. In addition, effective dissemination actions and strategies should be proposed to speed up new knowledge and novel practices transfer towards different categories of beneficiaries, e.g. farmers, extension services and policy-makers.

Funding Scheme: Collaborative Project (small or medium-scale focused research project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 3 000 000.

Additional information: Up to 2 projects may be funded.

Expected Impact: Overall, the project will contribute to stopping degradation of European agricultural soils by identifying sustainable soil management and agronomic practices to increase yields and restore vital soil functions, such as fertility, biodiversity, water and nutrients cycling, while enhancing their carbon sequestration and storage potential. More specifically, the project will deliver scientifically validated decision-support tools, guidelines on most suitable agronomic practices and approaches, techniques and technologies adapted to different European soils, with a special focus on optimum balance between two critical functions of agricultural soils, namely crop production and carbon sequestration and storage. Results from this project will also contribute to the implementation of the Soil Thematic Strategy (COM(2006)231, 22.9.2006).

KBBE.2011.1.2-02: Reducing mineral fertilisers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products

Call: FP7-KBBE-2011-5

The main drive of this topic is the contribution to the transformation of urban organic waste and farm organic residues management from a costly disposal process into an income-generating activity, and to allow the related industry to produce added value products and

organic matter of high quality to be recycled in agriculture. This will create a virtuous cycle which will increase mutually beneficial interactions between urban and rural areas, it will create new opportunities for the related industry, it will reduce the negative footprint of cities and enhance the environmental sustainability of crop production; overall contributing to climate change mitigation. With the objective of reducing the use of mineral fertilisers in intensive agriculture production systems and minimising their negative environmental impact, the project should contribute to: a) improving the currently used treatment and separation phases of organic wastes (of both urban and farm origin) and maximising their efficiency, with particular attention to the recovery of nutrients, such as phosphorous and nitrogen, and avoiding the presence of toxic compounds in the final products; b) improving the use, effectiveness and safety of the resulting products (compost and bio-char) in agriculture. Different types of compost and bio-char from currently available bio-waste treatment technologies will be considered for recycling as fertilisers and soil amendment products; their properties analysed and their potential and actual benefits and risks evaluated in terms of crop productivity, enhanced soil health, improved nutrients availability to plants and potential soil pathogens/diseases suppression. Results from the field will be used by the related industry for further improving the treatment and separation phases, also in terms of carbon cost, and increasing the quality and safety of the resulting products.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 20% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected Impact: The project will contribute to the reduction of chemicals use in agriculture and it will help to increase the amount of bio-waste diverted from landfill and recycled into the production process. The project should enhance proactive cooperation between researchers, industry and relevant public sector stakeholders in Europe, it will also contribute to stimulating industrial innovation by improving the bio-waste treatment process and by improving the quality and safety of the final products (compost and bio-char). The expected results of this project should clearly be of interest and potential benefit to SMEs. The project will as well promote a more efficient utilisation of the final products by the end-users (farmers), by also studying and developing new application methods. In addition, the project will provide useful data, including economical viability information and scientific inputs, to support policy makers for the revision of relevant policies, e.g. the Soil Thematic Strategy (COM(2006)231), the setting up future common bio-waste recycling targets, the application of common quality standard requirements for bio-waste treatment, compost and bio-char quality and trading requirements, with the aim of increasing end-users and consumers confidence in their use in agriculture for food and feed production.

KBBE.2011.1.2-03: Development of cover crop and mulch systems for sustainable crop production

Call: FP7-KBBE-2011-5

The introduction of cover crops, catch crops and (living) mulch into cropping systems is known to have beneficial effects in particular on soil improvement (e.g. organic matter and soil structure, nitrogen production, soil microbial activity, nutrient enhancement), pest management and weed suppression. These benefits need to be balanced against potential disadvantages related to water and nutrient consumption of the cover crops, the presence of specific insects and diseases and additional management and technology requirements at farm level. To be effective, cover crops and mulch systems require changes in farm practices and need to be suited to specific production systems and agro-climatic conditions.

The project shall extend existing knowledge as well as develop novel cropping systems and best practices based on cover, catch crops and (living) mulch to increase the duration of soil coverage by plant canopies, introduce diversity to the crop rotation and reduce the need for and the intensity of soil tillage. The plant species as well as the agronomic measures and machinery proposed shall be tested in view of their effect on the use of fertilisers, herbicides and pesticides taking into account a variety of climatic conditions and relevant farming systems in Europe, the Mediterranean and possibly other climatic zones. Overall, the project shall deliver new plant material and develop a comprehensive "cover crop toolbox" to help farmers identify cover crops most suited to their specific production systems (also including economic considerations and technology requirements). The transfer of results to breeders, extension services and other multipliers relevant for reaching farmers is essential.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: The project will contribute to enlarging the range of available cover crop species in agricultural systems, thereby supporting farmers in making better use of the beneficial effects of these crops. The delivery of suitable germplasm material, widely accessible "tailored" know-how on farming practices and technological requirements shall contribute to a more sustainable, resource efficient agriculture in Europe, the Mediterranean and other regions. Results shall benefit both conventional and organic farming systems. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-04: Translating knowledge on flowering time to improve breeding efficiency

Call: FP7-KBBE-2011-5

Flowering time is closely associated with yield and is altered by a wide range of environmental signals (including photoperiod, temperature, etc.). This trait is already being systematically recorded in breeding programmes (selecting for current climatic conditions), and has been empirically studied by breeders. However, with the combined effect of changes of different environmental factors, breeding may highly benefit from increased knowledge on the genetic factors of this trait (including a more systematic evaluation of the diversity) and on the development of strategies to use them more efficiently for crop improvement.

The project will develop multidisciplinary approaches (physiological, molecular and genetic, bioinformatic, modelling short generation and Marker Assisted Selection, use of phenotyping platforms in controlled conditions and in the field, etc.) mostly in crop plants to define the mechanisms controlling floral reproductive traits and to be able to model and predict the effects of environmental variation on flowering time. Furthermore, it shall explore the genetic variation available in major crops and their relatives in order to allow a wider use of new flowering alleles in breeding programmes.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 20% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Expected impact: The project will increase knowledge of the genetic basis and control of flowering time in crop plants and support the development of strategies to better use this parameter in breeding. It will thereby contribute to shortening the release of varieties which are better adapted to changing environments. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-05: Root signalling, growth and development under abiotic stress conditions

Call: FP7-KBBE-2011-5

Plant growth and development are largely dependent on the plant root system due to its crucial role in water and mineral uptake. Abiotic below-ground stresses (e.g. drought, waterlogging, salt, nutrient soil status, physical soil properties) affect overall plant growth and architecture and there is a need to further understand root growth, resource acquisition and root-shoot communication under effects of multiple and combined abiotic stresses.

The project aims at elucidating how roots perceive and respond to below-ground abiotic stresses in terms of development, root-shoot communication and interactions with the biotic environment. The proposed research will require interdisciplinary approaches (integrating expertise in disciplines such as genetics, genomics, physiology and soil ecology) to study a range of developmental, biochemical and symbiotic adaptive strategies that plant root systems have developed to cope with below-ground environmental stresses. Work shall take advantage of methods/technologies such as modelling, imaging and phenotyping and go well beyond studies in model plants to translate the generated knowledge into crop breeding strategies and tools.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.

- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 10% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected impact: Knowledge and tools generated will help to (i) better understand root development and below-ground interactions under abiotic stress in field conditions as well as (ii) support the development of root-targeted breeding strategies to generate varieties with increased resource use efficiency and tolerance to abiotic stresses. Overall, results obtained will contribute to sustaining yields under more adverse climatic conditions. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-06: Strategies to replace copper-based products as plant protection products in low input and organic farming systems

Call: FP7-KBBE-2011-5

Copper based products used as fungicides or bactericides are still important for the control of plant pathogens in integrated and organic production systems. However, EU policies aim at the promotion of sustainable, quality-based agricultural production and at limiting environmental risks especially regarding soil contamination. Therefore, research is necessary to develop new strategies like resistance to diseases, appropriate/improved management methods and alternative compounds that are efficient and suited to low-input and organic systems in order to reduce the dependency on copper based fungicides/products.

The project will develop new formulations or alternative compounds with effective fungicidal/bactericidal impact (i.e. potentiators of resistance, organically based products, biocontrol agents etc.) together with innovative techniques and management practices including the use of more resistant cultivars, novel disease control measures to develop sustainable strategies, optimisation of the use of existing products to replace the use of copper based products. Work shall take into account results and conclusions from previously funded research projects in the area such as EU projects REPCO Blight and ENDURE. The products and management practices developed should be appropriate for use in low-input and organic production systems and should be tested in different pedo-climatic and farming conditions in Europe. Appropriate economic analysis should be provided.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 20% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: Replacement of copper will have a positive impact on the environment. The topic is of major importance to organic and low-input integrated pest management production systems where very few chemical alternatives may be used. Solutions to replace

copper will support EU policy to reduce chemical inputs in crop production. Assessing copper substitutes in different climatic regions and different farming systems will meet the needs of the agricultural sector across different regions in Europe. The results of the project should clearly be of interest and potential benefit to SMEs. The project will produce a beneficial economic impact to the sector concerned, and will contribute to ensure a strong link between academia and end-users.

KBBE.2011.1.2-07: Preserving the multifunctionality of European Mountain forests

Call: FP7-KBBE-2011-5

Besides producing economic goods as well as delivering important societal and ecological services, forests in Europe's high mountains store vast amounts of carbon in old trees, deadwood and soils. Mountain forests are especially sensitive to climate change and significant alterations in the potential distribution of species are projected for the future. Higher temperatures and changes in snowfall patterns will also make mountain forests more vulnerable to pests and diseases.

Under these increasing pressures, there is a need to assist mountain communities in managing adequately their forests to meet the various demands coming from socio-economic activities (e.g. feeding sawmills, bio-energy and recreation), environmental protection (e.g. conservation of biodiversity and ecosystem services, protection against natural hazards) and preserving natural carbon stocks. The project will provide a set of advanced management tools, policy recommendations, guidelines and/or multi-criteria decision support systems specifically applicable to mountain forests in different regions in Europe. This includes modelling of forest stand development (stand dynamics with and without management activities), planning tools for forest treatment (including harvesting, reduction of potential negative impacts on soils and protective functions, choice of tree species for regeneration), suggestions for best management practices as well as proposals for adequate dissemination activities (e.g. core audiences, communication channels, key messages, exemplary training tool kits). Overall, this will help policy makers and forest managers to make the most appropriate choices when managing and further developing mountain forests in order to fulfil all socio-economic and environmental functions.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: The project will contribute to the development of strategies to foster socio-economic activities and employment in more marginal mountain regions (e.g. contributing to safer, faster and more economical harvesting methods under difficult circumstances like steep uneven slopes) and to help preserve important environmental functions of European mountain forests (e.g. halting loss of erosion, carbon sequestration). It will support the implementation of international and European commitments for the

protection of forests. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-08: Forest Research in the Mediterranean Region – ERA-NET - Mandatory ICPC (Mediterranean partner countries)²¹

Call: FP7-ERANET-2011-RTD

Mediterranean forest and woodlands provide, in addition to wood, multiple non-wood forest goods and services which are crucial for the socio-economic development of rural areas as well as for the welfare of the urban populations of the Mediterranean region. However, they are one of the most vulnerable forest ecosystems and are exposed to increased risks related to drastic land use changes and climate change.

Considering that countries in the Mediterranean basin are facing similar challenges regarding the sustainability of forest ecosystems and the delivery of goods and services in the context of rapid global changes, it is of crucial importance that these issues are addressed through a strong scientific cooperation between the EU Member States and other countries of the Mediterranean area. The ERA-NET project will coordinate national research activities on Mediterranean forest ecosystems of EU Member States, Associated countries and ICPC Mediterranean partner countries and help set up common research programmes.

The ERA-NET shall seek synergies with activities of other relevant initiatives such as the European Forest-Based Sector Technology Platform (FTP) and take into account existing strategies such as the Mediterranean Forest Research Agenda (MFRA).

Funding scheme: Coordination and Support Action (coordinating action).

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Workprogramme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Additional eligibility criteria:

- Minimum number of participants: 3 from different Member States or Associated Countries and 3 from different ICPC from the Mediterranean partner countries.

Expected impact: The ERA-NET is expected to reinforce scientific cooperation on forests throughout the Mediterranean area (EU and non-EU countries) thereby fighting fragmentation and maximising the impact of research activities on sustainable forest management, including management of forest resources to mitigate and adapt to climatic threats.

KBBE.2011.1.2-09: Beyond Maximum Sustainable Yield (MSY) in fisheries: defining management targets and their consequences

Call: FP7-KBBE-2011-5

Maximum Sustainable Yield (MSY) is a longstanding concept in fisheries management. The EU is committed to maintain or restore stocks to levels that can produce MSY by 2015²². The Common Fisheries Policy (CFP) has, furthermore, a vocation to progressively apply an ecosystem approach to fisheries management (EAFM). Achieving MSY for an increasing

²¹ This topic is subject to FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, special eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 of the Cooperation Programme.

²² WSSD Plan for Implementation. Johannesburg, 2002.

number of stocks will contribute to an EAFM by reducing overall fishing pressure and, consequently, the impacts of fishing on the ecosystem.

MSY can however be interpreted in a number of manners. It can be conceived for an individual fish stock, for a set of stocks fished altogether in the context of mixed fisheries, in terms of weight, in economic terms and having into consideration other constraints²³. MSY, even in the case of single-stock fisheries, can also be highly dependent on environmental factors affecting vital processes such as growth, mortality and recruitment success.

Most demersal fisheries in the EU are mixed and are therefore their management is subject to the above-mentioned constraints.

The aims of this project are, in cooperation with stakeholders, to:

(i) provide operational definitions of MSY variants (e.g. Multispecies Maximum Sustainable Yield (MMSY), Maximum Economic Yield (MEY), Maximum Social Yield (MSOY) and Maximum Ecosystem Sustainable Yield (MESY)) applicable to all types of EU fisheries (e.g. single, mixed, pelagic, demersal);

(ii) evaluate the effects of aiming at different MSY variants on target stock abundance, on productivity, on fish stock sustainability, on other components of the ecosystem, and on the economic performance of fisheries and the related industry and services. The ecosystem components would ideally include those that are used to determine Good Environmental Status (GES) or monitored by indicators of environmental integration in the Data Collection Framework (DCF) (Council Regulation (EC) No199/2008²⁴, Commission Regulation (EC) No 665/2008²⁵ and Commission Decision No 2008/949/EC²⁶). The economic component would primarily concern the performance of fleets but would ideally include as well as the overall industry and services related to them (e.g. processing industry, retailers, ship building). The social component should at least include employment;

(iii) develop an operational framework for the implementation of MSY variants in practical management settings for all types of EU fisheries (e.g. single, mixed, pelagic, demersal), broken down by RAC areas. This includes identifying any management measures that would be needed to achieve GES and other environmental, social or economic targets, in addition to those needed to achieve the MSY variant. Provide an impact assessment of the management tools to achieve the MSY variants.

Quantitative tools should be developed and provided to allow the developed methods to be tested and applied in an advisory context.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Commission contribution shall not exceed EUR 5 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation,*

23 By instance, Article 61(3) of the UNCLOS stipulates that "3. Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether sub-regional, regional or global

24 OJ L 60 of 5.3.2008, p. 1–12.

25 OJ L 186 of 15.7.2008, p. 3–5.

26 OJ L 346 of 23.12.2008, p. 37–88.

before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.

- The duration of the proposals submitted under this topic shall be 4 years.

Expected impact: To ensure the successful implementation and subsequent development of the new CFP, with a particular emphasis on effectively integrating environmental policy commitments into management of fisheries and related industries and services. The project should provide clear and operational definitions of MSY variants and should be a guide for policy makers to select operational targets and adopt appropriate management instruments. The expected results of this project should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-10: Socio-economic effects of the main management principles of the future Common Fishery Policy (CFP): impact of new policy framework and opportunities for the fishing sector to develop self- and co-management

Call: FP7-KBBE-2011-5

The previous reform of the Common Fisheries Policy (CFP) in 2002 did not resolve the many problems faced by the European fisheries, despite making good progress amongst others in the areas of better stakeholder involvement, phasing out direct capacity-enhancing subsidies, and moving towards long term management plans. As a result, the European Commission is currently undertaking a whole-scale, fundamental reform of the CFP. In the Green Paper of the Reform of the CFP (COM (2009) 163 final) the main structural failings of the current policy were identified as: a deep rooted problem of overcapacity; imprecise policy objectives resulting in insufficient guidance for decisions and implementation; a decision making system that encourages short term focus; a framework that does not give sufficient responsibility to the industry; and a lack of political will to ensure compliance as well as poor compliance by the industry.

The aim of this project is to develop and analyze, in cooperation with stakeholders, a range of available management measures and tools that specifically aim to endow fishermen with the incentives to overcome the identified failings and thereby achieve the objectives of the future CFP.

The project will: (i) investigate how the objectives regarding ecological; economic and social sustainability can be defined in a clear, prioritised and overall acceptable manner and which give guidance in the short term and ensures the long-term sustainability and viability of fisheries, (ii) analyze which management measures and at what organization level, create the right incentives to tackle the main structural failings mentioned in the Green Paper of the Reform of the CFP, giving particular attention to, technical measures, command and control instruments (e.g. TACs and quotas, effort), market instruments (e.g. transferability of collective or individual rights) and social instruments (self- or co-management possibilities) and (iii) determine the socio-economic and spatial effects of these management measures. Special attention should be paid to fishermen's behavioural responses to the range of management measures (e.g. incentives) and to the potential links of management measures with uncertainties and externalities (e.g. oil price, interest rates, fish market prices).

Considering the points above it should also provide socio economic impact assessment of the range of management measures selected.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*
- The duration of the proposals submitted under this topic shall be 3 years.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. To support the successful implementation and subsequent fine-tuning of future approaches under reformed CFP, with a particular emphasis on solving the main structural failings identified. It will provide guidance on how in an overall acceptable manner the ecological; economic and social sustainability objectives can be integrated and reached. The expected results of this project should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.2-11: Aquaculture feeds and fish nutrition: paving the way to the development of efficient and tailored sustainable feeds for European farmed fish**Call: FP7-KBBE-2011-5**

Aquaculture feeds are one of the main inputs and cost factors in fish culture. Concerns on the economic and environmental sustainability of marine origin aquaculture feeds has steered during recent years a significant EU and national RTD support toward the exploration and utilisation of other terrestrial sources of ingredients (mainly plant protein and oil sources, as well as, animal by-products) for the development of alternative feeds for aquaculture.

Recently, the EU has supported research on the replacement of fish meal and fish oil (separately or simultaneously) in the formulation of alternative aquaculture feeds. In addition, significant research effort has been allocated to the definition of quantitative requirements of the principal nutrients for the main fresh water and sea water aquaculture species. Although, it is possible today to replace, at least to a large extent, fish meal and/or fish oil in the formulation of alternative aquaculture feeds for several species, little is known on the long term effects of changes in diet formulations on cultured fish species. Additionally, there is still need for further research for an optimised formulation of aquaculture feed rations for the different farmed species, over their life cycle, with reduced fish meal and fish oil percentages. In this context, the simultaneous supplementation with micro-nutrients such as trace elements, vitamins and essential amino acids has to be considered more in detail.

The main objective of the project will be the investigation of these long term effects of alternative aquaculture feeds, including threshold effects of dietary components, carry-over from maternal diets to larvae, the use (if relevant) of feed additives to supply sufficient levels of essential trace elements and vitamins, antagonistic interactions between nutrients that alter dietary requirements, antagonistic effects of undesirable components linked to novel feed ingredients etc., on fish metabolism, performance and quality. The environmental impacts of long term effects of changes in aquaculture feed formulations will also be considered.

Building on, but without overlapping with, related initiatives, the project will identify targeted integrative tools (including meta-analysis of existing data) that accurately measure and predict metabolic and health effects and will explore how nutritional interventions with alternative feeds and differences in nutritional experience at critical life stages (early life stages, in

particular), could affect fish development, health and resistance to diseases, growth metabolism, fat deposition and performance, as well as, flesh quality and safety.

In addition, the project will investigate novel methods to estimate nutritional requirements and following an extensive review of existing knowledge (including grey literature and current practices), it will focus on the establishment of any lacking quantitative requirements for nutrients (with particular emphasis on micronutrients and vitamins throughout the life cycle), as well as, on the evaluation of the nutritional value of alternative feeds and will develop adequate and innovative delivery vectors for nutrients and supplements.

Considering the importance of species-related nutritional metabolism, requirements and constraints, the project will focus in a balanced way on Atlantic salmon (*Salmo salar*), rainbow trout (*Onchorynchus mykiss*), carp (*Cyprinus carpio*), sea bass (*Dicentrarchus labrax*) and sea bream (*Sparus aurata*).

The project should also include a training component with the aim to increase the research capacities, particularly in countries of the enlarged EU. This could include, for example, participation to training programmes, short exchanges of students & staff, training workshops etc.

Funding Scheme: Collaborative project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Commission contribution shall not exceed EUR 6 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***
- The duration of the proposals submitted under this topic shall not be less than 4 years.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Results of research in this topic should be of interest and potential benefit to SMEs. Advances in basic knowledge, in particular on the long term effects of alternative feeds on various physiological functions of fish, as well as, development of applicable outputs such as the quantification of nutritional requirements of different species are expected. The project is expected to complement RTD activities supported by the European feed manufacturing industry and by national public research performers. It will contribute to the development of feeds tailored to the nutritional requirements of European fish species, which should ideally lead to a gain of productivity. It will provide flexibility in the use of various ingredients in the formulation of efficient aquaculture feeds according to the variation of the prices of these ingredients in the global markets. It will stimulate the active involvement of SMEs in related RTD activities.

Area 2.1.3 Optimised animal health, production and welfare across agriculture, fisheries and aquaculture

Optimised animal health, production and welfare, across agriculture, fisheries and aquaculture, inter alia through the exploitation of genetic knowledge, new breeding methods, improved understanding of animal physiology and behaviour and the better understanding and control of pests, parasites and infectious animal diseases and other threats to the

sustainability and security of food production, including zoonoses. The latter will also be addressed by developing tools for monitoring, prevention and control, by underpinning and applied research on vaccines and diagnostics, studying the ecology of known or emerging infectious agents and other threats, including malicious acts, and impacts of different farming systems and climate. New knowledge for the safe disposal of animal waste and improved management of by-products will also be developed.

KBBE.2011.1.3-01: New/next generation of researchers for Neglected Zoonoses at the animal-human interface – Mandatory ICPC

Call: FP7-KBBE-2011-5

Neglected zoonoses- as qualified by WHO- cause not only very important losses to livestock productivity with impact on the whole chain: farmers (meat, milk, hides, skins, wool, labour), local and international traders, slaughter houses, transporters, butcheries, control programmes) but also high burden in the human populations (DALYs, diagnosis, treatments, care, control programmes) in endemic countries.

In line with the principles of One World One Health there is a need to address these diseases with an integrated approach and in particular at the animal human interface. Researchers with the appropriate holistic view and training are therefore necessary. The action focuses on targeted measures aiming at improving the career prospects for young researchers in the animal – human interface of neglected zoonoses, in particular: brucellosis, bovine tuberculosis, rabies and echinococcosis. The key research issues are: the added value of a closer cooperation of human and animal health compared to sectoral work alone, the potential financial savings of a closer cooperation, the potential new institutional arrangements at central and peripheral level of a closer cooperation in partnership (e.g. joint zoonoses surveillance in animals and humans), the potential of a closer cooperation both in the EU and in developing and transition countries. The activities should comprise training and supporting young researchers to establish independent research activities in disease-endemic countries. In addition to the scientific aspects of the diseases, socio-economic, cultural, institutional and decision making aspects should be also addressed with an integrated and multisectoral approach. Coordination with new and ongoing EU and international activities in neglected zoonoses should be envisaged.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 2 000 000.
- Coordination Action will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***
- Minimum number of participants: 3 from different Member States or Associated Countries and 3 from different ICPC (of which at least 2 from Africa).

Expected impact: Establishment of a long-term and sustainable training programme for young scientists in neglected zoonotic diseases at the animal-human interface. Capacity building, technology transfer. Improvement of animal production and public health. The project will build a “culture” of collaboration between animal and human health in the new generation of researchers. It will contribute to address global challenges: food security, health and environmental changes.

KBBE.2011.1.3-02: Development of field tests for rapid screening of pathologies as well as simple laboratories tests in animals

Call: FP7-KBBE-2011-5

Diagnosis is a key tool in prevention and control of infectious diseases in animals. The improvement of specificity, sensitivity, low cost, rapidity, simplicity, stability, potential to cover several diseases at the same time and fitness for purpose are a universal and systematic priority.

The aim of this project is to develop field tests based on new or current technologies for use in a rapid first line early multiple screening of pathologies / syndromes in livestock (including aquaculture species), wildlife and companion animals. The tests should be able to discriminate several diseases with the same sample. The selection of diseases to be considered in each species can be guided by different criteria such as differential diagnosis in syndromes, statutory control programmes, herd profiling. They should consider conditions prevailing in developed and developing countries. In addition to the basic qualities required of specificity and sensitivity, criteria of low cost, simplicity, rapidity, stability will be sought. The project will also address simple laboratory diagnosis including preliminary enrichment methods. The project must provide clear evidence and information on the value and application of such tests and their positioning as pen-side or point of decision-making tests. The project should foresee appropriate plans of technology transfer including transfer of reagents from research institutions and academia as appropriate.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 50% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: Improvement of prevention measures and animal health status. Rapid low cost screening will facilitate early detection and rapid decision making. The project will bridge bottlenecks between research laboratories and SMEs, promote technology transfer and increase competitiveness of SMEs.

KBBE.2011.1.3-03: European interprofessional network addressing zoonotic diseases transmitted via companion animals

Call: FP7-KBBE-2011-5

There is an ever increasing presence of companion animals in current societies in close interaction with human beings and in many cases also with food animals. In addition to dogs and cats, exotic animals from a large variety of species are also being introduced in considerable numbers through legal and illegal trade. It is well documented that 60% of infectious diseases in humans originate in animals and about 75 % of emerging diseases are zoonotic (e.g. Echinococcosis, leishmaniasis, psittacosis, monkey pox, influenza, salmonellosis, infections with antimicrobial resistant pathogens, rabies) and they are also a potential source of pathogens for food animals (including fish). However, information on

incidence in animals and people and on strategies for disease prevention and control is fragmented.

This coordination/support action aims at creating multidisciplinary and multisectorial inter-professional network of experts as an unprecedented “think tank” to provide an overview of the current situation and propose targeted actions to prevent reduce and eliminate the health risks for humans and food animals associated with keeping companion animals.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected impact: The project will have an impact on public and animal health and animal welfare. It will contribute to the transfer of knowledge to different layers of society. It will create a multisectorial and multidisciplinary inter-professional European network including policy makers and sociologists, addressing in a comprehensive approach the companion animals in society and their implication in the transmission of pathogens affecting humans and / food animals. Projects supported under this topic should integrate relevant partners from US (USDA and CDC), Australia, New Zealand and Canada. The participation of partners from those countries is important to achieve the expected impact of the research to be undertaken.

KBBE 2011.1.3-04 – Management and control of increased livestock helminths parasite infection risks due to global changes

Call: FP7-KBBE-2011-5

Helminths parasite infections in ruminants are a major constraint for the productivity and profitability of animal production. Global environmental, climatic and economic changes are challenging traditional methods of animal husbandry. Changes in animal husbandry together with climate change will affect patterns of parasite infections because they depend on specific environmental conditions to survive and disperse. Increased demand of animal products together with a limited (even decreasing) availability of agriculture lands will entail an increase in intensified grazing with a stronger parasite contamination of pastures. Parasite control relies heavily on treatments with antihelmintic drugs. However, the development and spread of drug resistant parasites will hamper the control in a medium and long term and hence the sustainability of livestock production.

The aim of this project is the development of innovative tools to monitor changing patterns of helminth infections - including the development and spread of drug resistance- in livestock (ruminants) in order to determine the most effective treatment and control strategies (excluding vaccination). This will require an interdisciplinary approach, involving parasitologists, climatologists, geographers, epidemiologists, information scientists, statisticians and veterinarians. Geographical information systems (GIS), Remote Sensing (RS) and Spatial analysis techniques, together with new diagnostics will monitor the distribution and spread of parasite infections and drug resistance. This will be correlated with changing environmental and climatic conditions to generate models and predict future trends. The project will focus on nematodes and trematodes, will consider including wildlife ruminant game farms if relevant and should cover areas of different climatic conditions and production systems in the EU. The inclusion of a training component and involvement of stakeholder groups such as farmers' organizations in the dissemination activities are encouraged.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Expected impact: Better management of anthelmintics allowing their efficacy to be preserved. The project will contribute to a more sustainable use of pasture and pharmaceutical resources and to reduce the negative environmental footprint of livestock products. It will provide technical and practical solutions (e.g. simple low cost multi-parasite species diagnostic tools, risk maps, GIS based disease surveillance and forecast), for the control of the parasite infections. It will promote knowledge transfer and capacity building within the EU and beyond.

KBBE.2011.1.3-05: Animal health and welfare – ERA-NET

Call: FP7-ERANET-2011-RTD

Co-operation between European research funding bodies in the area of animal health and animal welfare started with the Standing Committee on Agricultural Research (SCAR) collaborative working group on animal health and welfare. The EMIDA ERA-Net on animal health stemmed from the working group and will end mid-2011. In the context of the development of the Union Animal Health Policy and developments at global level in animal health, it is important to pursue and reinforce efforts in the coordination of animal health research, strengthening the network of national research funders in Member States and Associated countries and thus helping the achievement of the ERA in this field. In addition, the coordination of national research programmes in animal welfare of the SCAR CWG needs to be accelerated in view of contributing to the development of science-based animal welfare legislation with a more outcome based approach. The new ERA-Net will aim at building on the activities/achievements of EMIDA with regard to animal health as well as extending activities to address animal welfare research issues. The scope will also be extended in order to include farmed aquatic species.

The objective will be to achieve a broader network of funding bodies in an enlarged Europe, deepen the collaboration of the national funding bodies and launch trans-national calls in animal health and welfare.

Funding Scheme: Coordination and Support Action (coordinating action).

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Workprogramme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Expected Impact: It is expected that further coordination efforts in the area of animal health and welfare will consolidate the initiated process of identifying major research needs and pooling resources for funding and implementing research activities in a synergistic manner and avoiding fragmentation.

KBBE.2011.1.3-06: Development of next generation European system for cattle evaluation

Call: FP7-KBBE-2011-5

Next to pedigree testing, genomic evaluation is an indispensable new and rapidly developing tool for breeding livestock species. Dairy cattle breeding is at the forefront due to the long standing recording of traits and genotypes of individuals. Although some European countries are individually embarking on genomic selection in cattle, there is a widespread recognition that the resulting breeding programs will benefit from even larger populations and will be more achievable with multi-country collaboration.

Since the breakthrough in genomics, European breeding companies (mostly farmer owned) face challenges worldwide on the cattle breeding market. Europe needs to develop a herd improvement system directly based on the performance data from the European farmers, for sustainable balanced breeding. It is important that a collaborative industry-led action be undertaken to develop the next generation European system for cattle evaluation in a science-close-to-implementation way. For this, further improvement of current methods for genomic selection and genomic assisted evaluation are needed, and the tools must be made more flexible and user friendly in relation with a large reference population in Europe.

While genomic evaluation is well on track for dairy cattle, it is also necessary to investigate the feasibility of genomic evaluation in other types of cattle. Thus the project should study the extent and conditions necessary for the approach, methods and tools developed for dairy cattle to be used or adapted for other types of cattle.

The project should focus particularly on:

- Translation methods between different genotyping platforms and validation of SNP data,
- Scientific communication about extended reference populations,
- Development of software to make feasible exchanges between countries and breeds in Europe,
- Common development of new genetic software for wide field applications,
- Detection and data collection of new traits, in particular functional traits and traits difficult to measure, for genomic evaluation,
- Methods and tools to improve genetic variation within the breeds and developing genomic breeding plans.

The proposed project will include: meetings and workshops for fine-tuning of national and regional efforts; capacity building elements including training destined to the enlarged EU (e.g. summer schools); communication and technology transfer efforts for the cattle industry including artificial insemination centres and breed associations).

Funding scheme: "Research for the benefit of SMEs"²⁷.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.

²⁷ Eligibility criteria are explained in the call fiche. For evaluation criteria, please refer to the Annex 2 to the Work Programme and the Guide for Applicants for "Research for the benefit of SMEs".

- At least 3 independent SME participants established in 3 different Member States or Associated countries and 2 RTD performers²⁸ (independent from any other participant).

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Genomic selection is a new technology with the potential to deliver unprecedented rates of genetic gain in cattle. However, there is major concern in the cattle breeding industry, mostly SMEs, about the ability of EU countries to fully utilise the technology. The selected project should help them to capitalize on this technology to maintain and strengthen European expertise as a reference for breeding value estimation. This close-to-implementation project should reinforce European competitiveness in cattle breeding, taking into account renewed breeding goals such as production quality and efficiency, animal health and welfare, inbreeding and avoidance of recessive lethals. It is considered that the participation of relevant industrial partners, in particular SMEs, is essential to achieve the expected impact of the research to be undertaken. Therefore, the topic is designed to encourage SME efforts towards research and innovation representing the complete value added of the targeted sectors.

Area 2.1.4 Socio-economic research and support to policies

Providing the tools needed by policy makers and other actors to support the implementation of relevant strategies, policies and legislation and in particular to support the building of the European Knowledge Based Bio-Economy (KBBE) and the needs of rural and coastal development. The Common Fisheries Policy will be supported through the development of adaptive approaches supportive to a whole ecosystem approach for the harvesting of marine resources. Research for all policies, including the Common Agricultural Policy, will include socio-economic studies and cost-benefit analysis, comparative investigations of different farming systems including multifunctional ones, cost-effective fisheries management systems, the rearing of non-food animals, interactions with forestry and studies to improve rural and coastal livelihoods.

KBBE.2011.1.4-01: Coordination action in support of the implementation by participating States of a Joint Programming Initiative on 'Agriculture, Food Security and Climate Change'²⁹

Call: FP7-JPROG-2011-RTD

Following the Commission's Communication on Joint Programming to tackle Europe's major societal challenges, the Competitiveness Council has welcomed the common commitment of EU Member States to tackle the combined challenges of food security against the continuous threat represented by various scenarios of climate change, global population increase, and food and non-food demand. A successful coordination action should support the implementation of a Joint Programming Initiative by proposing concrete solutions for pooling national expertise and resources and establishing closer and robust collaboration among the participating States in the field of agriculture, food security and climate change. Moreover,

²⁸ As defined in Art. 2 (18) of Regulation (EC) No 1906/2006 of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme (FP7) and for the dissemination of research results: " 'RTD performer' means a legal entity carrying out research or technological development activities in funding schemes for the benefit of specific groups as identified in Annex III to Decision No 1982/2006/EC".

²⁹ This topic is subject to FP7-JPROG-2011-RTD call. Complete information on funding scheme, special eligibility criteria and expected impact can be found in Annex 4 to the Cooperation Programme.

the coordination action should enable the international dimension of the Joint Programming Initiative to be addressed by ensuring coherence with other relevant international initiatives.

Funding scheme: Coordination and Support Action (coordinating action).

Specific eligibility and evaluation criteria: please refer to Annex 4, section A4.2.2.4 of the Cooperation Workprogramme including the Call Fiche "FP7-JPROG-2011-RTD".

Expected impact: Further construction of a Joint Programming Initiative on 'Agriculture, Food Security and Climate Change', in particular facilitating the establishment of the management structure, development of the Strategic Research Agenda and possibly preliminary implementation actions. This Joint Programming Initiative should help to streamline the national programmes in order to reduce overlaps and to exploit synergies, with a scale and scope of action that will go well beyond what either the EU or Member States can achieve on their own.

KBBE.2011.1.4-02: Strengthening the impact of fisheries related research through dissemination, communication and technology transfer

Call: FP7-KBBE-2011-5

The Common Fisheries Policy has been heavily dependent on scientific research since its inception in 1982 – it is maybe the policy within the EU which has the closest and most immediate link between science and policy. However, there is very little public knowledge or understanding on what fisheries research is doing. The uptake of research results and dissemination towards managers, policy-makers, the industry and the EU citizens is of paramount importance in order to deliver an efficient support to policies, transfer of knowledge, and societal acceptance.

The objectives of the project are to increase dissemination of scientific knowledge on fisheries related research (i.e. Ecosystem approach to fisheries management, fisheries management and governance) and to explore innovative mechanisms to improve communication between scientists, industry, policy makers, stakeholders and the society at large, including the media.

The project should also facilitate exploitation and transfer of national and European research results through innovative friendly-user applications and new technologies.

Specific attention should also be given to dissemination towards the EU citizens.

Funding scheme: Coordination and Support action (supporting action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Provide better communication between the different actors taking also into account economic and social perspectives; improve dissemination towards the main end-users (EU citizens); improve transfer of knowledge from research and scientific advice to management and the fisheries sector; contribute to a better implementation of the Common Fisheries Policy (CFP) within the context of its future reform and the Green Paper "Reform of the Common Fisheries Policy" (COM/2009/0163 final).

KBBE.2011.1.4-03: Feasible and cost-effective crop-specific coexistence measures

Call: FP7-KBBE-2011-5

Further development and implementation of feasible and cost-effective coexistence measures, labelling and traceability requirements remain a key issue for the application of biotechnology in EU agriculture, as well as for the issue of freedom of choice for farmers and consumers. This project will build upon the advances made in the previous programme concerning the practical and safe implementation of various transgenic and non-transgenic biological containment strategies, crop-specific technical segregation measures including for organic crops and other high-quality production, and coexistence practices in crop and seed production, including measures for the co-existence between non food/feed GM crops and non-GM crops. Finally a comprehensive information system for sharing research results and practices with Member States and other stakeholders and a public communication programme to engage relevant Member States authorities, agro-food chain operators and other stakeholders from the beginning to the end of the project must be provided. A wide range of participants representing the complete EU farming topography are invited along with the participation of global trading partners, and particularly small and medium enterprises who can exploit and develop coexistence tools.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.

- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Because of the asynchronous approval processes the major challenge for the future will be to determine coexistence within the supply chain at international level. There is also a need for field based biological containment case studies which for example combine insect resistance and herbicide tolerance GM traits with CMS in maize and for testing stability and also for reliability of biological containment tools under field conditions.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. The project will support the coherent and practical implementation of feasible and cost-effective crop-specific coexistence measures and labelling and traceability requirements. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.4-04: The CAP and landscape management

Call: FP7-KBBE-2011-5

The role of traditional agriculture in providing public services and in fostering the sustainable development in rural areas has been recognised by the scientific community and in the logic of the CAP policy instruments. The most recent EU Policy Framework, and in particular on Rural Development, stressed the importance of agriculture as a driver to support land management and to improve the environmental and the socio economic development of rural areas. Special emphasis is given to the provision of environmental services from agriculture by agri-environmental schemes and by measures targeted to address EU priorities such as combating climate change, enhancing biodiversity and water quality.

Moreover, environmental services and public goods provided through agriculture, also give rise to a range of additional social and economic benefits that can boost the economy of rural areas. In this sense, landscape is one of the public goods provided directly and indirectly by agriculture. Due to its multifaceted character, which includes natural, cultural and societal values, its relationship with agriculture is extremely complex. As for its functions, there is an increasing recognition that landscape is not only an essential element to be preserved, but also an economic asset which can offer significant opportunities for the territorial and economic development of rural areas. In particular, it represents a critical resource for some sectors of the rural economy such as tourism, the agri-food sector, and can be a factor of territorial development in terms of agriculture income, population growth and employment creation. However, in the literature there is no clear evidence of the type of causal relationship between the maintenance and valorisation of landscape and the socio-economic benefits it may generate.

Scientific support to policy is needed to explore the link between agricultural landscape and the economy of rural areas, with a view to addressing policy measures and a number of emerging issues: 1) Is there a clear relation between the valorisation and maintenance of agrarian landscape and the socio-economic development of rural area? 2) Can landscape be considered a driver for the competitiveness of the agricultural sector in rural areas and for the creation of jobs and income in rural areas? 3) What methodologies can be used to measure the socio-economic second order effects rising from the provision of landscape by agriculture and what are the mechanisms that explain the economic impacts of landscape in rural areas?

Funding scheme: Collaborative Project (small or medium-scale focused research project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 500 000.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. A conceptual framework on the contribution of agriculture to landscape management would allow better valorising them as public good and maintaining landscapes for their ecological and socio-economic functions.

KBBE.2011.1.4-05: Data network for better European organic market information

Call: FP7-KBBE-2011-5

The objective is to increase the transparency of the European market for organic food through better availability of market intelligence. Currently, no official market statistics (such as volume and value of production and retail sales) of the European market for organic food (including seafood) exist. Data are collected and published by various bodies, including governments, private companies and academic research institutions. However, they often show contradictory trends, and this can lead to very different interpretations of the market situation and lack of willingness of operators to respond to likely growth areas. Innovative approaches are needed to improve the collection, quality and publication of such market data.

Building on established national examples and recommendations of the EISfOM-Project (QLRT-2001- 02400), the project partners will include a variety of bodies that collect and publish such data including the European Commission, EUROSTAT and statistical departments of Member States, as well as market research companies, research institutes, universities and certification bodies. It will develop and test common methodologies and quality criteria, including how to account for the range of products (including non-bar coded)

in a variety of outlets and how to assess the feasibility of national data in relation to trade flows. The partnership will act as co-ordinating centre between public and private bodies and stakeholders, and will develop recommendations on how similar goals can be achieved in the long term.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 1 500 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 15% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Improved market transparency of the European organic food market (including seafood) will lead to fairer competition and investment in growth areas within organic agriculture and food production. It will reduce the information asymmetry between large processors or retail chains on the one hand, and farmers and SME's on the other. Small actors will then be better able to respond to new market opportunities.

Better data will improve projections of future trends, assist control bodies and authorities in fraud prevention, and aid policy-makers in designing more effectively-targeted support mechanisms to complement market activities. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.4-06: Towards land management of tomorrow – Innovative forms of mixed farming for optimized use of energy and nutrients

Call: FP7-KBBE-2011-5

An important element of agricultural sustainability is to establish optimized flows of energy and nutrients with a high degree of recycling by transforming waste into resources such as fertilisers. In addition, optimizing the carbon cycle towards greenhouse gas mitigation is a new challenge for land managers.

Modern specialised crop production systems rely on external inputs for feed and fertilisation, whilst specialised livestock systems face dramatic costs and problems in waste disposal. The profitability and importance of traditional mixed farming systems is drastically reduced because of pressure for specialisation, economies of scale and work load reduction.

The project will evaluate new innovative ideas and develop new strategies to connect livestock and crop production at farm, district and landscape level in order to optimize energy, carbon and nutrient flows preserving natural resources and maximising production. In addition, diversified land use can open up new possibilities for combining food production with biomass production and on-farm production of renewable energy from livestock manure, small biotopes, perennial crops and semi-natural non-cultivated areas.

Profitability, socio-economic aspects of collaboration models and implementation potential in different systems (organic, low external input, integrated, etc.) across Europe will be assessed. Research activity shall also involve innovative forms of collaboration between farmers to

identify and test new combinations of agronomic practices (crop rotations, soil management, agro-forestry) and livestock practices (species selection, feeding, management) that will ultimately allow re-orientation of energy, carbon and nutrient flows by rural communities. A participatory approach in the identification and evaluation of the systems will allow immediate transfer possibilities and assessment of legal and organisational challenges. Models will be applied at the various levels to predict productivity gains and economic viability of the mixed farming systems developed.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criterion:

- The requested European Union contribution shall not exceed EUR 3 000 000.

- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected impact: Alleviate environmental problems in crop and livestock production, minimising reliance on external inputs (feed, energy, manure and mineral fertilisers), prepare for a greenhouse gas mitigation role of agriculture. SMEs play an important role in innovative institutional arrangements in rural areas. If these new systems show a positive effect on rural vitality, they might constitute a valuable guide for EU, national and regional agro-environment support schemes, and boost the role of mixed farming in landscape protection. Project results should clearly be of interest and potential benefit to SMEs.

KBBE.2011.1.4-07: Role of aquaculture in improving food security and eradicating poverty worldwide - Mandatory ICPC

Call: FP7-KBBE-2011-5

Within the context of increasing awareness of the importance of collective responsibility in combating poverty, 2010 is the "European Year for combating poverty and social exclusion", which is also among the main objectives of the European Union and its Member States. During the recent FAO's World Summit on Food Security held in December 2009, world leaders unanimously adopted a declaration highlighting once again the pledge to combat poverty and eradicate hunger from the face of the earth sustainably and at the earliest date.

Aquaculture is considered as an important activity for local food security through reduced vulnerability to variations in aquatic production, improved availability of high quality and affordable food, improved access to food and more effective food utilization (FAO, 2003). Among aquaculture products, fish, is one of the most efficient transformers of feed into food and therefore it seems of prime importance to utilize fish for production of valuable animal protein to prevent malnutrition. However, at present, little information exists concerning the scale and extent of rural or small-scale aquaculture development within most developing countries and Low-Income Food-Deficit Countries (LIFDCs), or concerning the direct/indirect impact of aquaculture activities and assistance projects on food security and poverty alleviation. Thus, although it is anticipated that aquaculture could have a significant contribution in combating food insecurity, it is still difficult to measure its potential contribution towards improving food security and subsequently plan, implement and

coordinate efficiently, development and research programmes supporting the sustainable expansion of this activity.

The main objectives of the project will be:

- 1) to review existing and develop new methodologies aiming at quantifying the contribution of aquaculture in combating hunger and poverty in developing countries and LIFDCs,
- 2) to review past and on-going national and international cooperation activities focusing in promoting aquaculture in a food security context,
- 3) to review and disseminate: i) best practices, ii) financially viable entrepreneurial aquaculture activities (including small-scale operations), iii) enabling institutional initiatives and frameworks and iv) successful public-private partnerships contributing to aquaculture development in developing countries,
- 4) to review and assess the role of targeted nutrition education programmes in promoting the production of aquaculture products as a source of nutrition for human consumption in food insecure regions. The project will also consider local social and cultural assets and constraints for the development of aquaculture, as well as, the effects of global trade and markets on enabling or preventing aquaculture from achieving its food security objectives,
- 5) to identify potential for more efficient coordination between national and EU research and development initiatives focused on aquaculture as means of promoting food security and poverty alleviation. The project will also spot knowledge gaps and technology needs adapted to local requirements and available resources.

Funding Scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 1 000 000.
- Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPCs.
- Eligible ICPCs for the implementation of the project: LIFDCs (<http://www.fao.org/countryprofiles/lifdc.asp>), ICPCs with high aquaculture contribution to their GDP, ICPCs with high numbers of small-scale aquaculture farmers operating, ICPCs with high international trade in fish products, in particular important exporters to EU. According to the partnership, clear synergy with relevant national and/or international initiatives may be required.

Expected impact: The project will promote enhanced coordination and stimulate synergies between Member States' and EU initiatives related to international cooperation aiming at developing aquaculture as means of combating food insecurity. It will provide tools for measuring the potential contribution of aquaculture in achieving global food security goals and MDGs, while determining the extent to which the promotion of this activity should be encouraged in the many food insecure regions of the world, where its sustainable development is possible. It will provide information on rural aquaculture (including small sale and commercial operations) and its role in improving rural livelihoods. The project will promote the integration of aquaculture into national rural development plans and strategies. It will contribute to stimulating the increase in institutional capacity and allocation of resources necessary to ensure the appropriate role of aquaculture in combating poverty and ensuring

food security. It will also stimulate involvement of stakeholders in decision making and dissemination of best practices.

Area 2.1.5 "The ocean of tomorrow" call - Joining research forces to meet challenges in ocean management

Oceans offer opportunities for sustainable economic development. However, human activities are exerting increasing environmental pressure on the oceans, threatening marine ecosystems and sustainable maritime activities. In particular, the growing demand for maritime transport, offshore energy, tourism, coastal development, resource extraction, fisheries and aquaculture, may have a major impact on the marine environment.

The European Union has taken up this challenge and established a new integrated maritime policy, of which the "European Strategy for Marine and Maritime Research"³⁰ is a fundamental part. The strategy highlights the importance of integration between established marine and maritime research disciplines in order to reinforce excellence in science and to reconcile the growth of sea-based activities with environmental sustainability.

The aims of the call are to improve our understanding and the predictive capacity of marine ecosystems' response to a combination of natural and anthropogenic factors, while fostering innovations to make the most of sea resources. It will thus contribute to implement the Marine Strategy Framework Directive and to respond in a coherent and integrated way to the EU Grand challenges, such as global warming, tightening supply of energy, water or food security. It is also in line with the new strategy for Europe EU 2020 which recognises that the only way to deliver new sources of growth and sustainable jobs is through research and innovation.

The partly regional focus of the call on the Mediterranean Sea and the Black Sea reflects the huge sustainability challenges in these two sea basins. It is in line with the Council conclusions on the "European Strategy for Marine and Maritime Research", which invite to put a particular emphasis on the Mediterranean and Black Sea basins. It also supports the objectives of the communications "Towards an Integrated Maritime Policy for better governance in the Mediterranean"³¹ and "Black Sea Synergy"³².

Research addressed in the call will be of cross-thematic nature, integrating in a coherent way marine and maritime research domains in order to reach an impact that a single theme of the Cooperation programme could not attain on its own.

The call is implemented through four different topics, out of which two of generic nature and two of particular relevance to the Mediterranean and the Black Sea: topic 1: "Multi-use offshore platforms"; topic 2: "Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential"; topic 3: "Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance" (SICA); topic 4: "Knowledge-base and tools for

³⁰ COM (2008) 534 final of 3.9.2008 - Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: "A European Strategy for Marine and Maritime Research: A coherent European Research Area framework in support of a sustainable use of oceans and seas".

³¹ COM (2009) 466 of 11.9.2009 - Communication from the Commission to the Council and the European Parliament: "Toward an Integrated Maritime Policy for better governance in the Mediterranean".

³² COM (2007) 160 of 11.4.2007 - Communication from the Commission to the Council and the European Parliament: "Black Sea Synergy – a new regional cooperation initiative".

regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea (SICA).

A multi-disciplinary approach and a multi-sectoral partnership are considered essential to achieving the expected impacts. All topics have been designed to secure a substantial involvement of industrial partners, SMEs and relevant end-users.

OCEAN.2011-1: Multi-use offshore³³ platforms

Call: FP7-OCEAN-2011

Increasingly, energy, fisheries and transport infrastructures are being established offshore. Facilities such as offshore wind farms may occupy large areas and compete with other users of the maritime space. Offshore platforms that can combine many functions within the same infrastructure could offer significant benefits in terms of economics, optimising spatial planning and minimising the impact on the environment.

This topic aims to develop novel innovative designs for multi-use offshore platforms and assess the technical, economical and environmental feasibility of constructing, installing, operating, servicing, maintaining and decommissioning together with the related transport aspects. The platforms shall target ocean renewable energy and in particular offshore wind, aquaculture and the related transport maritime services.

The work shall determine the optimal locations for multi-use offshore platforms taking into account renewable (in particular wind) energy resources, appropriate aquaculture, transport issues, and other platform-related activities including accessibility and possible use as offshore terminals. Model validations should be employed on several sites using field measurements. In determining locations, the following should be taken into account:

- Ocean renewable energy resources and seabed characteristics;
- Hydrodynamic dispersion models;
- Hydrodynamic conditions for logistic, transport and installation purposes;
- Impact analysis on the environment, social acceptance and other users (e.g. vibrations, noise, radar interference, shipping, tourism, fishing).

Innovative designs for multi-use offshore platforms shall be developed that allow optimal coupling of the various activities and services. Research shall include safe, efficient installation, operation maintenance and monitoring (including possibly remotely) together with specialised transportation to optimise efficiency, operation and installation.

Designs of large structures shall be developed that allow coupling of ocean renewable energy with aquaculture, off shore transport facilities, environmental monitoring and other relevant activities. These should lead to optimised spatial use and improved economic viability. Physical modelling shall be employed at an appropriate scale for experimental validation of the proposed platforms.

Research into relations between the combined activities shall in particular address the interaction between wind energy and other platform users, innovative containment systems and related technology for optimal aquaculture operation, the development of transport solutions for optimised installation, maintenance, operation and services to shipping (breakwater, terminals etc). Compatibility of current aquaculture equipment and techniques (handling, husbandry, feeding, etc) with establishment on a multi use platform and possible innovations should also be considered.

³³ "Offshore" is considered to be "out of sight" from the coast.

An assessment of the economic viability and value to the various stakeholders shall be undertaken. This shall include consideration of costs for construction, operation, servicing and decommissioning. This assessment should include a comparison to non multi-use platforms.

The project shall include a comprehensive environmental impact methodology and assessment, including a comparison to non multi-use solutions.

When appropriate, knowledge shall be drawn from pre-existing research and data.

Funding scheme: Collaborative Project.

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 14 000 000.

Additional information:

Up to 3 projects may be funded under the total budget of the topic (EUR 14 000 000) in order to allow various designs to be tested while maintaining critical mass and ensure complete coverage of the topic.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Contribution to the target of 20% share of wind energy in the final EU electricity consumption by 2020,
- Contribution to the growth of aquaculture industry and to increasing food needs and food security,
- Contribution to the increase of employment level (new job opportunities) in the shipbuilding, energy and fisheries sector,
- New emerging green technologies and global competitiveness of the European industries,
- Contribution to the low carbon economy,
- Strengthen the role of the European maritime transport sector within offshore energy and fisheries developments. Facilitate more efficient eco-friendly transport operations.

OCEAN.2011-2: Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential

Call: FP7-OCEAN-2011

The sequencing of environmental samples from marine environments allows investigations on microbial diversity and their functions at molecular level, leading to a better understanding and prediction of the marine microbial influence on biogeochemical cycles and hence on climate change and to the exploitation of its potential for biotechnological applications. This is why nowadays massive output of sequencing efforts of marine environmental samples e.g. ocean sampling expeditions, are flooding databases. To interpret these data in their environmental context is a prerequisite to being able to transform the wealth of sequenced data into biological understanding. However, analysis and interpretation of these data, especially metagenomic data, requires tools that are very poorly developed so far.

The focus of research should be on the development of new bioinformatic approaches in the marine environment field that will enable microbial (e.g. viruses, bacteria, archaea and protists) data exploitation, integration and accessibility for researches and different users worldwide. It should focus on standardization, processing, integration of heterogeneous data sources, annotation, interpretation of the metagenomics data taking into account their environmental context (biogeochemical and oceanographic data) and should link environmental studies with laboratory experiments so that hypothesis can be tested and unknown genes and/or biochemical pathways can be assigned a function. The complex problem of IPR issues related to the exploitation and protection of marine resources as well as outreach activities including training of researchers should also receive due consideration.

Funding scheme: Collaborative Project (large scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 9 000 000.

Additional information:

A maximum of one project may be funded.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Better understanding of the complexity of microbial communities and their role on climate change, the parameters driving the functioning of marine ecosystems and reveal new exciting activities with potential industrial use,
- Contribution to the improvement of environmental bioinformatics capacity building in Europe and overcome fragmentation resulting from the very fast developments in sequencing, bioinformatics, and molecular ecology,
- Enabling integration with oceanographic research on earth observation and monitoring (e.g. GMES, GEOSS and Emodnet) and other EU funded related activities,
- Contribution to the increase of the interoperability and data quality and facilitate novel applications in the field of blue biotechnology,
- Contribution to the improvement of the protection of genetic resources and the sustainable use of marine resources by advancing new IPR approaches.

OCEAN.2011-3: Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance

Call: FP7-OCEAN-2011

The capacity of the Mediterranean and the Black Sea to provide goods and services to their surrounding populations may be compromised in the near future if anthropogenic and natural pressures are not considered in connection with the natural sensitivities and capacities of the marine environment in an integrated, ecosystem-based way. An integrated approach for governance in the Mediterranean and in the Black Sea basins is therefore needed.

The overall objectives of the project are to promote sustainable well-coordinated research efforts in order to characterise patterns of pressure in environmental and socio-economic terms on the Mediterranean and the Black Sea and to develop a framework for future implementation of adaptive policies and management schemes, while fostering international cooperation with neighbouring countries.

Firstly, the project will develop expert systems in order to address the objectives of the topic, making the best use of the available observational and monitoring capability currently deployed in both basins. In particular it should take advantage of and be built on systems such as the ones currently deployed through the Global Monitoring for Environment and Security (GMES) and the Group on Earth Observations (GEO) initiatives. The project should also take into consideration the European Marine Observation and Data Network (EMODNET) and the Data Collection Framework (DCF) in fisheries. Where needed, the project should fill short term data gaps and propose options to fill gaps on a continuous basis in the long term. This will include making more compatible the role of existing and future research vessel (i.e. a new multipurpose mobile platform for environmental data collection) with the current effort to monitoring systematically the environmental status of the Mediterranean and the Black Sea conditions through an integrated observing system.

Secondly, the project shall build an integrated knowledge-base for understanding the patterns of anthropogenic and natural pressures in the Mediterranean and in the Black Sea. In particular, it should develop the science-base needed to understand how the natural land-ocean processes that are characteristic of semi-enclosed basins (peculiar role of air-sea fluxes and fresh water fluxes, specific water mass ventilation rates, hydraulic control of flows across straits) and the anthropogenic processes (effects of large cities, coastal development, pollution, recreational activities, fishing and aquaculture activities) interact in these two basins.

Thirdly, the project shall provide a scientific rationale for a basin-wide promotion of the principles and objectives put forward in the Marine Strategy Framework Directive (MSFD) in close collaboration with the neighbouring countries in order to achieve Good Environmental Status (GES). It should be built upon existing models, in particular those developed under GMES, improve prediction and management of key anthropogenic and natural processes and their impacts in the Mediterranean and the Black Sea.

The project shall cover both Mediterranean and Black Sea basins and foster international cooperation. It will aim to build scientific capacity in the countries bordering the Mediterranean Sea and the Black Sea to strengthen European efforts to address the environmental challenges faced in the two semi-enclosed seas, jointly with neighbouring countries.

Finally, the project will develop a small research and survey vessel concept to be used for coastal areas, estuaries, as well as port areas, navigation channels. The innovative research

content concerns a small vessel with low draft that can operate with very precise innovative dynamic positioning, novel propulsion in shallow waters and normal sea states. As well as being suitable for a wide range of research related users, the vessels will address the needs to survey, accurately and efficiently shallow water navigation channels, an important navigation safety issue for shipping, particularly in areas with shifting sands.

Funding scheme: Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 13 000 000.
- SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy³⁴.

Additional information:

A maximum of one project may be funded. The project must equally address both the Mediterranean and the Black sea basins. It may include one sub-project for the Mediterranean and one for the Black Sea; but with a strong interlink between the two (e.g. for modelling) and a common approach for the development of the small research and survey vessel.

The project should be in line with the requirements of the Inspire directive and data sharing principles of the GEOSS initiative.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Reinforcing the scientific knowledge base, including in the regions out of the EU where this knowledge base remains poor, in order to understand and manage the impact of global changes on the Mediterranean and the Black Sea marine ecosystems and thereby contribute to their sustainable development;
- Clarifying challenges related to the definition and implementation of basin wide Good Environmental Status in accordance with the MSFD;
- Contributing to building science-based basin scale management strategies and informing policy makers at national, EU, regional and International levels. Evaluating the various options for sustaining these tools on the long term;
- The project should be in line with EU and international policies such as: MSFD, GMES, GEOSS, Common Fisheries Policy (CFP), Integrated Maritime Policy and the regional sea conventions;
- Enable advanced marine transport technology to accurately and efficiently locate in normal seas a vessel that can research and survey in shallow waters;
- Reinforcing international cooperation and interactions between scientists throughout the two geographic areas and spreading knowledge to decision makers.

³⁴ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine

OCEAN.2011-4: Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea

Call: FP7-OCEAN-2011

Due to the specific nature of the Mediterranean and Black Sea and the rapid expansion of sea-based activities, there is a need to create new knowledge to support the development of decision maker's tools for optimizing the management of human activities, within an integrated coastal and marine space system.

The objective of the project is to build up scientific basis firstly for establishing regional or sub-regional wide networks of marine protected areas (MPAs) for conservation and better management of marine living resources, secondly for assessing offshore wind energy potential while evaluating possible synergies and conflicts of use with other marine activities.

Research on MPAs will concern the establishment of scientific guidelines, criteria, models and tools for the design, mapping, management, monitoring and control of regional or sub-regional networks of MPAs including deep-sea habitats and areas beyond national jurisdictions. These networks of MPAs should respond to clearly established objectives, from protecting biodiversity (strict reserves) to achieving a sustainable exploitation of aquatic living resources by preserving nursery grounds and juveniles (restricted areas).

The focus will be on the identification of priority areas in both basins through a hierarchical approach based on ecological and socio-economic criteria in underrepresented or poorly studied areas and ecosystems (e.g. the high seas and the deep seas). Sizing, spacing and ecological connectivity and interdependency between sites will be studied for optimal maintenance of species populations and biodiversity (spill over effect), considering possible genetic exchange, larval behaviour patterns and larval dispersal and making the best use of molecular science and multidisciplinary approaches between marine genomics and ecosystem science. Habitat discontinuity and fragmentation, physical oceanography should also be considered. The development of management strategies for implementing the regional networks such as regulation measures to limit and ban certain practices, dynamic closures, legal issues for managing trans-boundary areas and high seas MPAs are key elements of the project. The project should also promote innovative communication strategies between scientists, managers, fishermen, shippers, NGOs, potential users and public at large.

Research on wind energy will provide a scientific basis for assessing off-shore wind potential in the Mediterranean and the Black Sea, focusing on areas already identified as promising with respect to wind regimes. The project should assess the potential for offshore wind power production based on the use of existing models. It will also evaluate potential conflicts with other uses of the space (MPAs, maritime transport, on shore large desalination plants, dredging, fishing, aquaculture, sub-sea cables, pipelines, tourism, etc). The project should deliver scientific guidelines for an enriched "wind atlas" for decision-makers and planners.

Moreover the project shall launch two pilot studies, at least one in the Mediterranean and one in the Black Sea, addressing the establishment of regional networks of MPAs, also combining if possible wind energy development, and considering all the possible conflicts from other maritime activities. The pilot studies should address selected areas within regions or sub-regions of the Mediterranean Sea and the Black Sea as defined in the Marine Strategy Framework Directive³⁵. The project should reinforce capacity building in support to international cooperation by transferring and making compatible methods across the two

³⁵ The 4 sub-regions of the Mediterranean Sea are (i) the Western Mediterranean Sea; (ii) the Adriatic Sea; (iii) the Ionian Sea and the Central Mediterranean Sea; (iv) the Aegean-Levantine Sea.

basins and by promoting common rules and practices in particular with non EU countries from Balkans, Southern Mediterranean and Eastern Europe bordering the two seas.

Funding scheme: Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 9 000 000.
- SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy³⁶.

Additional information:

A maximum of one project may be funded.

The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".

The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

Expected impacts:

- Improved methods and tools for developing holistic planning and integrated management approaches and practices for the implementation of regional or sub-regional networks of Marine Protected Areas and the assessment of offshore wind energy potential in the Mediterranean Sea and the Black Sea,
- Reinforcing international cooperation and interactions between scientists and marine space users throughout the two geographic areas and spreading knowledge to decision makers,
- Demonstrating the feasibility and possible synergy between regional networks of MPAs and offshore wind sites through the launching of two pilot studies, at least one in the Mediterranean and one in the Black Sea, with the participation of the industry,
- Supporting maritime spatial planning³⁷ and the development of an Integrated Maritime Policy in the Mediterranean and Black Sea basins,
- Contributing to fulfil international/regional conventions and agreements e.g. Convention on Biological Diversity, UN World Summit on Sustainable Development Plan of Implementation, as well as EU regulations and policies regarding the implementation of regional or sub-regional networks of MPAs.

³⁶ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine

³⁷ COM (2008) 791 of 25.11.2008 - Communication from the Commission "Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU".

Activity 2.2 Fork to farm: Food (including seafood), health and well being

Area 2.2.1 Consumers

Understanding consumer behaviour and consumer preferences as a major factor in the competitiveness of the food industry and the impact of food on the health, and well-being of the European citizen. The focus will be on consumer perception and attitudes towards food including traditional food, understanding societal and cultural trends, and identifying determinants of food choice and consumer access to food. The research will include the development of data bases on food and nutrition research.

KBBE.2011.2.1-01: Strategies for improving communication between social and consumer scientists, food technology developers and consumers

Call: FP7-KBBE-2011-5

Communication barriers between food technologists and the public can lead to rejection of investment-intensive and useful new (food) technologies by the public based on misunderstanding, fear or mistrust. This is often due to a lack of information or to information that cannot be understood by the consumer. In addition, rejection of a new technology can also be the consequence of a lack of knowledge concerning the preferences or needs of consumers. The main task of this project is to identify and better understand existing barriers to consumer acceptance of new products or food technologies by establishing a dialogue between consumers, social/consumer scientists, food technologists and other key players in the food industry to overcome these barriers and promote knowledge-based acceptance through appropriate communication. Participants in this action should come from all groups to be consulted before and during technology development: food scientists and technologists from companies, universities and research institutes, together with consumer scientists, ethical experts, representatives of science media/journalists, and consumers.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected impact: 1) Early identification of issues that can lead to rejection of new (food) technologies before the start of the development or at the latest before the marketing phase. 2) Greater awareness among food technologists regarding the risk of their R&D work becoming a public issue and their own responsibility in this field. 3) Means of informing food technologists on how and where to obtain relevant information and flexible training tools for the formulation of information that can be understood by non-technologists. 4) Greater competitiveness of the European agro-food and food machinery industry due to more successful launches of new technologies.

Area 2.2.2 Nutrition

Understanding beneficial and harmful dietary factors as well as the specific needs and habits of population groups as a major controllable factor in the development and reduction of occurrence of diet-related diseases and disorders including obesity and allergies. This will involve the investigation of new dietary strategies, the development and application of nutrigenomics and systems biology, and the study of the interactions between nutrition,

physiological and psychological functions. It could lead to reformulation of processed foods, and development of novel foods and ingredients, dietetic foods and foods with nutritional and health claims. The investigation of traditional, local, and seasonal foods and diets will also be important to highlight the impact of certain foods and diets on health, and to develop integrated food guidance.

Coordination with Theme 1 – ‘Health’ is foreseen in the field of nutrition and prevention of diet-related diseases, in particular diabetes and obesity.

Coordination with Part 5 – ‘Science in Society’ of the Specific Programme ‘Capacities’ is foreseen in relation to the initiative on ‘Mobilisation and Mutual learning on societal challenges’, in particular in the field of ‘Food, nutrition, emerging technologies and related health issues’.

KBBE.2011.2.2-01: Development of functional foods and ingredients

Call: FP7-KBBE-2011-5

The aim of this topic is to develop foods and/or food ingredients (flavonoids excluded) beneficial to human health and therefore expected to bear nutrition or health claims. New compounds and/or compounds from new sources would be particularly relevant to address. The research can be complemented and supplemented with the use of already available scientific knowledge at molecular, cellular or whole-organism level, particularly in humans, and through epidemiological studies. The research will include studying the role and mechanisms (absorption and activity) of selected food components as well as the factors influencing their functional properties along the food chain. Translational research approaches including integration in the food matrix should be favoured with a view to achieving food market development and acceptance by consumers. Where appropriate, gender issues should be considered.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 6 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: The expected project results should clearly be of interest and potential benefit to SMEs. They will increase the innovation potential and competitiveness of the European food industry, in particular SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit. The project will contribute to the development of tools for industry, in particular SMEs, to underpin health claims with appropriate scientific evidence, when relevant. It will support the common European policy on health and nutrition claims, and will enhance cooperation between scientific disciplines and stakeholders in Europe.

KBBE.2011.2.2-02: New technologies and tools and their potential application to nutrition research

Call: FP7-KBBE-2011-5

New research opportunities in the nutrition area are arising through the use of cutting-edge technologies. Converging technologies offer significant potential for nutrition research. This potential may be more easily realised if available methods and tools are used in a comprehensive manner, in particular in combination with traditional nutrition techniques and methodologies. The aim is to explore and understand the power and limitations of these rather novel technologies and their use in combination with the more traditional methodologies in nutrition research in order to make the results/studies comparable and/or interconnected.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Expected impact: Understanding of the potential and limitations of the latest techniques in nutrition research. Scientific and technological breakthroughs in the development of integrated tools and methods for nutrition research. Contributing to a harmonisation of methodologies worldwide. The European added value lies in exploiting and developing cutting edge-technologies and methodologies for the scientific community in the nutrition field. Projects supported under this topic should integrate relevant partners from Australia, Canada, the USA and New Zealand. The participation of partners from those countries is important to achieve the expected impact of the research to be undertaken.

KBBE.2011.2.2-03: Long-term influence of early nutrition on health

Call: FP7-KBBE-2011-5

Increasing evidence demonstrates that early nutrition and lifestyle have long-lasting programming effects on later health. Research should aim to understand the mechanisms behind optimal nutrition in terms of both quality and quantity, using animal and human studies during critical periods in early life such as pre-conception, pregnancy, post-natal, breastfeeding and early life of the infant. Better knowledge is needed on the mechanisms of early programming which influence the development of metabolic diseases and health risks in later life (childhood, adolescence, adults). Factors such as placental function, early growth patterns, pre-pregnancy weight status, pregnancy weight gain, overweight and obesity, gestational diabetes, breastfeeding, genetic variation, environment, gender, lifestyle, physical activity, ethnicity and geographic background should be studied in relation to the later health of offspring. Recommendations for optimal nutrition during pregnancy, infancy and early childhood should be formulated, based on scientific evidences. Where appropriate, gender issues should be considered.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 9 000 000.

Expected impact: A better understanding of the impact of early nutritional programming on health during childhood, adolescence and adults in specific subgroups of the population. Identification of the nutritional needs of pregnant women in Europe. The results should lead to recommendations on optimal nutrition before and during pregnancy, and during the breastfeeding period and the early life of infants with special reference to later health development of offspring. Projects supported under this topic should integrate relevant partners from the

USA, the participation of which is important to achieve the expected impact of the research to be undertaken.

KBBE.2011.2.2-04: Translation mechanisms for targeting interventions on micro-nutrients — Mandatory South Asia and South East Asia

Call: FP7-KBBE-2011-5

Evidence shows that adequate nutrition during the six months before pregnancy, during pregnancy itself and in the first two years of a child's life is crucial for survival and optimal development (including growth, language, social, cognitive, and motor development). Adequate nutrition is key to achieving the Millennium Development Goals for reducing the proportion of people who suffer from hunger and malnutrition. However, implementation of science-based policy initiatives to reduce malnutrition is not always successful. The action should explore the best ways to exploit existing scientific results on micro-nutrient needs for targeted groups, identify best practices to improve micro-nutrient status on a large scale and translate efficiently the knowledge into operational capacities within, for example, households, communities or governments. South Asian and South East Asian countries are targeted. For developing specific, targeted policy guidance and for ensuring the successful implementation of measures/actions to improve micronutrient status, the specificities of these countries should be taken into account, such as their national health systems and their political, cultural and socio-economic situations. Where appropriate, gender issues should be considered.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 2 000 000.
- Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPC from South Asia³⁸ and South East Asia³⁹.

Expected impact: Achievement of the Millennium Development Goals in reducing the proportion of people who suffer from hunger and malnutrition, and improving the health status of mothers during pregnancy and infants during the first 24 months of life. This should eventually contribute to reducing malnutrition and improving health in adulthood, as well as to mitigating the risk of chronic diseases.

Area 2.2.3 Food processing

Optimising innovation in the European food industry through the integration of advanced technologies into traditional food production including fermented food, tailored process technologies to enhance the functionality, quality and nutritional value of food including organoleptic aspects in food production including new foodstuffs. Development and demonstration of high-tech, eco-efficient processing and packaging systems, smart control applications and more efficient valorisation and management of by-products, wastes, water and energy. New research will also develop sustainable and novel technologies for animal feed, including safe feed processing formulations and for feed quality control.

³⁸ South Asia: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka

³⁹ South East Asia: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, Vietnam

KBBE.2011.2.3-01: Sustainable cleaning and disinfection technologies

Call: FP7-KBBE-2011-5

Disinfection is one of the most critical processing steps in the production of fresh foods such as fresh-cut vegetables and fruit, and is mainly based on the use of chlorine. Due to the health and environmental risks associated with the formation of carcinogenic halogenated disinfection by-products, there is a need to reduce or circumvent the use of chlorine, minimising at the same time water consumption and waste water. The aim of this topic is to develop an innovative and holistic approach to cleaning and disinfection strategies in the production of foods, which faces three major challenges: (i) improving product safety and shelf-life, (ii) reducing water use, and (iii) reducing chemical emissions in waste water — all without affecting quality. To this end, the colonisation patterns (biofilms on food and equipment surfaces) and the sensitivity of microorganisms to cleaning and disinfection agents and processes have to be studied first. The hygienic design and cleaning characteristics of processing equipment have to be considered as well. Priority should be given to technologies that do not contribute to microbial resistance of bacteria. The research should lead to a new Code of Best Practice for disinfection and cleaning operations. The selection of the food(s) to be studied has to be well justified in view of technological and policy relevance.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: The European added value lies in increasing the innovation capacity of the equipment manufacturing industry, strengthening the competitiveness of the European fresh-cut food industry and offering improved food products of high quality and safety. The expected project results should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit. The research will contribute to sustainability in general and, more particularly, to the EC Directive on Integrated Pollution Prevention and Control (IPPC), in terms of reducing chlorine emissions in water and decreasing water consumption rates in food industries by up to 20-50 % via a revision of the relevant best available techniques reference document(s).

KBBE.2011.2.3-02: Food Factory of the Future — Design Study

Call: FP7-KBBE-2011-5

The aim is to support a conceptual design study for a new research infrastructure with a clear European dimension and interest. The study should address all key questions to help assess the scientific, technical and financial feasibility of the proposed new facility. It should lead to a ‘conceptual design report’ allowing policy makers and their advisors to prepare relevant strategic decisions for the development of the new research infrastructure. The objectives of the infrastructure will be to enhance knowledge transfer and provide a sound science base for

innovative, consumer-friendly and sustainable food production concepts, business models, emerging technologies, added value products and services. The infrastructure should support technologies and facilities in all steps in the food processing chain as well as general concepts such as virtual design, product flow, information technologies, vision systems and robotisation, and also the development of new business models. It should offer unique research resources and services to users from different countries, attract young people to science, and attract them to network among existing facilities, independent of location and operator.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 2 000 000.

Expected impact: The results of research in this topic should clearly be of interest and potential benefit to the food and machinery industry, including SMEs, and will create a beneficial economic impact to the sector concerned. The project should address the key questions in assessing the technical and financial feasibility of the new research infrastructure. The infrastructure will enhance technological development capacity and the scientific performance and attractiveness of the European Research Area. The European added value of the research infrastructure itself lies in fostering innovation in food science and technology and the cost-effective use of scientific resources in this field. Ultimately, this will assist EU manufacturers in the food and high-tech sectors, in particular SMEs, to adapt more quickly to global competitive challenges.

KBBE.2011.2.3-03: Advanced and flexible technologies for active, intelligent and sustainable food packaging

Call: FP7-KBBE-2011-5

Food packaging plays a crucial role in preserving the quality and safety of food during distribution and storage from farm to fork, but contributes to the generation of waste. The European food packaging industry needs active, intelligent and sustainable food packaging materials in combination with flexible packaging technologies to stay competitive on the global market. The new active, intelligent and sustainable solutions have to be consumer-oriented, ensure the safety and quality of food, reduce food losses, and reduce the environmental impact of food packaging. The industrial applicability of the research has to be demonstrated together with a positive impact on the environment via a Life Cycle Assessment of the whole value chain carried out according to the International Reference Life Cycle Data System (ILCD) Handbook.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Additional information: Up to 3 projects may be funded.

Expected impact: The main expected impact is the use of active, intelligent and sustainable packaging materials and flexible packaging technologies by the food industry. The results of research in this topic should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit. The European added value lies in the combination of lower environmental impact and improved competitiveness of European packaging and food industries, including SMEs. The project will answer consumer demands regarding food safety and environmental issues.

KBBE.2011.2.3-04: Satiety control through food structures made by novel processing

Call: FP7-KBBE-2011-5

The aim of this topic is to develop food products that help regulate of food intake by accelerating satiation during a meal, enhancing satiety, and/or reducing appetite. The approach to food development should use novel processing methods and guarantee food safety. The efficiency of the foods developed to satiate and/or reduce appetite has to be proven in human trials against biomarkers of satiety and/or appetite. The effect of the modified food structure on nutrient bioavailability has to be measured. Multidisciplinary collaboration by researchers in food processing, nutrition and consumer science with food producing enterprises will be instrumental in reaching the objectives of this topic.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 6 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Expected impact: The European added value lies in enhanced innovation capacity in the field of novel processing, broader application of the relevant technologies by the food industry, and improved competitiveness of the European food industry. The expected project results should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit. The development of food products for the control of satiety and/or appetite forms part of preventive strategies to reduce the burden of chronic disease among the European population. The research will contribute to European health policy, in particular the 'strategy for Europe on nutrition, overweight and obesity-related health issues'. New and/or improved food products of high quality and safety will enlarge the range of processed foods in order to help consumers achieve a balanced diet.

KBBE.2011.2.3-05: Processed foods with a lower salt, fat and sugar content

Call: FP7-KBBE-2011-5

The aim of this topic is to reduce the content of salt (sodium), fat (saturated and trans-fatty acids) and/or sugar (mono- and disaccharides) in processed food products by overcoming technological barriers to reducing the components concerned while ensuring food safety and quality and maintaining taste experience and pleasure. The food types covered should be major contributors to high intakes of the components concerned in Europe. At least the following food categories should be addressed: bakery products, meat products, cheeses and

ready-to-eat meals. The proposal has to contain clear quantitative goals for reduction. The work will also include sensory optimisation, evaluation of the acceptance of the new products by consumers, including labelling issues and affordability, and estimation of the impact of the reformulation on the overall nutrient intake of consumers. Multidisciplinary collaboration by researchers in food processing, nutrition and consumer science with food-producing enterprises will be needed to reach the objectives of this topic. Efficient technology transfer will be ensured by substantial demonstration activities to stimulate the new processes by industry, in particular SMEs.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected impact: The European added value lies in addressing the different recipes for traditional and processed foods from different countries in order to lower the risk of nutrition-related health problems. This will contribute to European health policy, in particular the 'strategy for Europe on nutrition, overweight and obesity-related health issues' and the EU salt reduction initiative. The range of processed foods that can ensure dietary adequacy will be increased. The results of research in this topic should clearly be of interest and potential benefit to the food industry, including SMEs, and will create a beneficial economic impact to the sector concerned. A strong participation of industrial partners from the food industry (one per food category studied), in the project itself should help contribute to the realisation of that impact.

Area 2.2.4 Food quality and safety

Assuring chemical and microbiological safety and improving quality in the European food supply. This will include understanding the links between microbial ecology and food safety; developing methods and models addressing the integrity of the food supply chains; new detection methods, traceability and its further development, technologies and tools for risk assessment, including emerging risks, management, and communication, as well as enhancing the understanding of risk perception. This will also include science based methods for risk benchmarking in the field of food safety.

KBBE.2011.2.4-01: Safety and quality of ready-to-eat foods

Call: FP7-KBBE-2011-5

New eating habits, like increasing consumption of convenience foods, are changing the ways of preparing and storing food. The consumption of ready-to-eat (RTE) or minimally processed foods is growing, together with the pressure on the food industry to reduce costs and waste and to increase shelf-life. Research in this area should address public health risks, with the focus on pathogens — their growth and possible toxin production — and organoleptic quality

aspects associated with modern food processing and storage. In order to produce safe products and stay competitive on the global market, the European food industry needs new predictive and probabilistic models and decision-making tools to quantify and manage spoilage and pathogen risks, taking into account possible abusive conditions further along the food chain. This will also enable the food industry to implement safe and milder processing procedures. Strategies for food business operators to mitigate the identified public health risks and organoleptic quality aspects associated with RTE food products should be developed in cooperation with food-producing SMEs.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 3 projects may be funded

Expected impact: The European added value lies in offering food of better quality and safety to consumers as well as in increasing the innovation capacity of the food industry, thus strengthening its competitiveness. Comparable scientific evidence will be provided to serve as a basis for increasing the safety and quality of RTE foods, enabling food business operators and especially SMEs to better identify where improvements are still possible in the RTE food production chain. The research activities are expected to produce, implement and validate user-friendly decision-making tools for the optimisation of food processing techniques, product innovation, and/or food product shelf-life determination. In the interest of consumers, industry and policy makers, these efforts should improve food safety and minimise food spoilage. The expected project results should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit.

KBBE.2011.2.4-02: Pan-European Total Diet Study

Call: FP7-KBBE-2011-5

It is essential to have accurate information on people's actual total dietary exposure to chemical contaminants. This can be achieved with total diet studies (TDS). Research in this area should assess dietary exposure to chemical contaminants among different population groups in Europe, taking into account age and sex. It will include identification of typical food baskets in the overall diet. Dietary intake of contaminants from these foods, processed for normal use and consumption, should be investigated. Harmonised methods should be developed for data collection and the construction of a European database, available to risk assessors and risk managers. This research is expected to encourage the active participation of partners from the enlarged European Union and candidate countries, for example by offering appropriate training opportunities (e.g. summer schools) for early-career researchers.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Expected impact: The European added value lies in providing European risk assessors and risk managers with a priority-setting tool consisting of a database with information on contaminant levels in food, which will enable them to focus their limited resources on those contaminants that pose the greatest risks to public health. In addition, total diet study results can be indicators of environmental contamination, and can be used to assess the effectiveness of specific risk management measures. This will lead to increased safety of the food chain.

Projects supported under this topic should integrate relevant partners from industrialised countries who have gained a certain experience with conducting total diet studies. The participation of partners from those countries is important to achieve the expected impact of the research to be undertaken.

Area 2.2.5 Environmental impacts and total food chain

Protecting both human health and the environment through a better understanding of the environmental impact on and from food/feed chains. This will involve study of food contaminants and health outcomes, monitoring of environmental effects, developing enhanced tools and methods for the assessment and management of impacts on, and resistance of, food and feed chains to global changes, in particular to the environment. Assuring quality and the integrity of the food chain requires new models for commodity chain analysis and total food chain management concepts, including consumer aspects.

KBBE.2011.2.5-01: Environmental sustainability in the European food and drink chain

Call: FP7-KBBE-2011-5

The aim of this topic is to harmonise and integrate methods and methodologies for environmental impact assessments of food and drink products. Research will focus on the key environmental sustainability challenges, including climate change adaptation, along the food production and supply chains and develop adequate strategies to cope with them. European environmental standards and comprehensive sustainability indicators will be developed for use in consumer education strategies. Studies of the variation in the environmental approaches of companies that produce similar products will provide evidence of the potential for improvements and reliable data on environmental impacts. It is important to investigate actual systems, covering several representative European regions.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35 % or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected impact: A high European added value is expected, as there is an urgent need to ensure consistency among the scientific approaches across the EU regarding the sustainability of the food production and supply chains. This would result in reliable and comparable quality data, putting an end to the current inconsistent ways in which environmental information regarding food is brought to the attention of the European public. In turn, this information will raise environmental and ethical awareness, enabling consumers to change their purchasing decisions and behaviour. It will also result in an increased understanding of the sustainability of Europe's food production and supply system in the light of climate change, and provide vital, science-based information including social-economic viability data to policy makers on the best practices for European food systems to adapt to this phenomenon. The alignment of this topic with the EU's sustainable consumption and production policy should make a significant contribution to the global sustainable development agenda. It will also speed up the creation of a safe and sustainable low-carbon and resource-efficient economy capable of competing successfully in global markets. The expected project results should clearly be of potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit.

KBBE.2011.2.5-02: Reducing post-harvest losses for increased food security — SICA

Call: FP7-KBBE-2011-5

Improving food security requires a comprehensive approach towards post-harvest research, as post-harvest losses are known to be significant, especially in low and medium-income countries. This topic aims to identify, develop and share appropriate technologies to reduce post-harvest losses and generate higher-value products from bio-waste on and off farms, while at the same time maintaining the quality and safety of food. Research in this area should develop strategies and procedures and identify areas where real improvement targets can be set and achieved. This may include benchmarking where appropriate, and should result in best practices. Demonstration activities under real-life third-country conditions, involving relevant food chain actors, are essential parts of the work to be carried out. The principle of mutual interest and shared benefits will underpin this international cooperation action with developing countries.

Funding scheme: Collaborative Project (small or medium-scale focused research project) for Specific Cooperation Actions dedicated to International Cooperation.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPC.

Additional information: Up to 2 projects may be funded.

Expected impact: The results of research in this topic should clearly be of interest and potential benefit to SMEs, and will create a beneficial economic impact to the sector concerned. A strong participation of SMEs in the project itself should help contribute to the realisation of that impact. The European and international added value lies in increasing the effectiveness of the food chain by reducing post-harvest losses. Food chain efforts from farm to fork, involving food manufacturers, processors, retailers up to and including consumer involvement and education will contribute to this goal. Best practices including handling, transport and storage procedures, are expected outcomes, with targets for improvement and

demonstration of their achievement. A high focus on dissemination and education is expected in order to make a tangible contribution to achieving the Millennium Development Goals.

KBBE.2011.2.5-03: Food science and the retail sector: a platform for preparing the effective integration of research findings within innovative concepts and applications

Call: FP7-KBBE-2011-5

An innovating food and drink sector receptive to new consumption trends is a key area for job creation, global competitiveness and societal benefit. However, food research and the food industry alone cannot achieve the overall objective of creating an innovation-friendly market for food and drink products. The newly developed products have to reach consumers and give them a positive product experience. Fostering innovation thus requires consumer acceptability and the involvement of a retail and catering sector open to offering new, added-value products to consumers in an early phase. The main aim of this topic is to stimulate and deepen discussions between the research sector, the food industry, retailers and consumers on science-based evidence regarding future technologies and processes that the industry wants to use and food and drink products the consumer can trust. The project should make a significant contribution to the implementation of the EU Action Plan regarding sustainable food consumption and production.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected impact: A discussion forum bringing together food researchers, the food industry, retailers and consumers to debate future food technologies and value-added food products and services; new ways to inform retailers about food innovations; building of trust between retailers and consumers on the one hand and scientists and food producers on the other, thereby contributing to a lead market initiative by the industry; identification of the risks impeding the uptake of such products by consumers.

The results of research in this topic should clearly be of interest and potential benefit to the food industry, the retail and catering sector, and consumer organisations, and will create a beneficial economic impact to the sector concerned. A strong participation of the partners mentioned (in the project itself) should help contribute to the realisation of that impact.

Area 2.2.6 European Research Area

KBBE.2011.2.6-01: Coordination action in support of the implementation by participating States of a Joint Programming Initiative on ‘A Healthy Diet for a Healthy Life’⁴⁰

Call: FP7-JPROG-2011-RTD

Following the Commission’s Communication on Joint Programming to tackle Europe’s major societal challenges, the Competitiveness Council has welcomed the common commitment of EU Member States to address the prevention of diet-related diseases. A successful coordination action must support the implementation of a pilot Joint Programming Initiative by proposing innovative ways of pooling national expertise and resources and establishing

⁴⁰ This topic is subject to FP7-JPROG-2011-RTD call. Complete information on funding scheme, special eligibility criteria and expected impact can be found in Annex 4 to the Cooperation Programme.

closer and robust collaboration among the participating States in the field of food and health research for the prevention of diet-related diseases.

Funding scheme: Coordination and Support Action (coordinating action)

Specific eligibility and evaluation criteria: please refer to Annex 4, section A4.2.2.4 of the Cooperation Workprogramme including the Call Fiche "FP7-JPROG-2011-RTD".

Expected impact: Support for implementing a Joint Programming Initiative on 'A Healthy Diet for a Healthy Life', in particular support for the management structure and development of the Strategic Research Agenda. The Joint Programming Initiative in the field of prevention of diet-related diseases should help to streamline the national programmes in order to reduce overlaps and to exploit synergies, with a scale and scope of action that will go well beyond what either the EU or Member States can achieve on their own.

KBBE.2011.2.6-02: Sustainable food production and consumption - ERA-NET⁴¹

Call: FP7-ERANET-2011-RTD

Bearing in mind the importance of a sustainable approach towards food production and consumption, there is a need for a coordinated chain approach at European level. The aim of this coordination action is to establish an ERA-NET to promote cross-border coordination of existing national and/or regional research programmes in the area of sustainable food production and consumption in order to increase synergies between research activities and scientific communities, programmes and policies across Europe, overcoming their current fragmentation, and to contribute to increasing innovation and competitiveness in the food sector. It will provide a basis for the coordination of national and/or regional programmes concerned with sustainable food production and consumption and create synergies by pooling the resources and know-how existing in the Member States. It will also provide a forum for the exchange of information and best practices between Member States and candidate countries in the enlarged EU and for launching joint, transnational calls.

Funding scheme: Coordination and Support Action (coordinating action).

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Workprogramme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Expected impact: This action will enhance the links between national/regional activities. The coordination efforts are expected to help in identifying major research gaps, extending Europe-wide partnerships, pooling resources for funding, implementing research activities in a synergistic and inter-disciplinary manner and ensuring better knowledge management. The increased coherence of sustainable food production and consumption programmes, following a food chain approach from farm to fork, will improve the efficiency of human and financial resources and scientific infrastructure. In turn, this will contribute to consolidating the European research area in sustainable food production, supply and consumption, improving the welfare of European citizens and strengthening Europe's influence and leadership in international food research.

⁴¹ This topic is subject to FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, special eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 of the Cooperation Programme.

Activity 2.3 Life sciences, biotechnology and biochemistry for sustainable non-food products and processes

- *Strengthening the knowledge base and developing advanced technologies for terrestrial or marine bio-mass production for applications in industrial processes and in energy production. This will include plant, animal and microbial genomics and metabolomics to improve the productivity and composition of raw materials and bio-mass feedstocks for optimised conversion to high added-value products including biological resources utilisable in pharmaceutical industry and medicine, while exploiting natural or enhanced terrestrial and aquatic organisms as novel sources. This will fully incorporate life cycle analysis of bio-mass production practices, transportation, and storage and market deployment of bio-products.*
- *Addressing the application of industrial bio-technologies within whole crop and forest bio-mass chains to realise the full potential of the bio-refinery approach (e.g. green chemicals), including socioeconomic, agronomic, and ecological and consumer aspects. This will be enhanced by an increased understanding and control of plant and microbial metabolism at the cellular and sub-cellular level, and how this is integrated into whole system performance in the production of high value commodities deploying bio-processes with increased yield, quality and purity of conversion products, including bio-catalytic process design.*
- *Using or developing bio-technologies for novel and improved high quality, high added-value and renewable forest based products and processes to increase sustainability of wood and wood production, including timber, renewable materials and bio-energy stocks.*
- *Addressing the potential of biotechnology to detect, monitor, prevent, treat and remove pollution.*
- *Maximising the economic value of waste and by-products through new and potentially energy-saving bio-processes, alone or in combination with plant systems and/or chemical catalysts.*

Area 2.3.1 Novel sources of biomass and bioproducts

The production of bio-mass in terrestrial environments is of greatest importance for the development of the KBBE as this will deliver feedstocks and precursors for nearly all bio-industries or directly saleable end-products.

Research and development activities will foster the optimisation of these biomasses for industrial purposes. It will generate knowledge in metabolic control, pathway design, metabolic engineering in plants, animals and other organisms (such as fungi)⁴², and domestication and breeding, also improving agricultural traits. Novelty will rely to some extent on screening of terrestrial biodiversity and discovery of new organisms and new biochemical pathways. The development and optimisation of novel expression systems in terrestrial organisms will eventually lead to new products and practices.

42 However, the focus will be on plant and animal biotechnology. Microbial biotechnology will be mainly covered in Areas 2.3.3 and 2.3.5.

KBBE.2011.3.1-01: Plant photosynthetic efficiency: from a C3 to a C4 system

Call: FP7-KBBE-2011-5

Suboptimal photosynthetic efficiency is the major limitation for industrial crop productivity and yield. C4-type plants show more efficient photosynthesis (efficiency up to 7%) than C3 plants (efficiency ca. 1-2%) because of their specific CO₂ concentration mechanism. C4-type plants are found in many families, often from sub-tropical environments, where they developed natural adaptations to high temperatures and associated water deficits. They represent only about 1% of all plant species, yet constitute 5% of all plant biomass and are responsible for fixation of about 30% of carbon dioxide. However, the vast majority of crops cultivated today belong to the C3 type.

The aim of the project is to adapt, via metabolic engineering and appropriate phenotypic screening techniques, photosynthetic CO₂ assimilation mechanisms in C3-type terrestrial plants towards more efficient C4 architecture and biochemical mechanisms. The plant species selected for experiments might include model plants but should focus on crop species of economic relevance, and their selection should take into account the predicted impact of increasing CO₂ level. The objective of the project is to increase biomass yields (e.g. by reducing photorespiration, optimising organelle function) and to redirect the allocation of selected assimilates to the harvestable tissues and organs in the cultivated plants. The project will also investigate the response of the modified C3→C4-type plants to abiotic stress, in particular water stress. This will include determining mechanisms that regulate the response to abiotic stress in terms of, for example, water use and carbon budget, aiming to improve stress adaptability and yield in C3→C4 plants. The project will consider appropriate training opportunities (e.g. summer schools) aimed at early-career stage researchers.

Funding Scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 9 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: The project will improve the potential of the plant source material in agriculture, biorefineries, production of biofuels, and generation of novel plant products. This will contribute to the KBBE goals of a more sustainable economy, supporting also the Millennium Development Goals. It is considered that participation of partners from third countries, including ICPC, should add to the expected impact of the research to be undertaken. Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union and the candidate countries.

KBBE.2011.3.1-02: Perennial grasses: optimising biomass production – SICA

Call: FP7-KBBE-2011-5

Perennial grasses have better water and nitrogen use efficiencies as compared to traditional biomass crops and cover the soil for 15-20 years. Several studies highlight their positive

environmental impact compared to annual crops in terms of CO₂ and energy balance. Perennial grasses are thus an ideal plant system for allowing the generation of novel varieties of plants that show higher productivity with existing inputs and stable productivity with reduced inputs while focussing on the use of marginal land, thus avoiding competition with areas used for food production. New grass varieties are needed to address the challenge of climate change and to allow a longer sowing period. The generation of early emergence plants will reduce the use of pesticides and increase the biomass yield in the first year of cultivation, especially on marginal lands.

The aim of the project is to tackle specific bottlenecks, such as homogeneous ripening to permit a timed harvest, along the whole gramineae-based production chain. In order to improve biomass density and to reduce losses due to high moisture content during storage and transport, the project will improve characteristics of biomass by increasing capacity for rapid drying. Specific issues such as osmotic regulation (guard cell function), senescence or regulation of metabolite degradation may also be considered. Adapting grasses to possible adverse environmental conditions encountered on marginal lands (e.g. salinity, water deficits) should be included.

Funding Scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs) for Specific Cooperation Actions dedicated to International Cooperation.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SICA - Minimum number of participants: 2 from different Member States or Associated countries and 2 from different ICPCs.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information:

- The project will take into account environmental sustainability criteria for grassland management and protection, and will fully adhere to relevant national and international regulations for biodiversity preservation.
- Up to 3 projects may be funded.

Expected impact: The project will allow the generation of perennial crops, with a higher yield within an optimised production system, while at the same providing a stable source of biomass and new plant-derived bioproducts, and exploiting the potential of underutilised marginal lands. Optimised production of raw materials from agriculture as resources for added-value products will contribute to more sustainable socio-economical and environmental performance. Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. It is considered that participation of relevant partners from India and/or China and/or Russia should add to the expected impact of the research to be undertaken.

Area 2.3.2 Marine and fresh-water biotechnology (blue biotechnology)

The economic and scientific potentials of aquatic environments (principally marine but including freshwater also) remain insufficiently explored using the power that modern biotechnology provides. Moreover, their resources remain largely untapped by European industry. Extreme or specific environmental conditions (e.g. in temperature, pressure, salt content, pH, chemical composition) and the enormous biodiversity of these ecosystems offer multiple opportunities for bio-prospecting, exploitation and use of microbes (e.g. cyanobacteria, fungi), plants (micro- and macro-algae) and animals (e.g. fish, molluscs, sponges) and their physiological performance and genes. This can lead to novel products or sources for industrial applications (e.g. bio-processing, biomass, bio-energy, bio-materials, specialties, pharmaceuticals, and aquaculture) and beyond.

KBBE.2011.3.2-01: Marine biotechnology ERA-NET preparatory action

Call: FP7-KBBE-2011-5

Cooperation between European research funding bodies in the area of Marine Biotechnology started in FP7 under the umbrella of the KBBE-NET high-level group. Building upon this group's conclusions, the overall aim of the CSA is to provide the basis for a successful forum for the exchange of information between Member States, and initiate the process of identifying research complementarities, thus creating a basis for developing future joint, transnational calls. The consortium should expand the partnership of the previous KBBE-NET Marine biotechnology working group to include more funding agencies of the different member states. In addition, complementarities with established and developing, relevant European initiatives are sought, including establishing interactions with relevant ERA-NETs and ETPs across the marine and relevant sectors. It is expected that the opportunity for future global initiatives in the of area marine biotechnology will also be analysed.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. It is expected that this proposal will consolidate the basis for further coordination efforts in the area of Marine Biotechnology; seek for complementarities between national activities, and start pooling resources for funding and implementing future research activities in a synergistic manner.

OCEAN-2011-2: - Marine microbial diversity – New insights into marine ecosystems functioning and its biotechnological potential

Call: FP7-OCEAN-2011

For the full topic text and further information, please refer to the description of the OCEAN-2011-2 call under Area 2.1.5 and the OCEAN-2011-2 Call fiche.

Area 2.3.3 Industrial biotechnology: novel high added-value bio-products and bio-processes

This area will address the development and application of industrial biotechnology for the production of high-value products such as fine and speciality chemicals, antibiotics, vitamins, detergents, etc. Industrial biotechnology enables industries to deliver novel products which cannot be produced by conventional industrial methods; in addition it will make possible replacing chemical processes by more resource efficient biotechnological methods with reduced environmental impact, thereby extending and strengthening the KBBE.

Research and development will enable among others the discovery of novel enzymes and micro-organisms with novel applications, the elucidation and optimisation of their functions, improvements in concept and design of bioreactors, such as biocatalytic process design, advancing fermentation science and engineering, and improving up- and down-stream processing where relevant.

KBBE.2011.3.3-01: Deepened and enlarged European cooperation in the area of Industrial Biotechnology - ERA-NET⁴³

Call: FP7-ERANET-2011-RTD

Cooperation between European research funding bodies in the area of industrial biotechnology started in FP6 under the ERA-NET umbrella (ERA-IB), providing a successful forum for the exchange of information between Member States and, importantly, for setting-up joint, transnational calls. The proposed network of National Funding Bodies in the area of Industrial Biotechnology will build upon the previous ERA-IB and capitalise on its achievements such as the establishment of principles and mechanisms for the evaluation of joint calls and for the management of transnational projects.

The overall aim of the network is to further increase the level of coordination between European research funding bodies in the area of Industrial Biotechnology, seeking complementarities between national activities, and pooling resources to undertake joint funding of transnational projects. Research collaborations shall serve to tackle scientific and industrial challenges and to better integrate and rationalise existing infrastructures, such as genetic, genomic and bioinformatics resources. These collaborations will address the important role of industrial biotechnology for the conversion of renewable resources into bio-based products. The network must seek to expand the previous ERA-IB membership to include new funding bodies from other Member States in the frame of the enlarged European Union.

In setting priorities for the network's activities it is important that complementarity with other FP7 initiatives is sought and that interactions are established with related ERA-NETs and ETPs.

Funding scheme: Coordination and Support Action (coordinating action).

⁴³ This topic is subject to FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, special eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 to the Cooperation Programme.

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Workprogramme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. It is expected that further coordination efforts in the area of industrial biotechnology will consolidate the initiated process of identifying major research needs, extending the partnership, pooling resources for funding, and implementing research activities in a synergistic manner. Ultimately, the cooperation shall lead to a self-sustainable and long-lasting network of programme managers in the area of industrial biotechnology, enabling the translation of information gained from innovative fundamental research into social, environmental, geographical and economic benefits. The European added value lies in supporting and enhancing the ERA in the field of industrial biotechnology. The project should contribute to realising the objectives of environmental and innovation policy initiatives, such as the Lead Market in Bio-based products, the Environmental Technology Action Plan, and the EU Strategy for Key Enabling Technologies.

KBBE.2011.3.3-02: Biocatalysis for chiral compounds

Call: FP7-KBBE-2011-5

Biocatalysis is becoming a key element in the toolbox of the process chemist. In particular, biocatalytic transformations are particularly promising in areas such as pharmaceuticals and agrochemicals where target molecules are selective and complex, frequently resulting in multiple chiral centres. While expensive new chiral chemocatalysis is becoming available, the unique properties of biocatalysts offer a green alternative with reduced use of organic solvents, efficient use of reagents and elimination of metal catalysts.

The objective of this topic is to enlarge the range of biocatalytic procedures available for selective biotransformation. The proposal should aim at the discovery and/or improvement and application in industrial conversions of stereo-specific robust enzymes that enable the controlled synthesis of only one of the possible stereo-isomers (100% yield). Consideration will be given to lyases, enzymes that cleave important chemical bonds, and which could be used in 100% routes. Other suitable enzymes for selective biotransformation may also be targeted. The proposal should reach proof-of-concept stage for targeted biotransformation for both the product and the process, and should assess the feasibility of scaling towards industrial needs.

The integration of chemistry, molecular biology, enzymology, microbiology and process development is essential to achieve the objective of the project. Molecular modelling techniques should be used to aid the prediction of stereochemical reactions and for insight into potential substrates or enzyme modifications with a view to increasing selectivity.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 6 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Enhancing the competitiveness and sustainability of the European chemical industry by replacing complex organic synthesis by cleaner biotransformation. Close research collaboration between the European chemical, intermediates pharmaceuticals and biotechnology industries, and leading research institutions will both reinforce the scientific and/or technological excellence and the industrial relevance and economic potential of the research. The development of synthetic processes with fewer steps, lower use of toxic reactants and solvents and efficient use of reagents, will improve efficiency. The project should contribute to realising the objectives of environmental and innovation policy initiatives, such as the Environmental Technology Action Plan and the EU Strategy for Key Enabling Technologies.

KBBE.2011.3.3-03: Cellular, metabolic and genetic engineering for novel compounds

Call: FP7-KBBE-2011-5

Metabolic engineering is being successfully implemented for the production of a wide range of natural compounds such as amino acids and organic acids. Genome sequencing efforts and recent advances in "omics" technologies and metabolic engineering have made possible the synthesis of compounds which do not occur naturally, such as is the production of 1,3-propanediol in *E. coli*.

The topic aims at the design of completely new pathways and/or networks with a focus on "new-to-nature" compounds. Gaps in the knowledge of cellular function and regulatory systems in cells must be filled. Special emphasis will be given to relevant operating conditions with the aim of creating new and robust production systems for industrially important metabolites. Catabolism of the compounds developed should also be assessed. Possible applications will be for the production of fine and bulk chemicals (e.g. new-to-nature and tailor-made biosurfactants) developed by extending the biosynthetic capabilities of the production strains beyond their natural synthesis. Careful consideration should be given to ethical issues and potential biosafety implications.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 2 projects may be funded.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Enlarging the application of industrial biotechnology for the production of novel industrial compounds. Increasing the competitiveness of the European biotechnology industry and end-use industrial sectors by developing new and robust microbial industrial production systems. The development of platform technologies is expected to enhance industry's capabilities for biotechnological applications. The project should contribute to realising the

objectives of environmental and innovation policy initiatives, such as the Environmental Technology Action Plan and the EU Strategy for key enabling technologies.

Area 2.3.4 Biorefinery

This area addresses the development and application of industrial biotechnologies for the conversion of renewable raw materials into sustainable and cost-efficient bulk bio-products (e.g. chemicals such as lactic acid, biopolymers), and/or bio-energy. Regarding biofuels, the focus will be on the development of second generation biofuels with improved energy and environmental balance and which avoid the potential food/fuel conflict.

Aiming at achieving integrated and whole crop use of the biomass, biorefineries can use a broad range of biomass feedstocks, ranging from dedicated agricultural, aquatic, forest biomass chains to residues/waste and by-products of biomass-based industrial sectors.

Emphasis will be on the discovery, characterisation and development of novel enzymes and strains with optimised biocatalyst and microbial function for improved production of energy and bioproducts; characterisation of the structure and composition of the feedstock for optimised pre-treatment and fractionation of the biomass into its components; development of improved bio-processes with increased yield, quality and purity through bioprocess design, process optimisation and integration as well as downstream processing; fermentation science and engineering. Environmental and social aspects will also be incorporated.

KBBE.2011.3.4-01: BioWASTE - Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts – SICA

Call: FP7-KBBE-2011-5

Industrial and municipal biowastes pose environmental risks while being an important potential feedstock resource for producing a wide range of bioproducts. The potential to exploit biowastes as raw materials for bioproducts/energy requires the application of new technologies to arrive at novel and economically viable solutions.

The objective of the project is to develop novel biotechnological processes for converting the biodegradable fraction of municipal solid waste or industrial biowastes into valuable bioproducts such as chemicals, biomaterials and nutraceuticals. The full armoury of genomics techniques may be brought to bear on the development of enzymatic and/or fermentation processes. Emphasis should be placed on biowaste streams which are produced in significant quantities at the European level. Proposed concepts should apply a cascading approach, giving priority to the transformation towards bioproducts but permitting a possible conversion to energy (e.g. through anaerobic digestion) at a later stage. For industrial wastes, the feasibility of the integration of the developed technologies into the existing processing chain should be assessed.

Demonstration activities aimed at proving the industrial relevance of the developed concept(s) should also be included. The project will address quantitative technological/economic viability analysis for the up-scaling of the developed technologies for industrial production. A dissemination plan should include a sound strategy for an effective transfer to the end users of the knowledge produced.

In order to avoid duplication with previous EU-funded research, agricultural and forestry residues are excluded from the scope of the topic.

Funding scheme: Collaborative Project (small or medium-scale focused research project targeted to SMEs) for Specific Cooperation Actions Dedicated to International Cooperation.

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SICA - Minimum number of participants: 2 from different Member States or Associated countries and 2 from different ICPCs.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 3 projects may be funded.

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Improving the overall sustainability of the biomass processing industry and increasing the competitiveness of the European biotechnology industry. The project will contribute to realising the objectives of environmental, socio-economic and industrial European policy initiatives, such as the Lead Market in Bio-based Products, the Environmental Technology Action Plan and the EU Strategy for key enabling technologies.

KBBE.2011.3.4-02: Towards a sustainable bio-industry - Biotechnology for renewable chemicals and innovative downstream processes

Call: FP7-KBBE-2011-5

Biotechnology has predominantly been applied to the production of complex chemicals (e.g. vitamins; antibiotics, amino acids and enzymes). The need to reduce the environmental footprint of producing and processing chemicals, as well as advances in biotechnological processes (e.g. increased productivities of fermentation) and extreme price fluctuation of fossil carbon sources, are driving the interest of the industry for the production of renewable chemicals. These can be precursors of today's synthetic organic chemicals or a resource for new functionalities and applications. Examples under research include ethanol, butanol, lactate, propanediol and succinate, and it is anticipated that further molecules will also become important.

To broaden the range of platform biochemicals produced by biotechnological routes, research is needed on aspects such as: (i) the design and optimisation of enzymatic synthesis for selected compounds; (ii) the selection/development of robust microorganisms with optimised metabolic pathways and adaptation to industrial conditions; (iii) the integration of biotechnological processes into existing production chains or into a "new chemistry" to be developed for the succeeding transformation chain; (iv) the development and integration of innovative technologies for product separation (e.g. selective product removal/*in-situ* product removal); (v) research into generic purification strategies, such as selective membrane, extraction, adsorption, and crystallization technologies.

The production of the selected chemical(s) and downstream processes employing innovative separation and purification technologies will be demonstrated at least to pilot scale in an integrated approach. Economic viability and eco-efficiency will be evaluated and assessed on a quantitative basis. The project will also address the technological/economic analysis for up-scaling the most promising candidate(s) to industrial production.

A dissemination and exploitation plan should include a sound strategy for an effective transfer to the public and end users of the knowledge produced, also taking into consideration potential opportunities for standardisation. The proposal should also include training activities such as the organisation of short courses, exchanges of staff, etc.

In order to avoid duplication with previous EU-funded research, the development of bioethanol, biobutanol, 3HPA and PDO are excluded from the scope of the project.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 9 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. Enhance the competitiveness and sustainability of European industries by substituting limited fossil resources by renewable ones and integrating cleaner bioprocesses into the production chains. Close research collaboration between the relevant European industries, process development firms and leading research institutions will both reinforce the scientific and/or technological excellence and the industrial relevance and economic, social and environmental potential of the research. The project will contribute to realising the objectives of environmental and industrial European policy initiatives, such as the Lead Market in Bio-based Products, the Environmental Technology Action Plan and the EU Strategy for key enabling technologies.

Area 2.3.5 Environmental biotechnology

The concept of the KBBE implies environmental sustainability which will be promoted through the development and application of modern biotechnology.

Research and development activities will provide solutions for sustainable processes and products as well as for preventing and cleaning-up pollution. This will comprise the application of biotechnologies for the design, manufacture and use of more environmentally benign products and processes as well as for applications such as bio-sensors, bio-remediation, waste treatment and recycling⁴⁴.

In addition, this area will also foster the application of modern biotechnology for the understanding of microbial biodiversity and ecology (e.g. bacterial cell-cell communication). This approach will expand the understanding on systematics and will lead to the unravelling of new genes, pathways etc. with the potential to enrich several of the biosynthetic domains of

⁴⁴ Where wastes can be regarded as feedstocks for bio-processing and biorefinery they shall be dealt with in the respective Areas (2.3.3 and 2.3.4).

biotechnology. It will also serve to the purpose of cataloguing and therefore preserving microbial diversity.

KBBE.2011.3.5-01: GM crops in the EU – systematically assessing environmental and economic impacts

Call: FP7-KBBE-2011-5

At the EU level, efforts are ongoing to accumulate data related to environmental risk assessment and post-market environmental monitoring (PMEM) of GMOs. The aim is to better integrate aspects related to specific agricultural ecosystems in the EU, to take account of conflicting results of the effects of GM crops on non-target organisms (NTO), currently obtained mainly in short-term studies, and to improve knowledge on potential long-term effects. Furthermore, data to support the assessment of the economic effects of cultivation of GMOs in the EU are fragmented and need more systematic analysis.

The project will: (i) establish current baseline conditions of different bio-geographic regions in Europe with regard to ecological aspects important for Environmental Risk Assessment/PMEM; and, (ii) tailor regional approaches to Environmental Risk Assessment/PMEM, taking into account the differences in the ecology of the agro-ecosystems. Baseline conditions shall comprise suitable bio-indicators (according to OECD and EEA standards) and the definition of regional protection goals (e.g. protected wildlife and habitats, and ecosystem functions).

Tangible outcomes should comprise: A) a network of EU representative sites for pre-market risk assessment and for long-term monitoring studies; B) a catalogue of selected indicator organisms, covering different ecological functions, being: (i) amenable for laboratory testing in eco-toxicological Environmental Risk Assessment of NTOs; (ii) suitable as surrogate or focal species for a wide range of NTOs in Europe; and, (iii) quantifiable in the field environment in European regions; and, C) a set of evaluated, standardised and harmonised sampling and testing methods, suitable for Environmental Risk Assessment and long-term monitoring. These outcomes should be verified by means of data collection derived from simultaneous field testing of GMO and regional non-GMO varieties (typical varieties, cropping practice), including isogenic conventional counterparts. The field trials should also serve as a basis for an economic analysis of the different agricultural practices investigated. The project shall contain suitable communication work plans to address current public concerns in the EU regarding GMO cultivation and in particular regarding relevant field trials. Organisation of summer schools for field trial training of e.g. early-career stage EU researchers should be included. Work from the update of the EFSA Guidance Document for Environmental Risk Assessment of GM plants as well as output of the EFSA working group on scientific cooperation shall be taken into account when designing the project.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Expected impact: Establishing a sound scientific system to identify and quantify environmental and economic impacts of GMOs will contribute to further eliminate current scientific and regulatory uncertainties in the EU. In view of the GMO development pipeline, this project is foreseen as a starting point for facilitating continued research on environmental and economic effects of GMO cultivation in comparison to other agricultural technologies and practices in the EU. The more comprehensive knowledge-base developed – including also clarifications on the risks of not using GMOs – will better support the decision making

process in the EU. Further efforts will need to be made by the MS and research programme managers to continuously update the current level of knowledge, particularly in line with upcoming decisions on GMO cultivation in the EU. Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union and Candidate Countries, enabling sufficient inclusion of various agricultural ecosystems throughout the EU. Participation of industrial partners, in particular SMEs, should contribute to achieving the expected impact.

Area 2.3.6 Emerging trends in biotechnology

Novel technologies and new trends in biotechnology will be instrumental for the rational advancement of the KBBE. Yet, not all future trends in enabling technologies and interdisciplinary research can be foreseen. However the potentials of e.g. meta-genomics, bioinformatics, systems biology, virtual cell, synthetic biology, and nano-biotechnology have become rather concrete. These and other fields deserve appropriate measures in terms of research and development to facilitate effective transfer and implementation into industrial applications.

KBBE.2011.3.6-01: Increasing the accessibility, usability and predictive capacities of bioinformatics tools for biotechnology applications

Call: FP7-KBBE-2011-5

The high-throughput revolution in the life sciences over the last decade has led to an ever expanding influx on “omics” (genomics, proteomics, etc) sequence data. Bioinformatics has opened the way towards the exploitation and use of this vast amount of biological data as a source of new biotechnological applications. However, to deliver its full potential, and to reduce the ever increasing gap between the massive influx of sequence data and the low rate of discovery of new biotechnological applications, new innovative bioinformatics approaches are needed. Among the main challenges these new approaches will face will be: the integration of databases; the need for increased interpretative and predictive capacity of data; and for taking account of the molecular complexity of living systems.

Proposals within this topic should focus on increasing the interpretative and predictive capacities of data as well as the navigating power of the bioinformatics tools. They should include the development and/or integration of application-oriented databases and could include innovative visualization methods, dedicated to integrative and synthetic representation of large and heterogeneous datasets. The proposals should seek multidisciplinary and involve biotechnology and/or bioinformatics companies at an early stage in the development. They should give due consideration to outreach activities e.g. accessibility of databases, dissemination and training of researchers in the effective interpretation and use of data. IPR issues, including the protection and management of the sensitivity of data, should also be included.

Funding Scheme: Collaborative Project (small or medium-scale focused research projects targeted to SMEs).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 3 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 25% or more of the total estimated EU contribution for the project as a whole. ***This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.***

Additional information: Up to 3 projects may be funded.

Expected impact: Better exploitation of existing databases, paving the way for new biotechnological applications in industrial, environmental, marine and plant biotechnology. The expected project results should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit.

KBBE.2011.3.6-02: Supporting the development of Bioinformatics Infrastructures for the effective exploitation of genomic data: Beyond health applications

Call: FP7-KBBE-2011-5

Bioinformatics tools for the effective exploitation of genomic data are of increasing importance across the KBBE. Recent efforts on the development of a pan-European bioinformatics infrastructure have been important but principally focused on health-related applications. It is of critical importance for maximising the utility of bioinformatics approaches for the KBBE that a balanced approach between health and non-health related applications is fostered from the earliest stages of the development of bioinformatics infrastructures. The aim of this topic is to support the KBBE bioinformatics stakeholders to coordinate, join efforts and feedback to the pan-European bioinformatics infrastructures on opportunities and priorities so to reinforce its exploitation beyond the health dimension.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Expected Impacts: It is expected that this proposal will reinforce the KBBE dimension within the pan-European bioinformatics infrastructure.

KBBE.2011.3.6-03: Towards standardisation in Synthetic Biology

Call: FP7-KBBE-2011-5

Some of the most relevant challenges that Synthetic Biology is facing are the definition, understanding and eventual cataloguing of *biological parts*. The issue at stake is to bring natural existing biological modules to the point of *context-independence*, which will be needed for serious engineering. This includes also the pursuit of a *consensus language* for describing biological functions in a quantitative format, as well as a good understanding of whether existing biological systems can be re-factored to be *orthogonal*. Only sufficient compliance with these standards will ensure that a designed element of the system has a high chance of re-utilisation. A successful project must take into consideration, besides the scientific/technical issues, training, ethics and safety.

Funding scheme: Collaborative Project (large-scale integrating project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 6 000 000.

Additional information: Interdisciplinary training is particularly important in synthetic biology because students not only require a detailed knowledge of their primary discipline and how it pertains to the field, but also a thorough grounding in the other scientific disciplines involved. In addition, they need to be fully conversant with the ethical, societal and economic issues, which are germane to synthetic biology. Applicants should adhere to the Opinion No 25 of the European Group on Ethics in Science and New Technologies to the European Commission "Ethics of Synthetic Biology".

Expected impact: A European project will create the appropriate platform for an international dialogue on standards, use and applications in Synthetic Biology. Participation of industrial partners, in particular SMEs, should contribute to achieving the expected impact.

KBBE.2011.3.6-04: Applying Synthetic Biology principles towards the cell factory notion in biotechnology

Call: FP7-KBBE-2011-5

The use of the Synthetic Biology approaches to engineer complex systems and redesign biological components towards cell factories will be a paradigm shift towards efficient and safe, engineered biotechnological applications. This effort should be based on attempts at using engineering principles like *orthogonality* and *hierarchy of abstraction* to assemble novel biological systems for the design of novel biomaterials or processes. The "cell factory" is a notion for the production of efficient and safe manufacturing of special fine, bulk, or fuel chemicals, biosensors for monitoring pollution or bioremediation tools to process contaminants. Risk analysis, training, ethical, legal and societal issues should be integral part of any proposal.

Funding scheme: Collaborative Project (small or medium-scale focused research project).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 3 000 000.

Additional information:

- Applicants should adhere to the Opinion No 25 of the European Group on Ethics in Science and New Technologies to the European Commission "Ethics of Synthetic Biology".
- Up to 2 projects may be funded.

Expected impact: Using technologies to develop engineered biological system by designing and constructing artificial micro-organisms for a given application will have an enormous potential for biotechnological applications and, thus, for European industry. Several applications can be envisioned in the fields of protein design and production, metabolic engineering, carbon fixation, biomass production, biocatalysis, biofuels and bioremediation. Participation of industrial partners, in particular SMEs, should contribute to achieving the expected impact.

KBBE.2011.3.6-05: Ensuring the safety of Synthetic Biology applications

Call: FP7-KBBE-2011-5

New technologies not only offer a wide range of useful applications but also potential for abuse, potentially have environmental and health impacts, and be subject to legal, patent, and intellectual property rights challenges. Safety and the development of efficient safeguards are paramount to society's acceptability of any new technology, in this case synthetic biology. Research, therefore, requires embedding a culture of safety in the development of synthetic biology and developing a system of good governance. This in turn calls for early identification of the possible hazards, knowledge of the potential adverse effects, measurement and control of exposures, and comprehensive risk assessments.

The project's main objectives will be (i) to identify and categorise hazards in function of their likelihood and potential seriousness in view of the main foreseeable developments and applications of Synthetic Biology; (ii) to formulate a conceptual framework for an early, systematic and comprehensive identification of potential hazards of Synthetic Biology; (iii) to develop appropriate tools and approaches for risk assessment; and, (iv) to develop an effective public dialogue.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 1 000 000.

Additional information: Applicants should adhere to the Opinion No 25 of the European Group on Ethics in Science and New Technologies to the European Commission "Ethics of Synthetic Biology" (17/11/2009).

Expected impact: Promotion of an ethically acceptable development of synthetic biology for the EU and, thus, the effective exploitation of such technology in the long-term.

KBBE.2011.3.6-06: Synthetic Biology– ERA-NET⁴⁵

Call: FP7-ERANET-2011-RTD

Synthetic biology aims to (re)engineer and study biological parts, devices and systems that do not exist as such in nature for better studying fundamental life processes, generating functional modular components and developing novel process technologies and applications. Recent activities in the KBBE-NET revealed a high interest of national funding bodies in enhancing existing and/or setting up new activities in close co-operation and co-ordination throughout Europe. A pro-active programming of a European Research Area in Synthetic Biology will contribute to increasing innovation and competitiveness of the biotechnology sector. The coordination of activities at this point in time will avoid the fragmentation of programmes and policies in the ERA and thereby overcome the fragmentation of ongoing research activities.

The aim of this ERA-NET is to provide the basis for a successful forum for the exchange of information between Member States, initiate the process of identifying research complementarities, and set up the basis for future joint transnational calls.

To reach this aim the first objective is to identify and link together existing national bodies responsible for research policies and funding in the field. The second objective is to develop

⁴⁵ This topic is subject to FP7-ERANET-2011-RTD call for ERA-NETs across the Themes. Complete information on funding scheme, special eligibility criteria and expected impact of ERA-NETs can be found in Annex 4 to the Cooperation Programme.

strategies to set up effective public funding schemes, to mobilise new sources of funding, and to coordinate existing and/or newly planned funding programmes at regional, national and European levels. Complementary features and synergies between the various national and European funding instruments should be explored. The strategies developed should take account of the different components of the knowledge triangle (research, education and training, and innovation and competitiveness of European industries and SMEs) as well as the ethical, legal, socio-economic and political implications and demands of synthetic biology. Standardisation issues and infrastructure development might be considered as well.

Funding scheme: Coordination and Support Action (coordinating action).

Eligibility and evaluation criteria: please refer to Annex 4 of the Cooperation Workprogramme including the Call Fiche "**FP7-ERANET-2011-RTD**".

Additional information: Applicants should adhere to the Opinion No 25 of the European Group on Ethics in Science and New Technologies to the European Commission "Ethics of Synthetic Biology".

Expected impact: Projects supported under this topic should lead to a greater integration of research actors and activities from across the enlarged European Union, and the candidate countries. It is expected that this proposal will consolidate the basis for coordination efforts in the area of Synthetic Biology; seeking complementarities between national activities and pooling resources for funding and implementing research activities in a synergistic manner.

Activity 2.4 Other Activities

KBBE.2011.4-01: Networking of KBBE relevant ERA-NETs

Call: FP7-KBBE-2011-5

More than 20 ERA-NETs have been set-up in FP6 and FP7 on a wide range of scientific subjects and disciplines relevant to the KBBE. While focusing on different scientific areas, they all work towards achieving a common goal of the transnational networking and coordination of national research programmes and address a number of horizontal issues, such as the mapping of existing research potential and foresight activities, the launching of joint calls and addressing the challenges of IPR rules and bioethical concerns. The topic aims to set a network of the coordinators of ERA-NETs in the KBBE relevant areas who based on their previous experiences and mutual learning will address issues of common interest including foresight activities, education and training needs, opportunities and strategies for international cooperation, communication and societal dialogue, synergies with other actors (i.e. ETPs). The project should foresee the inclusions of new ERA-NETs in KBBE area.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 500 000.

Expected impact: The network of KBBE relevant ERA-NETs shall through regular exchanges of views and the identification of best practices foster a more effective and harmonised environment for the ERA-NETs.

KBBE.2011.4-02: Support to European Commission (EC) activities related to international co-operation with Australia-Canada-New Zealand and with the USA

Call: FP7-KBBE-2011-5

The scope of this coordination action is to implement S&T co-operation activities in Food, Agriculture, Fisheries and Biotechnologies, under the umbrella of the following two Groups: 1) the EC-AU-CA-NZ cooperation initiative on Knowledge-Based Bio-economy and 2) the EC-US Task Force on Biotechnology (http://ec.europa.eu/research/biotechnology/ec-us/index_en.html). For each of these two groups, a set of specific activities should be planned according to the decisions by the respective cooperation initiative/Task Force. The overall objective should be to reinforce the links and optimise the synergies among the research activities carried out by the EU R&D programmes and the various counterpart programmes in these Third countries partners. Activities could include: i) Workshops (for foresight, priority setting and networking) ii) twinning of large sets of research projects/consortia from the counterparts' programmes, with meetings and exchanges of information, data, materials and methods; iii) short-term exchanges/visits of researchers; iv) joint training programmes, such as summer schools. Such activities could be in multilateral configurations. A link to the EU FP7 Theme 2 will be necessary to ensure cohesion at a European level and connections to both the EC-AU-CA-NZ cooperation initiative and the EC-US Task Force.

The budget for this project should cover the activities incurred in organising international events in Europe and cover participation costs of European participants in the events organised in Australia, Canada, New Zealand and the US.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 1 500 000.
- The duration of the proposals submitted under this topic shall be minimum of 3 years.

Expected impact: A wide co-ordination of research activities in the area of Food, Agriculture, Fisheries and Biotechnologies among the EU and major partners such as Australia, Canada, New Zealand and the US, would not only scale up the bilateral co-operations according to the S&T co-operation agreements with each of these countries, but would also foster the multilateral co-operation and broader international efforts, needed to tackle global challenges relevant to the Bio-Economy world-wide.

KBBE.2011.4-03: Communication of research results

Call: FP7-KBBE-2011-5

The support action aims to set up a network of communication officers/managers from projects funded under FP6 "Food quality and safety" and FP7 "Food, Agriculture and Fisheries, and Biotechnology" to exchange best practices, engage in joint communication activities to reach out to scientists, policy makers, SMEs and other stakeholders and users of the research results. Specific activities should be organised to communicate results to media and multipliers for addressing the general public. Young people and their educational needs should be also targeted. The activities will have to be geared as appropriate to the different target audiences taking into account the wide range of cultural perceptions in the EU.

The following activities should be considered:

- Creating network(s) of communication managers of FP6 and FP7 projects;
- Providing training to scientists in communicating and disseminating research results;
- Providing regular information to be posted on KBBE website;
- Preparing publications on success stories;
- Organisation of events and conferences on communication and knowledge transfer involving stakeholders named above.

Funding scheme: Coordination and support action (supporting action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 2 000 000.
- The duration of the proposals submitted under this topic shall be minimum of 3 years.

Expected Impact: Coordination and support action will increase and channel both in qualitative and in quantitative terms the information flow from research projects towards the target groups which include scientists, policy makers, industry and in particular SMEs and other stakeholders and users of the research results (including general public). Achievements of research results will be publicised and their impact on the quality of life of the citizens will be made understandable to non-specialists.

KBBE.2011.4-04: Energy Efficiency in Agriculture

Call: FP7-KBBE-2011-5

As a producer of sustainable and renewable energy and as a consumer of energy, the agricultural sector can significantly contribute to reduce GHG emissions. Moreover supporting energy production and energy efficiency will also enhance the overall efficiency of

the agro-forestry chain, cost-effectiveness, sustainability and market perspectives of agriculture.

Whilst R&D in the bioenergy sector is currently supported by an ERA-NET, R&D in energy efficiency in agriculture is in need of coordinated transnational support. A survey carried out by the SCAR/KBBE Collaborative Working Group on Agriculture and Energy reveals that energy efficiency research in agriculture is needed i.e. in the areas of Greenhouses, in livestock production, and farm houses.

A consortium of relevant institutions across Europe and from all areas relevant to the field of energy efficiency in agriculture shall team up in order to establish how and where to promote energy efficiency R&D in agriculture. The state-of-the-art in the countries shall be described, research need shall be outlined and a priorities list of most cost effective measures shall be compiled.

Issues to be addressed include: agriculture systems (clustering, glasshouses, agro-forestry), buildings (construction, animal husbandry, storage), processes of climate control, inputs (plant production, animal production), energy for agriculture machinery, logistics, waste/residuals, etc.

Funding Scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria: The requested European Union contribution shall not exceed EUR 500 000.

Expected impact: A significant reduction of GHG emissions from the agricultural sector will be reached by improving energy efficiency in agricultural processes. This is achieved by identifying those measures that achieve significant energy savings whilst being most cost-efficient. Also, longer term R&D needs are identified and a strategy for future transnational cooperation in energy efficiency R&D in agriculture is going to be established.

Generally speaking, the aim of the action will be to structure R&D cooperation in such a way that it facilitates taking agri-energy systems to a higher level. This shall contribute to the goals of the EU's climate package, namely increasing efficiency of primary energy production and reducing GHG emissions.

KBBE.2011.4-05: EU – India Partnering Initiative on biomass production and bio waste conversion through biotechnological approaches – Mandatory India

Call: FP7-KBBE-2011-5

The scope of this co-ordination action is to link the research activities carried out on one side by the EU research programmes (EU Framework Programmes and EU Member States' national programmes) and by related research programmes coordinated by Indian national institutions (e.g. Government of India, Ministry of Science and Technology: -DBT, Department of Biotechnology, -DST, Department of Science and Technology; CSIR, Council of Scientific and Industrial Research; ICAR, Indian Council of Agricultural Research). The targeted area concerns optimisation through biotechnological approaches of biomass for biomaterials and bioenergy production and sustainable conversion of biowastes. This should ensure a wide-range networking of the relevant scientific communities and stakeholders and the systematic establishment of linkages between the on-going research and innovation projects from the EU and India in this area. Participants should include public and private organisations that conceive and fund research programmes - both from India and the EU, including via ERA-NETs - and /or organisations who can ensure close links to them. A link

to the EU FP7 programme will be necessary to ensure cohesion at a European level. Also links to European Technology Platforms (ETPs⁴⁶) and to relevant international initiatives should be considered. Co-ordination of on-going activities from both sides could include a combination of: i) broad networking of the respective scientific communities (via meetings, workshops, etc); ii) twinning of large sets of research projects/consortia from the counterparts' programmes, with meetings and exchanges of information, data, materials and methods; iii) short-term exchanges/visits of researchers and iv) joint training programmes, such as summer schools. Furthermore this co-ordination action should also lead to a concerted planning of future research initiatives in these areas.

Funding scheme: Coordination and Support Action (coordinating action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 1 000 000.
- Minimum number of participants: 3 from different Member States or Associated Countries and 1 from India.
- The duration of the proposals submitted under this topic shall be up to 3 years.

Additional information: The Department of Biotechnology (DBT) of the Ministry of Science and Technology intends to support and/or carry out mirroring and complementary actions. The cooperation with these complementary actions should be reflected in the proposal and will be considered in the evaluation of the proposal. For the European side, key participants are the EU Member States' ministries and their national research organisations running relevant R&D programmes, also via ERA-NETs and in connection with the SFIC (Strategic Forum for International S&T Cooperation⁴⁷). Equally, for India, the participation of governmental bodies / national agencies / organisations managing national R&D programmes is essential.

Expected impact: A wide co-ordination of research activities in this area from the EU and India, which are both major players in these fields, would not only scale up the EU-India collaboration, according to the EU-India S&T co-operation agreement, but also contribute to broader international efforts. This EU-India Partnership is expected to contribute to the broader context of the SFIC EU-India pilot initiative, to strengthen cohesion of the EU Member States towards strategic S&T co-operation with India.

KBBE.2011.4-06: Bio-Economy Promotion

Call: FP7-KBBE-2011-5

The Knowledge Based Bio -Economy stakeholders and/or related networks are invited to organise Europe wide promotion activities in relation to the Commission's Communication on the Bio-Economy Strategy 2020 (planned adoption date: July 2011). The aim is to commit different stakeholders at national, regional and European level (stakeholders in science and education, politics, administrations, industry in bio-economy related sectors) to engage in an interactive debate with their target audiences across Europe to promote understanding of the Bio-Economy. The activities could involve conferences, workshops, debates, competitions, etc. The activities should address different target groups and discuss the potential impact Bio-Economy on daily lives and work, also in the perspective of global challenges and of local

⁴⁶ http://ec.europa.eu/research/biosociety/kbbe/platforms_en.htm

⁴⁷ OJ C18 of 24.1.2009, pp. 11-13

and regional economic and social conditions. Special activities could aim at the young generation, in particular high school students and university students to stimulate their interest and mobilise their talent for building the Bio-Economy. Topics to be addressed could include climate change and primary production, food security, food and health and well being, greening of the industry and the potential of sustainable growth.

Funding scheme: Coordination and Support Action (supporting action).

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 1 000 000.
- The duration of the proposals submitted under this topic shall be minimum 2 years.

Expected impact: Activities at the national and European level will raise awareness of different target groups on the challenges and opportunities of the bio-economy.

III IMPLEMENTATION OF CALLS

Call title: KBBE 2011: general call for proposals

- **Call identifier:** FP7-KBBE-2011-5
- **Date of publication⁴⁸:** 20 July 2010
- **Deadline⁴⁹:** 25 January 2011 at 17.00.00 (Brussels local time)
- **Indicative budget⁵⁰:** EUR 240.27 million from 2011 Budget

The budget for this call is indicative. The final budget awarded to actions implemented through calls for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

Activity	Indicative amount (EUR million)
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments	93.11
Activity 2.2: Fork to farm: Food (including seafood), health and well being	70.08
Activity 2.3: Life sciences, biotechnology and biochemistry for sustainable non-food products and processes	70.58
Activity 2.4: Other activities	6.5

Activity/ Area	Topics called	Funding Schemes and additional eligibility criteria
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments		
2.1.1	<i>KBBE.2011.1.1-01: Promoting conifer genomic resources</i>	- Collaborative Project (large-scale integrating project) - Max. requested EU contribution/proposal: EUR 6 000 000

⁴⁸ The Director General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁴⁹ The Director-General responsible may delay this deadline by up to two months.

⁵⁰ Under the condition that the draft budget 2011 is adopted without modifications by the Budgetary Authority

2.1.1	<i>KBBE.2011.1.1-02: Integrated approach to studying effects of combined biotic and abiotic stress in crop plants</i>	- Collaborative Project (small or medium-scale focused research project targeted to SMEs) - Max. requested EU contribution/proposal: EUR 3 000 000 - 15% of EU contribution to SMEs
2.1.1	<i>KBBE.2011.1.1-03: Efficiency of ruminant digestive systems and reduction of the ecological footprint through a combination of systems biology, 'omics' and nutrition</i>	- Collaborative Project (large-scale integrating project) - Max. requested EU contribution/proposal: EUR 6 000 000
2.1.1	<i>KBBE.2011.1.1-04: Sustaining and managing forest tree genetic resources</i>	- Collaborative Project (small or medium-scale focused research project) - Max. requested EU contribution/proposal: EUR 3 000 000
2.1.2	<i>KBBE.2011.1.2-01: Sustainable management of agricultural soils in Europe for enhancing food and feed production and contributing to climate change mitigation</i>	- Collaborative Projects (small or medium-scale focused research project) - Max. requested EU contribution/proposal: EUR 3 000 000
2.1.2	<i>KBBE.2011.1.2-02: Reducing mineral fertilisers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products</i>	- Collaborative Project (small or medium-scale focused research project targeted to SMEs) - Max. requested EU contribution/proposal: EUR 3 000 000 - 20% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-03: Development of cover crop and mulch systems for sustainable crop production</i>	- Collaborative Project (small or medium-scale focused research project targeted to SMEs) - Max. requested EU contribution/proposal: EUR 3 000 000 - 15% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-04: Translating knowledge on flowering time to improve breeding efficiency</i>	- Collaborative Projects (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -20% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-05: Root signalling, growth and development under abiotic stress conditions</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -10% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-06: Strategies to replace copper-based products as plant protection products in low input and organic farming systems</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -20% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-07: Preserving the multifunctionality of European Mountain forests</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000

		-15% of EU contribution to SMEs
2.1.2	<i>KBBE.2011.1.2-09: Beyond Maximum Sustainable Yield (MSY) in fisheries: defining management targets and their consequences</i>	-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 5 000 000 - 15% of EU contribution to SMEs -The duration of the proposals submitted under this topic shall be 4 years
2.1.2	<i>KBBE.2011.1.2-10: Socio-economic effects of the main management principles of the future Common Fishery Policy (CFP): impact of new policy framework and opportunities for the fishing sector to develop self- and co-management</i>	- Collaborative Project (small or medium-scale focused research project targeted to SMEs) - Max. requested EU contribution/proposal: EUR 3 000 000 - 15% of EU contribution to SMEs - The duration of the proposals submitted under this topic shall be 3 years
2.1.2	<i>KBBE.2011.1.2-11: Aquaculture feeds and fish nutrition: paving the way to the development of efficient and tailored sustainable feeds for European farmed fish</i>	- Collaborative Project (large-scale integrating project targeted to SMEs) - Max. requested EU contribution/proposal: EUR 6 000 000 - 15% of EU contribution to SMEs - The duration of the proposals submitted under this topic shall not be less than 4 years
2.1.3	<i>KBBE.2011.1.3-01: New/next generation of researchers for Neglected Zoonoses at the animal-human interface – Mandatory ICPC</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 2 000 000 -15% of EU contribution to SMEs -Minimum number of participants: 3 from different MS or AC and 3 from different ICPC (of which at least 2 from Africa)
2.1.3	<i>KBBE.2011.1.3-02: Development of field tests for rapid screening of pathologies as well as simple laboratories tests in animals</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -50% of EU contribution to SMEs
2.1.3	<i>KBBE.2011.1.3-03: European interprofessional network addressing zoonotic diseases transmitted via companion animals</i>	-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 000 000
2.1.3	<i>KBBE.2011.1.3-04: Management and control of increased livestock helminths parasite infection risks due to global changes</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -15% of EU contribution to SMEs
2.1.3	<i>KBBE.2011.1.3-06: Development of next generation European</i>	-“Research for the benefit of SMEs” -Max. requested EU contribution/proposal: EUR

	<i>system for cattle evaluation</i>	3 000 000 - Minimum number of participants: 3 independent SME participants, established in 3 different Member States of Associated countries and 2 RTD performers ⁵¹ (independent from any other participant).
2.1.4	<i>KBBE.2011.1.4-02: Strengthening the impact of fisheries related research through dissemination, communication and technology transfer</i>	-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 000 000
2.1.4	<i>KBBE.2011.1.4-03: Feasible and cost-effective crop-specific coexistence measures</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -15% of EU contribution to SMEs
2.1.4	<i>KBBE.2011.1.4-04: The CAP and landscape management</i>	-Collaborative Project (small or medium-scale - focused research project) -Max. requested EU contribution/proposal: EUR 1 500 000
2.1.4	<i>KBBE.2011.1.4-05: Data network for better European organic market information</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 1 500 000 -15% of EU contribution to SMEs
2.1.4	<i>KBBE.2011.1.4-06: Towards land management of tomorrow – Innovative forms of mixed farming for optimized use of energy and nutrients</i>	-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -25% of EU contribution to SMEs
2.1.4	<i>KBBE.2011.1.4-07: Role of aquaculture in improving food security and eradicating poverty worldwide – Mandatory ICPC</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 1 000 000 -Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPCs. -Eligible ICPCs for the implementation of the project: LIFDCs (http://www.fao.org/countryprofiles/lifdc.asp), ICPCs with high aquaculture contribution to

⁵¹ As defined in Art. 2 (18) of Regulation (EC) No 1906/2006 of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme (FP7) and for the dissemination of research results.

		<i>their GDP, ICPCs with high numbers of small-scale aquaculture farmers operating, ICPCs with high international trade in fish products, in particular important exporters to EU. According to the partnership, a strong and clear synergy with relevant national and/or international initiatives may be required.</i>
Activity 2.2: Fork to farm: Food (including seafood), health and well being		
2.2.1	<i>KBBE.2011.2.1-01: Strategies for improving communication between social and consumer scientists, food technology developers and consumers</i>	<i>-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 000 000</i>
2.2.2	<i>KBBE.2011.2.2-01: Development of functional foods and ingredients</i>	<i>-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 6 000 000 -35% of EU contribution to SMEs</i>
2.2.2	<i>KBBE.2011.2.2-02: New technologies and tools and their potential application to nutrition research</i>	<i>-Collaborative Project (large-scale integrating project) -Max. requested EU contribution/proposal: EUR 6 000 000</i>
2.2.2	<i>KBBE.2011.2.2-03: Long-term influence of early nutrition on health</i>	<i>-Collaborative Project (large-scale integrating project) -Max. requested EU contribution/proposal: EUR 9 000 000</i>
2.2.2	<i>KBBE.2011.2.2 -04: Translation mechanisms for targeting interventions on micro-nutrients – Mandatory South Asia and South East Asia</i>	<i>-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 2 000 000 -Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPC from South Asia⁵² and South East Asia⁵³.</i>
2.2.3	<i>KBBE.2011.2.3-01: Sustainable cleaning and disinfection technologies</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -35% of EU contribution to SMEs</i>
2.2.3	<i>KBBE.2011.2.3-02: Food Factory of the Future – Design Study</i>	<i>-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 2 000 000</i>
2.2.3	<i>KBBE.2011.2.3-03: Advanced and flexible technologies for</i>	<i>-Collaborative Project (small or medium scale focused research project targeted to SMEs)</i>

⁵² South Asia: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka

⁵³ South East Asia: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, Vietnam

	<i>active, intelligent and sustainable food packaging</i>	<i>-Max. requested EU contribution/proposal: EUR 3 000 000 -35% of EU contribution to SMEs</i>
2.2.3	<i>KBBE.2011.2.3-04: Satiety control through food structures made by novel processing</i>	<i>-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 6 000 000 -35% of EU contribution to SMEs</i>
2.2.3	<i>KBBE.2011.2.3 -05: Processed foods with lower salt, fat and sugar content</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -35% of EU contribution to SMEs</i>
2.2.4	<i>KBBE.2011.2.4-01: Safety and quality of ready-to-eat foods</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -35% of EU contribution to SMEs</i>
2.2.4	<i>KBBE.2011.2.4-02: Pan-European Total Diet Study</i>	<i>-Collaborative Project (large-scale integrating project) -Max. requested EU contribution/proposal: EUR 6 000 000</i>
2.2.5	<i>KBBE.2011.2.5-01: Environmental sustainability in the European food and drink chain</i>	<i>Collaborative Project (small or medium-scale focused research project targeted to SMEs) Max. requested EU contribution/proposal: EUR 3 000 000 35% of EU contribution to SMEs</i>
2.2.5	<i>KBBE.2011.2.5-02: Reducing post-harvest losses for increased food security - SICA</i>	<i>-Collaborative Project (small or medium-scale focused research project) for Specific Cooperation Actions dedicated to International Cooperation -Max. requested EU contribution/proposal: EUR 3 000 000 -Minimum number of participants: 3 from different Member States or Associated countries and 3 from different ICPC.</i>
2.2.5	<i>KBBE.2011.2.5-03: Food science and the retail sector: a platform for preparing the effective integration of research findings within innovative concepts and applications</i>	<i>-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 000 000</i>
Activity 2.3: Life sciences, biotechnology and biochemistry for sustainable non-food products and processes		
2.3.1	<i>KBBE.2011.3.1-01: Plant photosynthetic efficiency: from a C3 to a C4 system</i>	<i>-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 9 000 000 -25% of EU contribution to SMEs</i>
2.3.1	<i>KBBE.2011.3.1-02: Perennial</i>	<i>-Collaborative Project (small or medium-scale</i>

	<i>grasses: optimising biomass production – SICA</i>	<i>focused research project targeted to SMEs) for Specific Cooperation Actions dedicated to International Cooperation -Max. requested EU contribution/proposal: EUR 3 000 000 -SICA - Minimum number of participants: 2 from different Member States or Associated countries and 2 from different ICPCs. -25% of EU contribution to SMEs.</i>
2.3.2	<i>KBBE.2011.3.2-01: Marine biotechnology ERA-NET preparatory action</i>	<i>-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 1 000 000</i>
2.3.3	<i>KBBE.2011.3.3-02: Biocatalysis for chiral compounds</i>	<i>-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 6 000 000 -25% of EU contribution to SMEs</i>
2.3.3	<i>KBBE.2011.3.3-03: Cellular, metabolic and genetic engineering for novel compounds</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -25% of EU contribution to SMEs</i>
2.3.4	<i>KBBE.2011.3.4-01: BioWASTE – Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts – SICA</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) for Specific Cooperation Actions Dedicated to International Cooperation -Max. requested EU contribution/proposal: EUR 3 000 000 -SICA – Minimum number of participants: 2 from different Member States or Associated countries and 2 from different ICPCs -25% of EU contribution to SMEs</i>
2.3.4	<i>KBBE.2011.3.4-02: Towards a sustainable bio-industry – Biotechnology for renewable chemicals and innovative downstream processes</i>	<i>-Collaborative Project (large-scale integrating project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 9 000 000 -25% of EU contribution to SMEs</i>
2.3.5	<i>KBBE.2011.3.5-01: GM crops in the EU – systematically assessing environmental and economic impacts</i>	<i>-Collaborative Project (large-scale integrating project) -Max. requested EU contribution/proposal: EUR 6 000 000</i>
2.3.6	<i>KBBE.2011.3.6-01: Increasing the accessibility, usability and predictive capacities of bioinformatics tools for biotechnology applications</i>	<i>-Collaborative Project (small or medium-scale focused research project targeted to SMEs) -Max. requested EU contribution/proposal: EUR 3 000 000 -25% of EU contribution to SMEs</i>
2.3.6	<i>KBBE.2011.3.6-02: Supporting the development of Bioinformatics Infrastructures</i>	<i>-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR</i>

	<i>for the effective exploitation of genomic data: Beyond health applications</i>	1 000 000
2.3.6	<i>KBBE.2011.3.6-03: Towards standardisation in Synthetic Biology</i>	-Collaborative Project (large-scale integrating project) -Max. requested EU contribution/proposal: EUR 6 000 000
2.3.6	<i>KBBE.2011.3.6-04: Applying Synthetic Biology principles towards the cell factory notion in biotechnology</i>	-Collaborative Project (small or medium-scale focused research project) -Max. requested EU contribution/proposal: EUR 3 000 000
2.3.6	<i>KBBE.2011.3.6-05: Ensuring the safety of Synthetic Biology applications</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 1 000 000
Activity 2.4: Other activities		
2.4.1	<i>KBBE.2011.4-01: Networking of KBBE relevant ERA-NETs</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 500 000
2.4.2	<i>KBBE.2011.4-02: Support to European Commission (EC) activities related to international co-operation with Australia-Canada-New Zealand and with the USA</i>	-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 500 000 -The duration of the proposals submitted under this topic shall be minimum 3 years.
2.4.3	<i>KBBE.2011.4-03: Communication of research results</i>	-Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 2 000 000 -The duration of the proposals submitted under this topic shall be minimum 3 years.
2.4.4	<i>KBBE.2011.4-04: Energy Efficiency in Agriculture</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 500 000
2.4.4	<i>KBBE.2011.4-05: EU – India Partnering Initiative on biomass production and biowaste conversion through biotechnological approaches – Mandatory India</i>	-Coordination and Support Action (coordinating action) -Max. requested EU contribution/proposal: EUR 1 000 000 -Minimum number of participants: 3 from different Member States or Associated Countries and 1 from India -The duration of the proposals submitted under this topic shall be up to 3 years.
2.4.4	<i>KBBE.2011.4-06: Bio-Economy Promotion</i>	- Coordination and Support Action (supporting action) -Max. requested EU contribution/proposal: EUR 1 000 000

		- <i>The duration of the proposals submitted under this topic shall be minimum 2 years.</i>
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- **Eligibility conditions**

- The general eligibility criteria are set out in Annex 2 to this work programme, and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- Standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation, apply to all topics, **unless indicated otherwise in the table above:**

Funding scheme	Minimum conditions
Collaborative Projects	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Collaborative Project for specific cooperation actions (SICA) dedicated to international cooperation partner countries	At least 4 independent legal entities. Of these, 2 must be established in different MS or AC. The other 2 must be established in different international cooperation partner countries (ICPC)
Coordination and Support Actions (coordinating action)	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC
Coordination and Support Actions (supporting action)	At least 1 independent legal entity
Research for the benefit of SMEs	At least 3 SME participants (from 3 different Member States or Associated countries) and 2 RTD performers ⁵⁴ (independent from any other participant)

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and minimum number of eligible participants.

Evaluation procedure

- The evaluation criteria and scoring scheme are set out in Annex 2 to the work programme.

⁵⁴ As defined in Art. 2 (18) of Regulation (EC) No 1906/2006 of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme (FP7) and for the dissemination of research results : " *'RTD performer'* means a legal entity carrying out research or technological development activities in funding schemes for the benefit of specific groups as identified in Annex III to Decision No 1982/2006/EC".

- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.
 - The Commission will instruct the experts to disregard any pages exceeding these limits.
 - The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
- Experts will carry out the individual evaluation of proposals remotely.
- The procedure for prioritising proposals with equal scores is described in annex 2 of the work programme.

It is envisaged that **up to one project** may be retained for each topic, except for the topics indicated below:

Topic number	Topic title	Maximum number of proposals
KBBE.2011.1.2-01	Sustainable management of agricultural soils in Europe for enhancing food and feed production and contributing to climate change mitigation	Up to 2 projects may be funded
KBBE.2011.1.2-02	Reducing mineral fertilisers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products	Up to 2 projects may be funded
KBBE.2011.1.2-05	Root signalling, growth and development under abiotic stress conditions	Up to 2 projects may be funded
KBBE.2011.1.4-06	Towards land management of tomorrow – Innovative forms of mixed farming for optimized use of energy and nutrients	Up to 2 projects may be funded
KBBE.2011.2.3-03	Advanced and flexible technologies for active, intelligent and sustainable food packaging	Up to 3 projects may be funded.
KBBE.2011.2.3-05	Processed foods with lower salt, fat and sugar content	Up to 2 projects may be funded
KBBE.2011.2.4-01	Safety and quality of ready-to-eat foods	Up to 3 projects may be funded
KBBE.2011.2.5-01	Environmental sustainability in the European food and drink chain	Up to 2 projects may be funded
KBBE.2011.2.5-02	Reducing post-harvest losses for increased food security — SICA	Up to 2 projects may be funded

		funded
KBBE.2011.3.1-02	Perennial grasses: optimising biomass production – SICA	Up to 3 projects may be funded
KBBE.2011.3.3-03	Cellular, metabolic and genetic engineering for novel compounds	Up to 2 projects may be funded
KBBE.2011.3.4-01	BioWASTE – Novel biotechnological approaches for transforming industrial and/or municipal biowaste into bioproducts – SICA	Up to 3 projects may be funded
KBBE.2011.3.6-01	Increasing the accessibility, usability and predictive capacities of bioinformatics tools for biotechnology applications	Up to 3 projects may be funded
KBBE.2011.3.6-04	Applying Synthetic Biology principles towards the cell factory notion in biotechnology	Up to 2 projects may be funded

- There may be competition between proposals submitted on different topics and proposals submitted on the same topic. This may result in some topics not being supported. A reserve list may be produced of projects that pass the evaluation but fall below the available budget in case additional budget becomes available.
- **Indicative timetable:** Evaluation results: three months after the relevant deadline mentioned above. Grant agreement signature: it is estimated that the first grant agreements related to this call will come into force at the end of 2011.
- **Consortia agreements:** Participants in Collaborative Projects (large scale integrating projects) are required to conclude a consortium agreement. For other projects consortia agreements are recommended.
- **The forms of grant and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
- **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.
- **Additional information concerning twinning of projects under Theme 2 and related programmes in third countries:** with a view to promoting international cooperation with third countries that have signed bilateral S&T agreements with the European Union, initiatives for collaboration between projects under Theme 2 of FP7 and related research programmes in these third countries will be encouraged on the basis of mutual benefit and reciprocity. The Commission reserves the right to ask the coordinators of FP7 projects, during the grant agreement negotiations, to include collaboration activities with projects financed by these third countries. The costs of these activities are expected to be

approximately 1% of the total European Union contribution to these projects. Parallel funding is expected from the related research programmes in the third countries for counterpart projects.

- For the topics which have a percentage of EU contribution going to SMEs as an eligibility criterion, the following aspects will be considered under the 'Implementation' criterion:
 - Proposals are expected to have a substantial involvement of SMEs;
 - The proposals will be selected for funding only if a percentage of EU contribution going to SMEs, as indicated in each topic and in the call fiche, is met. This will be checked definitively at the end of any negotiation.

CALL FICHE

Call title: "The ocean of tomorrow"

- **Call identifier:** FP7-OCEAN-2011
- **Date of publication**⁵⁵: 20 July 2010
- **Deadline:** 18 January 2011 at 17.00.00, Brussels local time⁵⁶
- **Indicative budget**⁵⁷: EUR 45 million from the 2011 budget of which:
 - EUR 14 million from Theme 2 – Food, Agriculture and Fisheries, and Biotechnology (KBBE)
 - EUR 5 million from Theme 5 – Energy
 - EUR 16 million from Theme 6 – Environment (including climate change)
 - EUR 10 million from Theme 7 – Transport (including Aeronautics)

The budget for this call is indicative. The final budget awarded to actions implemented through this call for proposals may vary:

- The final budget of the call may vary by up to 10% of the total value of the call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

- **Topics called**

The four topics of 'The ocean of tomorrow' call are implemented jointly by the Themes 2, 5, 6 and 7 mentioned above and have identical descriptions under each Theme.

⁵⁵ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

⁵⁶ The Director-General responsible may delay this deadline by up to two months.

⁵⁷ Under the condition that the draft budget for 2011 is adopted without modification by the budgetary authority.

<p align="center">Theme / Activity / Area implementing jointly 'The ocean of tomorrow' Location of the call and topics descriptions</p>	<p align="center">Topics called</p>	<p align="center">Funding Scheme</p>
<p>Theme 2 – Food, Agriculture and Fisheries, and Biotechnology Area 2.1.5 Call "The ocean of tomorrow"– Joining research forces to meet challenges in ocean management</p> <p>Theme 5 – Energy Area ENERGY.10.1 Call "The ocean of tomorrow" – Joining research forces to meet challenges in ocean management</p> <p>Theme 6 – Environment (including climate change) Area 6.2.2.2 Call "The ocean of tomorrow" – Joining research forces to meet challenges in ocean management</p> <p>Theme 7 – Transport (including Aeronautics) Activity 7.2.8 Call "The ocean of tomorrow" - Joining research forces to meet challenges in ocean management</p>	<p>OCEAN.2011-1 Multi-use offshore platforms</p>	<p>Collaborative Project</p> <p>Max requested EU contribution per proposal: EUR 14 000 000</p>
	<p>OCEAN.2011-2 Marine microbial diversity – new insights into marine ecosystems functioning and its biotechnological potential</p>	<p>Collaborative Project (large scale integrating project)</p> <p>Max requested EU contribution per proposal: EUR 9 000 000</p>
	<p>OCEAN.2011-3 Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance</p>	<p>Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries</p> <p>Max requested EU contribution per proposal: EUR 13 000 000</p>
	<p>OCEAN.2011-4 Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea</p>	<p>Collaborative Project (large scale integrating project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries</p> <p>Max requested EU contribution per proposal: EUR 9 000 000</p>

- **Eligibility conditions**

- The general eligibility criteria are set out in Annex 2 to this work programme, and in the Guide for Applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- The following additional eligibility criterion applies in this call:
The requested EU contribution shall not exceed the indicative budget for the topic chosen (see table displayed above).
- Standard minimum number of participating legal entities for all funding schemes used in the call, in line with the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative Project	At least 3 independent legal entities, each of which is established in a MS or AC, and no 2 of which are established in the same MS or AC

- **For the following topics, additional eligibility criteria apply, over and above the criteria stated above:**

TOPICS	Particular requirements
OCEAN.2011-3: Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance	SICA - Minimum number of participants: 3 from different Member States or Associated countries and 4 from different ICPC, among which at least 2 from the Mediterranean Partner Countries and at least 2 from the ICPC countries of the EU Black Sea Synergy ⁵⁸ .
OCEAN.2011-4: Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea	

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

- **Evaluation procedure**

- The evaluation criteria and scoring scheme are set out in Annex 2 to the work programme.
- Proposal page limits: applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS.

The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).

The Commission will instruct the experts to disregard any pages exceeding these limits.

⁵⁸ COM (2007) 160: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine

- The evaluation shall follow a single stage evaluation procedure. Proposals will be evaluated remotely with the consensus session being held in Brussels.
- The result of the evaluation will be one ranked list per topic. The number of proposals that can be funded per topic is limited as follows:

Topic number	Indicative budget per topic	Maximum number of proposals
OCEAN.2011-1	EUR 14 000 000	Up to three projects may be funded.
OCEAN.2011-2	EUR 9 000 000	Up to one project may be funded.
OCEAN.2011-3	EUR 13 000 000	Up to one project may be funded.
OCEAN.2011-4	EUR 9 000 000	Up to one project may be funded.

A reserve list of projects will be established to be used in case the negotiation for entering into a grant agreement fails.

Evaluation criteria and threshold:

Proposals are evaluated on the basis of the following three criteria: 1. S/T quality; 2. Implementation; 3. Impact. For each criterion marks will be given, with the possibility of 0.5 point scores. Successful proposals must pass the minimum thresholds as follows:

	Minimum threshold
S/T quality	3/5
Implementation	3/5
Impact	3/5
Overall threshold required	10/15

Proposals with equal overall scores will be prioritised according to their scores for the S/T quality criterion. If they are still tied, they will be prioritised according to their scores for the Impact criterion.

The following points will be reflected in the evaluation:

- The multi-disciplinary approach of the research undertaken is essential to address the topic. It will be considered during the evaluation of the criterion related to "S/T quality".
- The multi-sectoral composition of the partnership and the participation of industrial partners and relevant end-users, in particular SMEs, are essential for the implementation of the project. It will be considered during the evaluation of the criterion related to "Implementation".

- **Indicative evaluation and contractual timetable**

- Evaluation results: four months after the relevant deadline mentioned above.
- Grant agreements signature: it is estimated that the first grant agreements related to this call will come into force at the end of 2011.

- **Consortia agreements**

Participants are required to conclude a consortium agreement prior to grant agreement.

- **The forms of grant and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Cooperation work programme.
- **Flat rates to cover subsistence costs:** In accordance with Annex 3 to this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

IV. OTHER ACTIONS⁵⁹

Evaluations:

Appointed external experts will be used for the evaluation of project proposals

Indicative budget: EUR 1 700 000

Funding scheme: Coordination and Support Action for the appointment of evaluators

Monitoring and review:

- *Review of projects:*

Appointed independent experts will review FP-6 and FP-7 projects.

Indicative budget: EUR 500 000

Funding scheme: Coordination and Support Action for the appointment of expert-reviewers

Actions implemented through public procurements, expert groups and grants to named beneficiaries:

Study on 'Forward looking activities to support the identification of grand challenges and the corresponding priorities for research and innovation in the food area'

The study should assist the European Commission in building vision and analysis about the future of societal issues in the food sector, including the identification of future European research issues. Forward looking activities should address future evolution of social, economical, cultural, environmental, scientific, technological and policy dimensions of the societal issues in the area of food research. It should particularly support the Joint Programming Initiative on "A Healthy Diet for a Healthy Life. The tasks developed would involve forward looking analysis, impact assessment, and scenarios combining socio-economic and science and technology foresight and forecast. It will also identify the main drivers and potential tensions linked to the societal issues and the elaboration of scenarios describing possible futures. It should also include an analysis of strengths and weaknesses of EU food research in the ERA context and in relation to the "Grand Challenges" developed by the JPI "A healthy diet for a healthy life". Participatory approaches should be used to ensure validation and discussion of results with the main stakeholders in the field.

Indicative budget: EUR 200 000

Funding scheme: Coordination and Support Action — public procurement; framework contract; estimated publication date: second half of 2010

⁵⁹ In accordance with Articles 14, 17 and 27 of Regulation (EC) No 1906/2006 of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme and for the dissemination of research results (2007-2013).

- **Groups of independent experts**

Expert group will be invited to provide recommendations for future trends and challenges of the bio-economy.

Indicative budget: EUR 100 000

Funding scheme: *Coordination and Support Action for the appointment of expert group members*

Expert group will be invited to provide recommendations for future trends and challenges in the field of food traceability.

Indicative budget: EUR 50 000

Funding scheme: *Coordination and Support Action for the appointment of expert group members*

- **Conferences/events:**

Foresight Stakeholder Conference – A stakeholder conference will be organised to disseminate the findings and reflect upon the long-term research needs from the SCAR 3rd Foresight analysis under the foresight signalling and monitoring mechanism set up by SCAR.

Indicative budget: EUR 150 000

Funding scheme: *Coordination and Support Action - public procurement, estimated date: first semester 2011*

- **Grants to named beneficiaries:**

Subject	Max. requested EU contribution
<p>European Conference on ‘Food and Nutrition in the 21st Century’ under the Polish Presidency (second half of 2011)</p> <p>Grant to:</p> <p>Research Institute of Pomology and Floriculture</p> <p>ul. Pomologiczna 18</p> <p>PL-96-100 Skierniewice</p> <p><i>Expected impacts: The main objective of the conference is to review the research and innovation challenges the European agri-food sector is confronted with as regards competitiveness, demographic developments, and diet-related and lifestyle changes.</i></p>	80 000

Funding scheme: *Coordination and Support Action — Identified beneficiary*

V BUDGET

Indicative budget for the 'Food, Agriculture and Fisheries, and Biotechnology' Theme for 2011 (EUR million)⁶⁰:

Call-KBBE-2011-5	240.27
Call FP7-OCEAN-2011	14.00
Call-ERANET-2011-RTD (cf Annex 4)	12.00
General activities (cf Annex 4)	3.12
Other actions <ul style="list-style-type: none">• Evaluations (1.70)• Monitoring and reviews (0.50)<ul style="list-style-type: none">- Review of projects (0.50)• Actions implemented through public procurements, expert groups and grants to named beneficiaries (0.58)<ul style="list-style-type: none">- Study "Forward looking activities to support the identification of grand challenges and the corresponding priorities for research and innovation in the food area" (0.20)- Expert groups (0.15)- Conferences/events (0.15)- Grants to named beneficiaries (0.08)	2.78
Estimated total budget	272.17

Summary Budget allocation to general activities for 2011 (cf Annex 4) (EUR million):

CORDIS	0.48 ⁶¹
Eureka/Research Organisations	0.02
COST	2.56
Strategically oriented support actions	0.03
Cooperation with non-University Research	0.02

⁶⁰ Under the condition that the draft budget 2011 is adopted without modifications by the Budgetary Authority

⁶¹ This amount is reserved to support the CORDIS activities in 2011. The exact content of the CORDIS activities in 2011 will be specified through an update of Annex 4 to the Cooperation work programme at a later stage.

Performing Organisations	
Experts (evaluators & reviewers)	0.01
TOTAL:	3.12

All budgetary figures given in this work programme are indicative. The final budgets awarded to actions implemented through calls for proposals may vary by up to 10% of the total value of the indicated budget for each call.

For actions not implemented through calls for proposals:

- The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions;
- The final budget awarded for all other actions not implemented through calls for proposals may vary by up to 10% of the indicated budget for these actions.