

WORK PROGRAMME 2007

COOPERATION

THEME 2

FOOD, AGRICULTURE AND FISHERIES, AND BIOTECHNOLOGY

(European Commission C(2007)560 of 26.02.07)

Changes to the cooperation Work Programme: Food, Agriculture and Fisheries, and Biotechnology

This work programme is an update with respect to the provisional version adopted on the 21 December 2006. The majority of changes are minor typographical corrections. The more substantive modifications are as follows:

p11 – the title of topic KBBE-2007-1-3-08 has been amended by the deletion of the word “food-borne” in order to make it coherent with the text of the topic on page p23.

p23 – The call reference of topic KBBE-2007-1-3-07 has been corrected to FP7-KBBE-2007-2A, in line with the call fiche.

p64 – the title of topic KBBE-2007-1-3-08 has been amended by the deletion of the word “food-borne” in order to make it coherent with the text of the topic on page p23.

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Theme 2: Food, Agriculture and Fisheries, and Biotechnology

Objective:

Building a European *Knowledge Based Bio-Economy*¹ 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 contexts and response to specific dietary needs of consumers.

I CONTEXT

I.1 Policy context

Renewable biological resources are the basis of a European knowledge based bio-economy (food, feed, agriculture, forest based, fisheries, aquaculture, biochemistry, etc.) that today has an estimated annual turn-over of more than €1500 million. The increasing demand for biological resources, both in quantity and quality, can only be met through innovation and advancement of knowledge in the sustainable management, production and use of these biological resources (micro-organism, plants and animals)². This programme brings together all relevant actors (appropriate research disciplines and industrial sectors, farmers, forest owners, consumers, etc.) to develop the basis for new, sustainable, safer, affordable, eco-efficient³ and competitive products. In line with the European strategy on life sciences and biotechnology⁴ and the Lisbon objectives, this will help increase the competitiveness of European agriculture and biotechnology, seed and food companies, in particular high tech SMEs, while improving social welfare and well-being and reducing environmental footprints.

The research will also provide the knowledge base needed to support the Common Agricultural Policy; the EU Forest Strategy and the Forestry Action Plan; agriculture and trade issues; the Community Animal Health Policy; safety aspects of GMOs; the Development Policy and the Common Fisheries Policy reform aiming to provide sustainable development of fishing and aquaculture.

Research into the safety of food and feed chains, diet-related diseases, food choices and the impact of food and nutrition on health will help to fight diet-related disorders (e.g. obesity, allergies) and infectious diseases (e.g. transmissible spongiform encephalopathies, avian-flu, bluetongue), while making important contributions to the implementation of existing, and the formulation of future, policies and regulations in the area of public, animal and plant health and consumer protection.

¹ The term "bio-economy" includes all industries and economic sectors that produce, manage and otherwise exploit biological resources (and related services, supply or consumer industries), such as agriculture, food, fisheries and other marine resources, forestry, etc.

² For clarity, resources are considered broadly: Animals include fish; plants include trees; food includes seafood, etc.

³ Eco-efficient products are less polluting and less resource-intensive in production, and allow a more effective management of biological resources.

⁴ http://ec.europa.eu/comm/biotechnology/introduction_en.html

Research into non-food applications of biological resources will support objectives of the Environmental Technology Action Plan (ETAP)⁵, as well as the biomass action plan⁶ and the European biofuel strategy⁷.

I.2 Approach

This work programme describes the research topics for the calls for proposals launched in December 2006 and May 2007. It provides, for each topic, a description of the technical content and scope of the research, any specific participation requirements (if appropriate) and the related expected impact. Two main calls will be open in 2007: The first call (Call 1) will use the 2007 budget and, for the second call (Call 2A) it is planned to use part of the 2008 budget⁸. The remaining 2008 budget will be used for Call 2B, which will be published in the 2008 work programme. The titles of indicative topics for Call 2B are given in this work programme for information only – *please note that the content for call 2B will be reviewed during the preparation of the next work programme and these indicative topics may be amended or deleted, and new topics may be added.*

All three activities and all areas within these activities are open in the 2007 calls. In view of the wider scope of this Theme as compared to thematic priority 5 "Food quality and safety" of the sixth Framework Programme (FP6) and the more limited financial resources available in the first few years of the seventh Framework Programme (FP7), the focus is on topics that a) cover new areas, as compared to FP6, or b) are a necessary continuation or follow-up of previously funded European projects⁹, and/or c) are of high priority and European added value in terms of recent policy developments.

There will be a strong focus in Call 1 on (i) small collaborative projects, (small or medium-scale focused research actions) where needs in terms of competitiveness or policy support are more tangible and targeted and where clear impacts can be achieved through shorter term projects, and (ii) on small preparatory actions (Coordination & Support Actions – CSA), which will, *inter alia*, identify and lay the ground for priority actions in later calls. All proposals, including large collaborative projects, (large scale integrating projects) and Networks of Excellence, will be evaluated under the one-stage procedure in Call 1.

Call 2A covers exclusively large collaborative projects and Networks of Excellence, which will be evaluated through a two-stage submission procedure.

Small collaborative projects (“small or medium-scale focused research actions”) are projects with a requested Commission contribution up to € 3 million¹⁰, large collaborative projects (“large-scale integrating projects”) and Networks of Excellence between € 3 million and € 6 million and Coordination and Support Actions (CSA) up to € 1 million.

⁵ <http://ec.europa.eu/comm/environment/etap/>

⁶ http://ec.europa.eu/energy/res/biomass_action_plan/index_en.htm

⁷ http://ec.europa.eu/agriculture/biomass/biofuel/index_en.htm

⁸ An amount for the 2008 budget may be added, for which a new financing decision to cover the budget for that year will be requested at the appropriate time.

⁹ <http://cordis.europa.eu/food/home.html>

¹⁰ In general, projects supporting policy through a study-type approach will be significantly less than this – applicants should ensure that the budget is appropriate to the work carried out.

It is important to note that the above mentioned funding thresholds will be applied as eligibility criteria and that the proposals not fulfilling these thresholds are considered as ineligible.

The forms of the grants to be used for the funding schemes under this work programme are given in Annex 3. Further information on funding schemes can be found in the relevant “Guide for applicants” published for this call.

For all calls of this work programme, in general only one project will be retained per topic, unless indicated otherwise. However, there will be competition between topics, and some proposals may fail to be of a sufficient standard to be funded so that some topics may not be supported.

The content of the research topics selected for the calls in 2007 is based on the input received from the Advisory Group and the Programme Committee of this Theme, the Standing Committee for Agricultural Research (SCAR) & the Advisory Committee for Fisheries and Aquaculture (ACFA), on external inputs from the research community and interested organisations¹¹, expert workshops, outputs from conferences, studies, analysis of ongoing research, policy needs, etc. The strategic research agendas (SRA) of the European Technology Platforms¹² relevant to Theme 2 have been taken into account in defining the priorities for this work programme.

A significant part of this Theme provides research in support to policy, the topics of which have been identified in cooperation with the relevant policy directorates of the Commission, and in response to recent policy developments.

Coordination of national research programmes in the current work programme will be limited to support new activities in strategically important areas. Potential funding for the continuation or widening of current ERA-NET activities (ERA-NET plus) will be addressed in later work programmes, and following a thorough analysis of the on-going projects and experiences with joint calls.

In preparing proposals, applicants should consider the horizontal issues addressed in the general introduction and the following aspects, which are of particular relevance to Theme 2:

- ***SME relevant research***

The work programme of this Theme is designed to attract industrial participants, in particular SMEs. These might be: end-users of new technologies (such as breeding companies, SMEs or agricultural cooperatives involved in the production, packaging or control of foods or feeds, etc); technology providers (mainly engineering companies) or technology-based biotechnology companies (agricultural or industrial biotechnology). It is expected that SMEs are involved in all relevant research projects that aim to support the competitiveness of European industries, in particular those dealing with the concrete industrial application of new technologies or research results, or the development of industrially relevant technologies.

¹¹ Amongst others the European Food Safety Authority, the International Council for the Exploration of the Sea – ICES, the European Fisheries & Aquaculture Research Organisations – EFARO.

¹² Plants for the Future; Sustainable Farm Animal Breeding and Reproduction; Global Animal Health; Food for Life; Forest-based Sector; Biofuels; the Industrial Biotechnology section of the Sustainable Chemistry Platform

• **International Cooperation**

International cooperation with participants from third countries is supported and encouraged throughout all areas of this Theme, and all topics are open to cooperation with third countries. In addition, a series of “Specific International Co-operation Actions” (SICA) will be dedicated to international co-operation with partners from International Cooperation Partner Countries (ICPC) – see Annex 1– to jointly address, on the basis of mutual benefit, problems of shared interest, or that third countries face or that have a global character. Firstly, co-operation with ICPC will be supported, taking into account their needs with a view to contribute to the UN Millennium Development Goals of eradicating extreme poverty and hunger and to ensure environmental sustainability. Secondly, Specific International Co-operation Actions on commonly agreed priorities will be undertaken with major partner regions and countries - particularly those involved in bi-regional dialogues and bilateral S&T agreements as well as European neighbourhood countries and emerging economies. Thirdly, multilateral co-operation actions involving broad international consortia of industrialised, emerging and developing countries world-wide will be carried out to address either challenges requiring broad international efforts (such as the dimension and complexity of systems biology in plants and micro-organisms) or to address global challenges and EU international commitments (e.g. international standards for food quality and safety and drinking water, global spread of animal diseases, equitable use of biodiversity). The priorities for actions have been identified in close cooperation with stakeholders from these regions and countries (Mediterranean, Russia, Balkan, etc.) through specific workshops. The SICA will ensure continuity with the international scientific cooperation activities from previous framework programmes. SICA will build upon the progress and achievements of the past, fostering synergies with the different activities across the Theme.

In order to help international partners identify relevant topics, a list of all SICA topics and those relevant to international cooperation covered by this 2007 work programme is provided at the end of this introduction.

• **Cross-thematic approaches**

Because bio-, nano- and information technologies have an interdisciplinary character, they contribute to different industrial sectors and policy objectives. Synergy and complementarity are apparent amongst the activities described in this work programme under its various Themes when technologies, industrial sectors or policies covered by one Theme build on technologies or contribute to industrial or policy objectives of another Theme (such as health, environment, energy, transport).

This Theme engages in research activities that contribute to the wider objectives of, or are complementary to research in, other Themes of the Cooperation programme. The development of this work programme has taken place in close consultation and interaction between the Themes to ensure synergy and complementarity. This applies, *inter alia*, to research in the areas of:

1. Systems biology/bioinformatics – relevant to Theme 1 "Health" and Theme 3 "ICT".
2. Factors impacting health – relevant to Theme 1 "Health".
3. Biodiversity and its sustainable exploration for the production of biological resources – relevant to Theme 6 "Environment", which deals with the conservation of biodiversity and natural resources.

4. Novel biotechnology approaches and improved biotechnologies for the production of bioenergy/biofuels - relevant to biofuels/bioenergy activities under Theme 5 "Energy" and Theme 6 "Transport".
5. Novel biotechnology approaches and improved biotechnologies for the production of renewable biomaterials – relevant to biomaterials research under Theme 4 "Nanosciences, Nanotechnologies, Materials and new Production Technologies".
6. Actions that focus on risk perception and communication, understanding of consumer behaviour and on wider stakeholder dialogue, including civil society organisations – relevant to “Science and Society” aspects.

In addition, research and technology development relevant to this Theme may be carried out under other Themes, in particular those of Theme 1 (basic biological processes, system biology, bioinformatics, biotechnological tools and processes, etc.), Theme 3 (development and/or application of ICT tools relevant to this Theme), Theme 4 (development and/or applications of nanotechnologies and nano-materials relevant to this Theme, i.e. in the area of food packaging) and Theme 10 "space" (space based observation and monitoring systems).

Finally, other specific programmes (“Ideas”, “People” and “Capacities”) may also have application to the areas and topics within this Theme, such as frontier research supported through the European Research Council.

Potential applicants should therefore consult other work programmes to identify opportunities that best cover their research interests and areas of expertise.

- ***Dissemination actions***

The dissemination and transfer of knowledge is a key added value of European research actions, and consortia should propose appropriate measures to increase the use of results by industry, policy makers and society.

Strengthening the competitiveness of the European food, agriculture, fisheries and biotechnology sectors is an important objective of this priority Theme, with particular attention being given to innovation aspects and broad participation of SMEs. Innovation-related aspects need to be clearly addressed and well-defined dissemination and exploitation plans presented, showing the optimal use of project results.

Dissemination will be considered an integral task of each project and consortia are encouraged to involve all relevant stakeholders (for example consumer and patient organisations, farmers, cooperatives, animal welfare organisations, ethicists, lawyers) in research projects from the very beginning of a proposal and actively engage in public dialogue. It will provide at the European level a bottom-up approach to help the process of consensus-forming around the development and use of new scientific and technological developments.

Within this work programme, a number of topics specifically address knowledge transfer and dissemination activities and activities aimed at engagement of the public.

- ***Integration of ethical, social, economic and wider cultural aspects.***

Experts in ethics, law, economy and social sciences are encouraged to participate actively in research projects. This trans-disciplinary collaboration should ensure that due account is taken of the ethical and societal concerns, our obligations towards future generations and the rest of

the world as well as the potential economic impact at the earliest possible stage of new developments arising from the research. This may include the integration of foresight activities from previous FPs.

- ***Participation of women and gender aspects in research***

The pursuit of scientific knowledge and its use in service to society requires the talent, perspectives and insight that can only be assured by increasing diversity in science and the technological workforce. Therefore, an equal representation of women and men at all levels in research projects is encouraged.

Gender aspects in research have a particular relevance to this Theme as risk factors, biological mechanisms, behaviour, causes, consequences, management and communication of diet related disease and disorders may differ in men and women. Furthermore, roles and responsibilities, the relationship to the resource base (land management, agricultural and forest resources etc) and the perception of risk and benefits may have a gender dimension. Applicants should systematically address whether, and in what sense, sex and gender are relevant in the objectives and in the methodology of projects.

I.3 Other activities

- **National Contacts Points (NCP) for the Theme 2 "Food, Agriculture and Fisheries, and Biotechnology"**

A Network of National Contact Points is instrumental for helping access to FP7 calls, and to lower the entry barrier for newcomers and raise the average quality of submitted proposals. A topic for supporting a trans-national NCP network through a coordination and support actions is included in the first call of 2007.

- **Risk-Sharing Finance Facility (RSFF)**

In addition to direct financial support to participants in RTD actions, the Community will improve their access to private sector finance by contributing financially to the 'Risk-Sharing Finance Facility' (RSFF) established by the European Investment Bank (EIB).

The Community contribution to RSFF will be used, by the Bank, in accordance with eligibility criteria set out in the Work Programme 'Co-operation' (horizontal issues). RSFF support is not conditional on promoters securing grants resulting from calls for proposals described herein, although the combination of grants and RSFF-supported financing from EIB is possible.

In accordance with the Specific Programme 'Cooperation' which stipulates that the Community contribution to RSFF will be funded by *proportional contributions of all Themes, except Socio-economic Sciences and the Humanities*, the Commitment Appropriations for this Theme to RSFF in 2007 will be EUR 9.53 million. This amount will be committed entirely in 2007.

The use of the Community Contribution from the Specific Programme 'Cooperation' will be on a 'first come, first served' basis and will not be constrained by the proportional contribution of Themes.

Further information on the RSFF is given in Annex 4 of this work programme.

- **Monitoring, Evaluation and Impact Assessment**

The Theme “Food, Agriculture and Fisheries, and Biotechnology” will comply with the prevailing requirements for monitoring, evaluation, and impact assessment. This may involve studies and surveys (implemented through public procurement) as well as appointing experts or groups of experts. It will include the ex-post impact assessment of relevant activities under the 6th Framework Programme and studies of the longer term impact of Community funding of research in related areas/disciplines/sectors, including from previous Framework Programmes.

List of Specific International Cooperation Actions and those relevant to international cooperation

1) Specific International Co-operation Actions (SICA)

<i>Topic number</i>	<i>Call</i>	<i>Full Title</i>	<i>Funding Scheme</i>	<i>Third Countries (type/region and minimum number requested)</i>
<i>KBBE-2007-1-2-01</i>	<i>FP7-KBBE-2007-1</i>	<i>Annual Food crops with improved tolerance to multiple abiotic stresses</i>	<i>Small collaborative project - SICA</i>	<i>Mediterranean (2)</i>
<i>KBBE-2007-1-2-11</i>	<i>FP7-KBBE-2007-1</i>	<i>Improving research in support to scientific advice to fisheries management outside EU waters</i>	<i>Coordination and support action -SICA</i>	<i>ICPC (3)</i>
<i>KBBE-2007-1-2-12</i>	<i>FP7-KBBE-2007-1</i>	<i>Consolidate alliances with third countries in the field of aquaculture</i>	<i>Coordination and support action -SICA</i>	<i>ICPC (3)</i>
<i>KBBE-2007-1-3-09</i>	<i>FP7-KBBE-2007-2A</i>	<i>Neglected zoonoses in developing countries: integrated approach for the improvement of their control in animals</i>	<i>Large collaborative project - SICA</i>	<i>ICPC (4)</i>
<i>KBBE-2007-2-1-02</i>	<i>FP7-KBBE-2007-1</i>	<i>Developing research tools for food consumer science in the Western Balkan Countries</i>	<i>Small collaborative project - SICA</i>	<i>Western Balkans (2)</i>
<i>KBBE-2007-2-2-03</i>	<i>FP7-KBBE-2007-1</i>	<i>Malnutrition in developing countries</i>	<i>Large collaborative project - SICA</i>	<i>ICPC (3), low-income and lower-middle-income countries</i>
<i>KBBE-2007-2-5-05</i>	<i>FP7-KBBE-2007-2A</i>	<i>Reduce contamination by mycotoxins in the food and feed chain</i>	<i>Large collaborative project - SICA</i>	<i>ICPC (3)</i>
<i>KBBE-2007-3-3-03</i>	<i>FP7-KBBE-2007-1</i>	<i>Animal By-Products - Novel methods of treatment of animal by-products for the production of substances with biologically valuable functional properties</i>	<i>Small collaborative project - SICA</i>	<i>Russia (2)</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Improved agro-forestry systems for sustainable farming</i>	<i>(- SICA)</i>	<i>ICPC (with a special focus on the poorest countries)</i>

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<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Valorisation of Andean microbial biodiversity for agro-industry of basic crops, for environmental protection and as a source of novel bioactive compounds</i>	<i>(- SICA)</i>	<i>Latin America (Andean Region)</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Methodologies and tools to support the prevention of obesity in Mediterranean Partner Countries</i>	<i>(- SICA)</i>	<i>Mediterranean</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Linking with international databases on food composition and consumption</i>	<i>(- SICA)</i>	<i>ICPC</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Functional foods, natural products and bioactive compounds from the Black Sea region</i>	<i>(- SICA)</i>	<i>Black Sea Region</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Sweet Sorghum - Alternative energy crops for biofuel production in semi-arid and temperate regions</i>	<i>(- SICA)</i>	<i>Latin America and Africa</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Industrial Enzymes - Rational design of biocatalysts and enzyme systems with requested properties</i>	<i>(- SICA)</i>	<i>Russia</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Bagasses – Improved chemical and enzymatic treatments of bagasses from energy crops, for increased bio-fuels production yields</i>	<i>(- SICA)</i>	<i>Latin America and ACP</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Plants as Edible Vaccines</i>	<i>(- SICA)</i>	<i>Russia</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Network of Third Countries National Information Points</i>	<i>(- SICA)</i>	<i>ICPC and countries with EU bilateral agreements</i>

2) Other topics with an important international co-operation dimension

Topic number	Call	Full Title	Funding Scheme	Third Countries (mentioned / encouraged)
<i>KBBE-2007-1-1-05</i>	<i>FP7-KBBE-2007-2A</i>	<i>Using new technologies to identify (re-) emerging pathogens from wildlife reservoirs</i>	<i>Large collaborative project</i>	<i>All Third Countries, including ICPC</i>
<i>KBBE-2007-1-2-02</i>	<i>FP7-KBBE-2007-1</i>	<i>Genomics for cereal improvement for food, feed and non-food uses</i>	<i>Large collaborative project</i>	<i>ICPC</i>
<i>KBBE-2007-1-2-06</i>	<i>FP7-KBBE-2007-1</i>	<i>Developing new methods for valuing and marketing of currently non-marketable forest goods and services</i>	<i>Small collaborative project</i>	<i>ICPC</i>
<i>KBBE-2007-1-2-07</i>	<i>FP7-ERANET-2007-RTD</i>	<i>Coordination of Agricultural Research in the Mediterranean</i>	<i>Coordination and support action; ERA-NET</i>	<i>Mediterranean</i>
<i>KBBE-2007-1-2-09</i>	<i>FP7-KBBE-2007-1</i>	<i>From capture based to self-sustained aquaculture</i>	<i>Small collaborative project</i>	<i>ICPC</i>
<i>KBBE-2007-1-2-13</i>	<i>FP7-KBBE-2007-1</i>	<i>Mitigating adverse impacts of fisheries</i>	<i>Small collaborative project</i>	<i>ICPC</i>
<i>KBBE-2007-1-2-14</i>	<i>FP7-KBBE-2007-1</i>	<i>The structure of fish populations and traceability of fish and fish products</i>	<i>Small collaborative project</i>	<i>ICPC</i>
<i>KBBE-2007-1-2-15</i>	<i>FP7-KBBE-2007-2A</i>	<i>Reducing the utilisation of mineral fertilisers by improving the efficiency</i>	<i>Large collaborative project</i>	<i>ICPC</i>

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		<i>of nutrient use in European crops</i>		
<i>KBBE-2007-1-3-05</i>	<i>FP7-KBBE-2007-1</i>	<i>Evaluating and controlling the risk of African Swine Fever in the EU</i>	<i>Small collaborative project</i>	<i>ICPC, Africa</i>
<i>KBBE-2007-1-3-06</i>	<i>FP7-KBBE-2007-1</i>	<i>Emerging vector-borne diseases, in particular: West Nile fever, Rift Valley Fever and Crimean-Congo haemorrhagic fever</i>	<i>Coordination and support action</i>	<i>Relevant Third Countries</i>
<i>KBBE-2007-1-3-08</i>	<i>FP7-KBBE-2007-2A</i>	<i>Improved epidemiological tools for zoonoses: application of geographical information for live animals and animal products</i>	<i>Network of excellence</i>	<i>Leading third countries, in particular the USA</i>
<i>KBBE-2007-1-4-01</i>	<i>FP7-KBBE-2007-1</i>	<i>Developing the knowledge-based bio-economy</i>	<i>Coordination and support action</i>	<i>ICPC</i>
<i>KBBE-2007-1-4-05</i>	<i>FP7-KBBE-2007-1</i>	<i>Enlargement network - Agro-economic policy analysis of the accession and the candidate states and the Western Balkan countries</i>	<i>Coordination and support action</i>	<i>Western Balkans</i>
<i>KBBE-2007-1-4-08</i>	<i>FP7-KBBE-2007-1</i>	<i>Drivers and limits of enhanced trade in agriculture and food products</i>	<i>Small collaborative project</i>	<i>Third countries</i>
<i>KBBE-2007-1-4-09</i>	<i>FP7-KBBE-2007-1</i>	<i>Trade and agricultural policies - India</i>	<i>Small collaborative project</i>	<i>India</i>
<i>KBBE-2007-1-4-10</i>	<i>FP7-KBBE-2007-1</i>	<i>Containment of Sharka virus in view of EU-expansion</i>	<i>Small collaborative project</i>	<i>Western Balkans</i>
<i>KBBE-2007-1-4-12</i>	<i>FP7-KBBE-2007-1</i>	<i>Policy and institutional aspects of sustainable agriculture, forestry and rural development in the Mediterranean partner countries</i>	<i>Small collaborative project</i>	<i>Mediterranean</i>
<i>KBBE-2007-1-4-21</i>	<i>FP7-KBBE-2007-1</i>	<i>Interactions of fisheries and aquaculture of bluefin tuna (BFT)</i>	<i>Coordination and support action</i>	<i>Mediterranean</i>
<i>KBBE-2007-2-5-04</i>	<i>FP7-KBBE-2007-2A</i>	<i>Sustainability of the food chain</i>	<i>Network of Excellence</i>	<i>Third countries, especially ICPC</i>
<i>KBBE-2007-3-1-01</i>	<i>FP7-KBBE-2007-1</i>	<i>Plant Cell Walls - Understanding Plant Cell Walls for optimising Biomass potential</i>	<i>Large collaborative project</i>	<i>USA</i>
<i>KBBE-2007-3-1-03</i>	<i>FP7-KBBE-2007-1</i>	<i>Green oil – Plants providing oils of the future</i>	<i>Large collaborative project</i>	<i>USA, ICPC</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Developing vaccines for the control of roundworm infestation in extensive ruminant production systems</i>	<i>to be communicated</i>	<i>ICPC</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Development of a new generation vaccine for FMD</i>	<i>to be communicated</i>	<i>Third Countries</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Non-tariff barriers</i>	<i>to be communicated</i>	<i>Third countries (e.g. AR, AU, BR, CA, CN, IN, US, RU, NZ, JP)</i>
<i>Indicative 2008</i>	<i>Indicative 2008</i>	<i>Assessment of impacts from climate change on food</i>	<i>to be communicated</i>	<i>Third Countries</i>

II CONTENT OF CALLS IN 2007

Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments¹³

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-1-1-01: Development of new tools and processes to support R&D in crop plants: molecular breeding

Call: FP7-KBBE-2007-1

The project will develop new tools from technologies that support both research & development and the production of industrial prototypes for the breeding of crop plants using molecular tools. Proposals should pre-select and justify the choice of technologies to develop, which may include, among others, integrated phenotyping and genotyping, large-scale phenotyping with predictive value and predictive screening methods for desired genotypes, monitoring and diagnosis in complex systems – such as plants and plant-environment interactions.

Funding scheme: Small collaborative project

Expected impact: This project is expected to give the EU plant breeding industry a competitive edge for the breeding of crop plants for sustainable and competitive agriculture.

KBBE-2007-1-1-02: Mining genomics information of farm animals to generate new information on the genetic basis of phenotypes important to sustainable animal production

Call: FP7-KBBE-2007-1

This project will use functional and comparative genomics and/or *in silico* analysis to dissect the genetic basis of one or more specified traits. The outcome of the research will be molecular diagnostic tools to assist in selective improvement of breeding stock of farmed animals.

Funding scheme: Small collaborative project

Expected impact: Through the tools to improve selection, the project will improve the efficiency and profitability of animal production and the competitiveness of animal production, within the overall framework of European policies on sustainability and on animal health and welfare.

¹³ Complementary research relating to sustainable management and conservation is addressed under "Environment including Climate Change". Research on other tools and technologies that support sustainable production and management will be done under the relevant Themes.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-1-1-03: Development of genetic systems for crop improvement through a systems biology approach **Call: FP7-KBBE-2007-2A**

This project will delineate the molecular basis for genetic systems underpinning crop improvement and innovative agricultural practices. Proposals should pre-select and justify the choice of the basic biological process or processes to study in model species using a systems biology approach, which may include, among others, heterosis, recombination, ploidy control, perenniality, parthenocarpy and apomixis. The study of these genetic systems will be complemented with an understanding of trait plasticity, including potential constraints, effects of gene dosage and the contribution of the genetic variation.

Funding scheme: Large collaborative project

Expected impact: This project is expected to give the EU a competitive edge in the efficient targeted delivery of desired outcomes in crop improvement programmes, domestication of new crops and industrial innovation.

KBBE-2007-1-1-04: Development of technologies and tools for the exploitation of livestock genome **Call: FP7-KBBE-2007-2A**

The project will deliver improved tools using a pre-selected group of technologies. With the generation of animal genome sequences, livestock production finds itself on the cusp of a new generation of technologies. However, to fully exploit the sequence information, a series of downstream tools needs to be developed. The purpose of this project is to assist in the exploitation of the available livestock genome sequences on a comparative basis by providing sequence and annotation data and by developing tools.

Funding scheme: Large collaborative project

Expected impact: This project is expected to help ensure that the EU is positioned to take advantage of the genomics revolution and will primarily contribute to the long term competitiveness of European livestock production. Given its fundamental role, it will also lead eventually to support the sustainability, in a broad sense, of animal production and support European policies in relation to animal health and production.

KBBE-2007-1-1-05: Using new technologies to identify (re-)emerging pathogens from wildlife reservoirs **Call: FP7-KBBE-2007-2A**

The purpose of this multidisciplinary collaborative research project is to develop generic approaches to wildlife surveillance by providing baseline data for disease control and intervention. It will do this through the use of novel screening assays, such as microarrays, to screen wildlife populations including marine and freshwater species, for the presence and distribution of infectious agents that cannot be isolated in culture and/or which are only distantly related to known infectious agents. Collaboration with third countries, including ICPC, is encouraged.

Funding scheme: Large collaborative project

Expected impact: Using new available technologies coupled with more classic techniques will help to discover new potentially emerging pathogens. Phylogenetic studies comparing old and new strains of already known species allow insights into evolutionary trends and therefore into prediction about features of such pathogens. It will help to anticipate and adopt a proactive approach in order to respond rapidly to new and emerging animal diseases, including zoonoses, and hence to enable the development of appropriate epidemiological tools and the rapid establishment of surveillance.

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 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.

CALL 1: FP7-KBBE-2007-1 and FP7-ERANET-2007-RTD¹⁴

KBBE-2007-1-2-01: Annual Food crops with improved tolerance to multiple abiotic stresses

Call: FP7-KBBE-2007-1

This project will support the development of “climate proof” food crops that better utilise agricultural areas affected by erratic rainfalls, drought and other associated stresses in the Mediterranean region. The long-term aim will be the stabilisation of yield capacity in cultivars adapted to combinations of abiotic stresses. The work should be underpinned by a holistic approach integrating research on agricultural systems, husbandry practices including the use of bio-fertilisers and plant breeding technologies, and should also address socio-economic aspects, in order to ensure sustainability and field applicability of results in different pedo-climatic conditions encountered in the Mediterranean region.

Funding scheme: Small collaborative project

¹⁴ For Theme 2, call FP7-ERANET-2007-RTD refers to topics KBBE-2007-1-2-07 and KBBE-2007-1-3-02 only – see annex 4.

Additional information: - SICA- Specific International Cooperation Action: The project is expected to contribute to the EU neighbourhood policy and other EU-MED initiatives and dialogues such as co-operation with countries signatories of S&T agreements with the EU (e.g. Egypt, Morocco and Tunisia). Minimum Number of Participants: 2 from different MS or AC and 2 from different Mediterranean ICPC.

Expected impact: The project will allow improved productivity and sustainable exploitation of agricultural lands in the Mediterranean region, thus supporting economic development in non-European Mediterranean countries while ensuring mutual interest and mutual benefit with the EU. It will also help adaptation of agricultural practices to future needs and constraints.

KBBE-2007-1-2-02: Genomics for cereal improvement for food, feed and non-food uses

Call: FP7-KBBE-2007-1

This project will assemble the knowledge required, and use modern breeding techniques, including genetic engineering, to produce cereal crops (from the Triticeae tribe) with improved composition and characteristics that will satisfy the proven needs of consumers, processors and producers. In addition to developing new knowledge in the areas of genetics and genomics, the project will build on existing resources inside and outside Europe. To assure dissemination and transfer of the results, industrial, farmers' and consumers' representatives should be included from the project's inception. Participation in international genomics programmes and collaboration with ICPC target countries is encouraged.

Funding scheme: Large collaborative project

Expected impact: The project will enable Europe to assume a clear leadership role in Triticeae genomics, thus producing a competitive advantage in the global market.

KBBE-2007-1-2-03: Development of more efficient risk analysis techniques for pests and pathogens of phytosanitary concern

Call: FP7-KBBE-2007-1

This project will develop the science and provision of pest risk analysis and explore the potential for new techniques, and refine existing tools and management approaches that can be applied to enhance existing PRA schemes. Key work will focus on risk assessment issues and will include: identifying and integrating key national and international datasets; exploring new techniques and refining existing tools, especially validation of techniques that assess economic, environmental or social impacts/costs; developing system approaches for pest risk management to analyse and enhance the effectiveness of Plant Health policy; and developing novel and sustainable pest management strategies with integrated technical support for policy development in the case of emergency situations/pest outbreaks, especially those pests that are difficult to control.

Funding scheme: Small collaborative project

Expected impact: The project will develop sustainable, integrated plant health risk analysis and management strategies. Effective policy making and decision making by governments aimed at predicting and managing plant health risks, will be enhanced through the further development of more effective PRA based on new decision support systems.

KBBE-2007-1-2-04: Reducing the need for external inputs in high-value protected horticultural and ornamental crops

Call: FP7-KBBE-2007-1

This project will improve the efficient use of inputs (plant protection products, nutrients and water, CO₂ and energy) in high-value horticultural crops - including small fruits - and/or ornamentals crops grown in soil-less and closed-cycle cultivation systems. The project will integrate research on novel cultivation techniques and equipment with the development of "real-time" monitoring tools, and will include the application of advanced technologies, such

as bioscience-based technologies, computer sciences, ICT, non-invasive sensory electronics, novel greenhouse building concepts, etc., to optimise the use of inputs, reduce running costs and produce high-quality and safer vegetables and ornamentals.

Funding scheme: Small collaborative project

Expected impact: The project will increase market competitiveness of the European protected horticultural and/or ornamental sector by reducing the running costs of systems/infrastructures and optimising the use and recycling of both the growth media and the external inputs.

KBBE-2007-1-2-05: Novel forest tree breeding

Call: FP7-KBBE-2007-1

By focusing on improved/novel breeding strategies (e.g. resistance breeding, marker assisted breeding, flowering stimulation, genetically designing trees with enhanced physiological characteristics, mathematical and informatics aided simulation models of genotype-phenotype interactions at the tree architecture and production level), this project will address increasing societal needs, such as the sustainable biomass production from forests as a replacement for fossil fuels and other petrochemical products, improved raw material quality and quantity for forest based products. Concomitantly, the project will need to reduce the vulnerability of trees towards the impact of biotic hazards, pests, diseases and improve adaptation to changing environmental conditions due to climate change, as well as the potential impacts of enhanced biomass utilisation on sustainability.

Funding scheme: Large collaborative project

Expected impact: This project will help the European forest-based sector to adapt production strategies to already shifting, and in the future more rapidly changing, market and environmental conditions. Consequently it will strengthen the sector's global competitiveness by demonstrating novel/improved methods to breed trees with improved quality and quantity parameters.

KBBE-2007-1-2-06: Developing new methods for valuing and marketing of currently non-marketable forest goods and services

Call: FP7-KBBE-2007-1

The project will develop new valuation methods to assess the socio-economic impact of a wide range of forest externalities, provide decision support for ranking economic targets and, additionally, develop new or improved marketing concepts and integrated production methods for non-wood forest products. These methods and concepts will address the changes in forestry production where goods, benefits and services such as clean water and air, carbon sequestration, recreation, hazard protection and prevention, landscape, etc. are becoming more important as a forest product but currently lack sufficient economic incentives to be viable. Inclusion of ICPC partners, particularly developing countries, is encouraged.

Funding scheme: Small collaborative project

Expected impact: The project will help develop a viable income from forests, secure the future stability of European forests and contribute to a sustainable rural development by reducing the abandonment of forests as a result of the long-term stasis in prices for wood-based forestry products. It will provide models for validating and marketing of several forest externalities and give guidance to policy makers for implementing those models.

KBBE-2007-1-2-07: Coordination of Agricultural Research in the Mediterranean¹⁵

Call: FP7-ERANET-2007-RTD

The countries of the Mediterranean basin face a number of similar problems in relation to agriculture, mainly as regards the use and management of natural resources, such as soil and water, crop protection and threats to the security and sustainability of agricultural production resulting from climate change. These issues need to be identified and addressed through a stronger scientific cooperation between the EU Members and other countries of the Mediterranean area.

Funding scheme: Coordination and support action.

Additional information: ERA-NET

Expected impact: This project is expected to help coordinate national research activities and identify common research programmes among the countries of the Mediterranean area, fight fragmentation and exploit synergies

KBBE-2007-1-2-08: Reduction of N excretion in ruminants **Call: FP7-KBBE-2007-1**

Research on fundamental aspects of nitrogen metabolism is needed to reduce nitrogen excretion from dairy farming. The objective is to obtain knowledge of the complex interactions between ruminal, microbial and intermediary metabolism and to develop new strategies for feeding and managing high yielding dairy cows to reduce nitrogen loss. The research will address the following tasks: development of rapid tools for measuring protein degradability and microbial synthesis, calibration of *in vivo* and *ex vivo* methods on the base of animal experiments; investigation of N metabolism in the rumen, understanding of amino-acid absorption in the intestine and metabolism of absorbed amino-acids and their conversion to milk; harmonisation of protein evaluation systems in Europe; and development of reliable tools to assess N adequacy on animal and farm level.

Funding scheme: Large collaborative project

Expected impact: The project will help develop sustainable ruminant farming systems. By improving the knowledge on nitrogen metabolism in ruminants, the project will also contribute to the achievement of EU policy objectives in support of the implementation of the Nitrates Directive and the thematic strategy on air pollution (reduction of ammonia emissions).

KBBE-2007-1-2-09: From capture based to self-sustained aquaculture

Call: FP7-KBBE-2007-1

This project will substantiate the current knowledge on the reproduction of capture based aquaculture species (e.g. bluefin tuna, eel) in captivity, and at the same time establish the knowledge-base required for controlled development of eggs and larvae, and for the development of suitable and environmentally performing feeds. In recent years a new aquaculture activity has developed directed at highly appreciated species for which the current level of production by commercial fisheries is not enough to meet consumers' demand and where the wild populations are facing serious fishing pressure. The development of a self-sustained aquaculture activity, independent from the supply of wild fish, is thus required both from an industrial and conservation perspective. The inclusion of ICPC partners is encouraged.

Funding scheme: Small collaborative project

Expected impact: This project will improve competitiveness in the aquaculture industry and contribute directly to ensuring the sustainability of capture based aquaculture.

¹⁵ This topic is subject to a joint call for ERA-NETs across the Themes – see Annex 4

KBBE-2007-1-2-10: Improving cost-efficiency in the fisheries Call: FP7-KBBE-2007-1

The project will investigate possible improvements in cost-efficiency of fisheries through changes in fishing effort and geographical and seasonal fishing patterns, change of gear, implementation of new gear design, etc. and propose management measures that would direct the fishing fleet towards adopting a more cost-efficient strategy. This should be accompanied by an energy impact evaluation, and research into the options for energy savings and the linkages between fishing practices and energy consumption will be a necessary basis for such evaluations. Beyond economic concerns there is a need to consider options for increased energy efficiency in order to reduce emissions that may contribute to climate change. There needs to be a strong social and economic component in the research.

Funding scheme: Small collaborative project

Expected impact: With increasing oil prices, the cost of fuel threatens the livelihood of some fisheries and this project will develop options for improving the situation. Also, fisheries in general will benefit from a cost-efficient approach to practical fishing operations.

KBBE-2007-1-2-11: Improving research in support to scientific advice to fisheries management outside EU waters Call: FP7-KBBE-2007-1

The project will support the development of a network of fisheries research with third countries, with the aim to improve coordination of research programmes promoted by different actors (Commission, Members States, Associated States, concerned third countries and international organisations such as FAO and regional fisheries organisations). The project will deliver a synopsis of data available and methodologies applied in collection, analysis, dissemination and management procedures in support to scientific advice to fisheries management in the concerned regions. It will also establish needs for further research in order to maintain the basis for a sustainable resource utilisation.

Funding scheme: Coordination and support action aiming at coordinating research activities

Additional information: SICA - Minimum Number of Participants : 3 from different MS or AC and 3 from different ICPC.

Expected impact: The network will increase knowledge on fisheries resources in support to the formulation of scientific and technical advice in third countries and will improve dialogue with research communities, policy-makers and stakeholders in the concerned geographic areas in order to better take their needs into account. Through a better coordination of European research with ICPC countries outside EU waters, the project is expected to avoid duplication and fragmentation of the research effort.

KBBE-2007-1-2-12: Consolidate alliances with third countries in the field of aquaculture Call: FP7-KBBE-2007-1

The objective of the project is to set up a network of aquaculture research with third countries, with the aim to promote coordination of research and facilitate the emergence of joint research programmes in the concerned regions. The project should also develop a multi-stakeholder platform for dialogue, disseminate knowledge up to final users and should establish needs for further research in order to maintain the basis for a sustainable aquaculture development in the concerned regions.

Funding scheme: Coordination and support action aiming at coordinating research activities

Additional information: SICA - Minimum Number of Participants : 3 from different MS or AC and 3 from different ICPC.

Expected impact: Ensure a sustainable development of aquaculture in the concerned regions while increasing links with EU partners.

KBBE-2007-1-2-13: Mitigating adverse impacts of fisheries **Call: FP7-KBBE-2007-1**

The project will develop measures needed to mitigate adverse impacts of fisheries. Known impacts comprise habitat destruction and by-catch of non-target species, including seabirds, sea mammals and turtles, in addition to undesirable biological interactions induced by the exploitation of fish species. Mitigation measures could include new technologies and fishing practices, supported by management measures such as closed areas and gear restriction. The inclusion of ICPC partners is encouraged.

Funding scheme: Small collaborative project

Expected impact: Mitigation measures, including new technologies, to reduce adverse impacts of fisheries will support a viable commercial exploitation of fish resources that minimises the effects on the marine environment.

KBBE-2007-1-2-14: The structure of fish populations and traceability of fish and fish products **Call: FP7-KBBE-2007-1**

The project will improve the traceability of fish and fish products through understanding and mapping the structure of fish populations by investigating life history traits, genetic composition, physiological and morphological characteristics and other indicators of population sub-structure. Traceability could be applied in both fisheries control and in consumer information. Furthermore, sustaining the components of a population and understanding their function is important, partly to avoid over-exploitation of local fish populations and loss of genetic material. The ultimate objectives would be to obtain improved traceability of fish and fish products, to consider the management implications of the results and advice on actions, and to develop a methodology for monitoring potential changes in the population structure. Inclusion of ICPC partners is encouraged.

Funding scheme: Small collaborative project

Expected impact: Improved traceability of fish and fish products can be used in fisheries control and will benefit consumers. The project will also be an important contribution to the ecosystem approach to fisheries management, which requires insight into the infrastructure of fish stocks and how they function, in particular the genetic aspect.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-1-2-15: Reducing the utilisation of mineral fertilisers by improving the efficiency of nutrient use in European crops **Call: FP7-KBBE-2007-2A**

Using genomics and metabolic tools, this project will further our understanding of the molecular genetic basis of nutrient use efficiency in crop plants. It will study the impact of environmental factors on nutrient use efficiency and identify genetic variation that affects such efficiency. It will design genetic markers for marker assisted breeding of cultivars with improved nutrient use, and explore alternative strategies for improvement of nutrient use efficiency, including those based on genetic engineering. The project will also develop monitoring tools and adapt agricultural practices to reduce the need for fertiliser in plant production systems and will construct models of nutrient uptake and acquisition, storage and utilisation of fertilisers by crops. Inclusion of ICPC partners, particularly from developing countries, is encouraged.

Funding scheme: Large collaborative project

Expected impact: The project will reduce the environmental impact of crop production, leading to more efficient and sustainable farming.

KBBE-2007-1-2-16: Essential biological functions related to the most relevant stages of aquaculture fish life-history **Call: FP7-KBBE-2007-2A**

This project will clarify the mechanisms of essential biological functions related to the most relevant stages of aquaculture fish life-history (larval development, growth, maturation, reproduction) at both a physiological and molecular level. Despite the recent developments in aquaculture, our knowledge base on basic life-requirements of farmed fish remains limited. The combined use of genomic tools with a better understanding of physiological and behavioural features throughout the fish life-cycle will allow for a better insight on key biological processes, and help to overcome bottlenecks in the production cycle of commercially important species.

Funding scheme: Large collaborative project

Expected impact: The project will deliver improved competitiveness of the EU aquaculture industry by establishing the knowledge-base required for improved stress control, disease prevention and control, new breeding technologies, better environmental performance and diversification into new species.

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.

CALL 1: FP7-KBBE-2007-1 and FP7-ERANET-2007-RTD¹⁶

KBBE-2007-1-3-01: Breeding tools for improved livestock products

Call: FP7-KBBE-2007-1

The project will develop new, practical technologies to measure product quality and animal robustness and tools to measure the consequences of breeding for specific traits on other characteristics (e.g. robustness on product quality and vice versa). It will include statistical methodologies that can cope with a complex biological background. Genetic tools, based on genomic information, promise to improve selection for specific traits. However, this development is slow partially as a result of lack of data and partially as a result of lack of tools for processing data. In addition, the interaction of prioritised traits (such as added value of products) with those affecting the animal themselves (robustness) means that selection can rarely be aimed at a single characteristic.

Funding scheme: Small collaborative project

Expected impact: The project will support the competitiveness of the livestock breeding and production industries within the context of sustainable production and European policy on animal welfare.

¹⁶ For Theme 2, call FP7-ERANET-2007-RTD refers to topics KBBE-2007-1-2-07 and KBBE-2007-1-3-02 only – see annex 4.

KBBE-2007-1-3-02: Coordination of European research in the area of animal health, including emerging threats, infectious diseases and surveillance¹⁷

Call: FP7-ERANET-2007-RTD

Coordination of national research activities at the European level is important in fighting animal diseases, including fish diseases, which are a significant threat to human health. Pooling different expertise in different Member States will facilitate the generation of an integrated approach to research activities and the development of a common evidence base, which will, in turn, help the development of policy and the identification of common research priorities.

Funding scheme: Coordination and support action

Additional information: ERA-NET

Expected impact: This ERA-NET will help to coordinate national research activities and identify common research programmes and will, thus, fight fragmentation and exploit synergies between such programmes.

KBBE-2007-1-3-03: Optimising research efforts for the development of the most effective tools for controlling infectious animal diseases

Call: FP7-KBBE-2007-1

This project will take an integrated, rational and methodological approach in order to accelerate the process of research and development of tools against major infectious diseases, including zoonoses, for food animals; minor species; non-food animals and wildlife. The aim of the coordination action is to undertake three successive stages of preliminary assessments in order to best target areas of research. These are: the prioritisation of the infectious diseases; a gap analysis for the priority diseases; and an analysis of available and new technologies with an assessment of their value for the future development of tools. A “gated management” approach will be included.

Funding scheme: Coordination and support action aiming at coordinating research activities

Expected impact: The project will deliver improved control tools of diseases of major importance to the EU and the rest of the world through an integrated, coordinated and rational strategy optimising the targeting of research efforts, from fundamental research to development. The project will develop synergies, reduce duplication, increase public-private partnerships and international collaborations, reduce economic impact of the diseases concerned and contribute to poverty alleviation in developing countries.

KBBE-2007-1-3-04: Development of rational strategies for the eradication of bovine tuberculosis

Call: FP7-KBBE-2007-1

Tuberculosis, caused by bacteria of the *Mycobacterium tuberculosis* complex, is present in many wild animal species in EU countries. The spread of the infection between wildlife and domestic animals and the role of some wild species acting as reservoirs of infection for livestock is well documented. Infected wildlife is a threat for the progress of the eradication campaigns, may have an impact on public health and on protected and endangered species. The project will deliver improved tools and develop strategies for the eradication of bovine tuberculosis in areas where the disease is present in both domestic and wildlife populations. It will include in particular: 1) vaccination of bovine animals, wildlife and feral reservoirs, (2) control of populations to reach numbers compatible with animal welfare, (3) improved diagnostic tools for detection of infected animals, (4) strategies to limit the contact between

¹⁷ This topic is subject to a joint call for ERA-NETs across the Themes. See annex 4

domestic and wild species. The diversity of wild species (some legally protected) and farming systems should also be taken into account.

Funding scheme: Small collaborative project

Expected impact: The project will deliver progress in the tuberculosis eradication campaigns in the EU affected countries where the disease is present in both domestic and wildlife populations. It will improve animal health and reduce costs entailed by the measures and will reduce public health risks, and reduce morbidity and mortality that the infection may cause in endangered species.

KBBE-2007-1-3-05: Evaluating and controlling the risk of African Swine Fever in the EU **Call: FP7-KBBE-2007-1**

African swine fever (ASF) is one of the most devastating diseases of swine. The EU has succeeded in its eradication except in Sardinia where it remains endemic. The impact on trade for the whole of Italy has been adverse in particular for exports of pork meat products leading to import barriers by third countries. The situation of ASF in African countries has greatly increased, reaching unprecedented levels. Currently ASF is widespread in more than 20 sub-Saharan countries. The cause is thought to be the presence of carrier animals, mainly due to a higher proportion of local resistant pigs than to the “white” pig. As local pigs do not suffer the disease but become carriers, there is a greater viral circulation, representing a permanent threat and risk transmission to the EU. In view of this new situation, research should be targeted to the following: risk analysis for the introduction of the virus into the EU; characterisation of currently circulating field viruses in African countries and Sardinia; development and validation of sensitive diagnostic techniques, including pen-side tests, with the existing field viruses; host-pathogen interaction and viral immune response in view of the development of a vaccine; development of new control strategies focused on the situation in Africa. The project should contain a component of training and technology transfer. Third countries participation, especially of ICPC partners, is encouraged.

Funding scheme: Small collaborative project

Expected impact: This project will deliver improved tools and strategies for the prevention and control of African swine fever taking into consideration the latest situation of risk for Europe due to its widespread occurrence in Africa. It will improve livelihood of rural communities in affected developing countries and will encourage international collaboration

KBBE-2007-1-3-06: Emerging vector-borne diseases, in particular: West Nile fever, Rift Valley Fever and Crimean-Congo haemorrhagic fever **Call: FP7-KBBE-2007-1**

West Nile fever (WNF), Rift Valley Fever (RVF) and Crimean-Congo haemorrhagic fever (CCHF) are arthropod-borne diseases of different domestic and wild animals and can also affect humans. The geographical distribution of these diseases has expanded over recent decades. WNF outbreaks have already occurred in Europe while RVF and CCHF are present in neighbouring countries. The objective of this coordination action is to set up a network aimed at creating common knowledge on the diseases, sharing and exchanging data, expertise, experiences and scientific information via regular meetings; maintain and expand surveillance systems, monitor disease occurrence, virus isolation and vaccine use. It will also focus on disease detection and control tools and ensure dissemination and training of personnel. Participation of relevant third countries, in particular those where disease represents a major threat to the EU, as well as those more active in research, and international organisations should be sought.

Funding scheme: Coordination and support action aiming at coordinating research activities

Expected impact: This project will create in the EU a network of laboratories and scientists with expertise in these diseases and which are ready to act should the diseases occur, thus

improving the EU's response to outbreaks of disease and contributing to the community animal health policy.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-1-3-07: Improving animal health, product quality and performance of organic and low-input livestock systems through integration of breeding and innovative management techniques **Call: FP7-KBBE-2007-2A**

In this project, different breeding concepts will be analysed for their success in achieving specific breeding aims (health condition, tolerance to stress, product quality, etc) needed for organic and low-input rearing of livestock. Prioritising farm-level research, indicators will be developed and tested in different breeding programmes, integrating management and feeding practices in different macro-climatic regions including ICPC, with the purpose to produce high quality and differentiated food products. Multicriteria evaluation of systems shall be considered through experimental/model approaches and integrating innovative management techniques.. Thus, the project will assist in reducing the gap between the genetic potential of livestock and their site- and environment- specific performance. The work may address cattle, pig, small ruminant and/or poultry production systems, which, in addition to food production, may also be desirable for tourism, rural development and landscape management.

Funding scheme: Large collaborative project

Expected impact: The project will stimulate organic and "low-input" livestock production by enabling logical, regionally-adapted breeding strategies to be developed that are compatible with sustainable production, high product quality and organic principles.

KBBE-2007-1-3-08: Improved epidemiological tools for zoonoses: application of geographical information for live animals and animal products

Call: FP7-KBBE-2007-2A

The aim of this project is to enhance capacity and improve methodology for the surveillance of zoonoses. It will include the definition of the minimum agreed information to be collected. While the application of geographical information to infectious disease data is an increasingly used tool for epidemiological studies, the information currently available within the EU would be of higher value if it was linked to the geographical distribution of livestock, trade dynamics and control strategies in the member states. There is, therefore, a need to assess the value of European and national databases and to recommend how they can be integrated. Leading third countries, in particular the USA, should be part of the project.

Funding scheme: Network of excellence

Expected impact: The project will integrate partner organisations in order to better deliver integrated geographical tools for disease surveillance and provide input for risk assessment.

KBBE-2007-1-3-09: Neglected zoonoses in developing countries: integrated approach for the improvement of their control in animals **Call: FP7-KBBE-2007-2A**

There is consolidated evidence and models which show the significant burden in terms of morbidity, mortality and economic costs which some zoonoses qualified by WHO as "neglected zoonoses" pose to developing countries in Africa, Latin America and Asia. Eradication and control programmes for some of these have been funded by major donors. However the diseases are still prevalent in many of the poorest countries in the world. The technological advances in diagnostics and vaccines open a window of opportunity to improve the control measures and hence bring a double benefit to both animal and public health and, improve socio-economic conditions, thus contributing to poverty alleviation. The diseases to be targeted are: anthrax, rabies, brucellosis, bovine TB, zoonotic trypanosomiasis,

echinococcosis, cysticercosis and leishmaniasis. The programme will include 1) mapping research activities at global level, 2) improving or developing disease control tools where needed and appropriate for the conditions prevailing in affected countries 3) develop control and prevention strategies taking into account the economic, sociological and cultural aspects related to the diseases as well as the traditional knowledge. The attribution of a major role to women, both in the veterinary profession as well as in the populations concerned, should be sought.

Funding scheme: Large collaborative project

Additional information: SICA: Minimum number of participants: 4 from different MS or AC and 4 from different ICPC.

Expected impact: The project will contribute to the improvement of animal and human health and hence the livelihoods of the poorest communities. It will contribute to the reduction of poverty and the Millenium Development Goals. A major impact is expected by tackling these zoonoses as a group and by giving a major role to women. The strategies developed will be applicable to different parts of the world. The project will also provide technology transfer and training to affected countries.

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-1-4-01: Developing the knowledge-based bio-economy (KBBE)

Call: FP7-KBBE-2007-1

This project will assist in the development and application of new or improved existing models and indicators for supporting analysis, development and monitoring of the social, environmental and economic impact of the implementation of the Knowledge-Based Bio-Economy in Europe. The potential contribution of the KBBE to the UN Millennium Goals of eradicating extreme poverty and hunger and to ensure environmental sustainability at the global level, will also be analysed. Among others, the impact on the Common Fisheries and Agriculture Policies as well as the European Forest Strategy should be addressed, and the project will also include the impact on Europe's competitiveness at the global level. Participation of ICPC partners, in particular from developing countries, is encouraged.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will measure the social and economic impact of the KBBE approach to European development and, thus, assist in the development of the KBBE concept.

KBBE-2007-1-4-02: Enabling efficient transfer of technology in the knowledge-based bio-economy

Call: FP7-KBBE-2007-1

The aim of this topic is to propose a coordinated effort aiming at raising awareness and carry out dissemination activities and advice among the research institutions and academia, in

particular with regard to issues such as Good Laboratory Practice (GLP), the development of ideas to the proof-of-concept stage and Intellectual Property Rights (IPR). In addition, the project will develop and establish a Europe-wide system to identify innovation and enhance the transfer of knowledge to commercial companies for further development and will establish criteria for the selection of innovative ideas for such development. The intellectual property situation should be taken into account to build innovation and ensure effective utilisation of know-how amongst all stakeholders.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will develop and establish a Europe wide system in the different fields of the KBBE in order to identify innovation and enhance the transfer to commercial companies for further development and commercial exploitation. It will also establish the criteria for the selection of innovative ideas and further development, and, in the long term, will increase competitiveness of the European industry.

KBBE-2007-1-4-03: The farm of tomorrow

Call: FP7-KBBE-2007-1

The “farm of tomorrow” will take account of Europe’s ecological and cultural diversity, will be non-uniform, will be built on technological, social and economic innovations and a variety of research outputs. The specific main issues facing the farm of tomorrow are: New models of farm material flow management, based on on-farm or local integration of environmentally friendly closed-cycle processing facilities (energy, food/non-food raw materials, bio-refining). Energy efficient cultivation with light machinery (avoiding soil compaction), precision farming, and robotics are important components, considering special requirements for high value markets, such as organic agriculture/livestock production. Integrated technologies and ICT tools are needed to make cost efficient compliance with standards (public and private) an integral part of farm operations, including the whole chain of suppliers and services by sharing good practices. The multifunctional European farming model delivering public goods (environment, landscape, social functions) in an efficient way needs research support to integrate, assess and quantify these services and linkage (e.g. rural tourism) to the rural economy. Overall trends of the European societies have to be considered and new models of relationships with consumers and citizens.

Funding scheme: Small collaborative project

Expected impact: The project will increase competitiveness of farming in less protected markets, will increase viability of rural areas and improve competitiveness of the European farm machinery industry. It will substantiate perspectives of farming in providing public goods and services.

KBBE-2007-1-4-04: GMO cost-effective and crop-specific co-existence measures

Call: FP7-KBBE-2007-1

Development of feasible and cost-effective coexistence measures remain a key issue for the application of biotechnology in EU agriculture. This project will research into best practice for crop-specific technical segregation measures in crop and seed production including measures for the co-existence between non food/feed GM crops and non GM crops. The project should also assess the economic cost of the proposed measures and should take into account, and when appropriate establish interactions with, ongoing research projects. Furthermore it should develop a comprehensive information system which will make existing research results available to the Member States and other stakeholders.

Funding scheme: Small collaborative project

Expected impact: The project will support the coherent development and implementation of guidelines for crop specific measures.

KBBE-2007-1-4-05: Enlargement network - Agro-economic policy analysis of the accession and the candidate states and the Western Balkan countries

Call: FP7-KBBE-2007-1

In the view of the integration of new Member States, strengthening the accession process for the remaining Candidate Countries and the closer co-operation with other candidate and pre-candidate countries, notably of the Western Balkans, it is important to establish and combine insight and analyses of agricultural developments in the different countries. It is important to include all relevant countries (i.e. Malta, the Former Yugoslav Republic of Macedonia, Albania, Serbia (including Kosovo under United Nations Security Council Resolution 1244) and Montenegro). The area of expertise and analyses on the individual countries should cover agricultural policies, agricultural markets and food chains, the competitiveness of agri-food products and farms including structural change, the developments of trade and trade relations, as well as developments of rural economies and regions including socio-economic conditions and rural labour markets and agro-environmental situations. Since the agricultural, economic and socio-economic conditions vary significantly between the countries a strong and a wide expertise needs to be established by individual countries as does the capacity to achieve a regional and European perspective in the different analyses.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will provide the analytical tools to increase the effectiveness of EC measures in support of agriculture and rural development within the accession process and the new neighbourhood policy

KBBE-2007-1-4-06: Comparative analysis of factor markets for agriculture across the Member States

Call: FP7-KBBE-2007-1

This project will analyse the functioning of factor markets for agriculture in the EU-27, including Candidate Countries. The research will compare the different markets, their institutional framework and their impact on agricultural development and structural change, as well as their impact on rural economies, for the Member States and the EU as a whole. The research shall focus on land sale/lease, labour and capital markets and will include the impact of national and EU programmes on these markets.

Funding scheme: Small collaborative project

Expected impact: The project results will allow a better targeting of CAP measures and as a consequence improve the competitiveness of European agriculture.

KBBE-2007-1-4-07: Costs of different standard setting and certification systems for organic food and farming

Call: FP7-KBBE-2007-1

Research should analyse the costs, and thus the effectiveness, of different standard setting procedures and certification systems as a basis for optimisation of the current EU certification system (Reg. EEC 2092/91). The task is to quantify for selected products all relevant expenditure and transaction cost for certification along the entire supply chain for the actors involved: farm, processing, wholesaling, retail and import level as well as the administration level and recognition of the various standards, logos and trademarks by consumers in various regions of the EU. The project should conclude in recommendations to increase the effectiveness and the efficiency of organic certification for the EU Commission, national competent authorities and private actors in organic food and farming.

Funding scheme: Small collaborative project

Expected impact: Efficient certification systems for organic farming with lower costs, contribute to better regulation and will increase the competitiveness of the European organic farming sector.

KBBE-2007-1-4-08: Drivers and limits of enhanced trade in agricultural and food products **Call: FP7-KBBE-2007-1**

The research work should aim at a wide-ranging impact assessment of the liberalisation of agricultural and trade policies. It should take into account both multilateral and bilateral agreements and changes in the direction of trade flows. Therefore a spatial model should be used. Special emphasis should be put on the EU's trade with its main partners. The product coverage should fit with the WTO definition of agricultural products, but appropriate disaggregating is needed to identify key changes in the composition of trade (bulk, intermediate, consumer-oriented, including a special focus on biofuels). In addition to assessing the impact of liberalisation on agricultural markets and the sector's income, a series of issues should be studied: degree of concentration and competition in trade (share of main exporting countries and of major trans-national companies, export monopolies), risk of dependence on a limited number of suppliers, consequences of sanitary or phytosanitary barriers and problems.

Funding scheme: Small collaborative project

Expected impact: The project will provide analysis and data to underpin the European position in trade negotiations.

KBBE-2007-1-4-09: Trade and agricultural policies - India **Call: FP7-KBBE-2007-1**

India is a leading world agricultural producer and consumer. Depending on factors affecting demand and supply, its net trade position can quickly change and have a significant impact on world commodity markets. The research should provide a qualitative and quantitative analysis of future developments in Indian supply, demand and trade for the main agricultural commodities. The aim is to evaluate the impact that domestic structural changes and trade agreements (WTO, GSP) may have on the EU and Indian agricultural sectors as well as on world markets. Special emphasis should be put on agricultural trade with the EU, taking into account the possible outcome of the Doha Round and the Community's future new GSP scheme for 2006 to 2015 and a possible future Free Trade Agreement with the EU. The work will provide a comparison with the agricultural trade prospects with other developed (in particular Quad) countries, including under their GSP schemes. Similarly, the project should examine prospects for regional trade, including with countries benefiting from the "Everything But Arms" agreement with the EU, and the likely consequences for the cumulation of origin under EU preferential agreements. The project should take into account (ongoing) work carried out on India by international organisations, especially the OECD and FAO.

Funding scheme: Small collaborative project

Expected impact: Sound analysis to underpin the trade negotiations.

KBBE-2007-1-4-10: Containment of Sharka virus in view of EU-expansion

Call: FP7-KBBE-2007-1

Sharka (Plum pox virus) is considered one of the most serious diseases of stone fruit. The virus affects all Prunus species, including plums, peaches, nectarines, apricots and almonds. Plum pox causes high yield losses and has resulted in large areas of tree removal in Europe, where it is well established. Central Europe and the Balkans are known as endemic centres of the disease. Epidemics result in large areas of stone-fruit cultivation being destroyed, with consequent economic losses as well as related social and environmental impacts. Research in this project will look at new ways of controlling the spread of this virus, including early warning systems, research networks, use of remote sensing and other techniques that would help contain the disease. The research should focus on three complementary aspects: 1) The

spreading of contaminated seedling/nursery materials; 2) Establishing guidelines for cultivation methods to contain the disease; 3) The development of genetic control based on marker assisted selection and biotechnological strategies for breeding for resistance.

Funding scheme: Small collaborative project

Additional information: Partners should include relevant institutions from Bulgaria, Romania and Turkey.

Expected impact: The project will deliver a risk management system for this important plant disease and, thus, minimise the impact of the disease during the accession process.

KBBE-2007-1-4-11: Assessing the impact of Rural Development policies (including Leader)¹⁸ Call: FP7-KBBE-2007-1

This project will assess the economic, social and environmental impact of rural development programmes currently adopted for the period 2007 to 2013. The work will focus on the EU priorities defined in the Strategic Guidelines for rural development. These include the competitiveness of the agricultural and forestry sectors, knowledge transfer and innovation, biodiversity and preservation of high nature value farming and forestry systems, water, and climate change, the creation of employment opportunities in the fields of diversification and quality of life, improving governance and mobilising the endogenous development potential of rural areas. The research will focus on the key areas of expenditure and will be grounded in the approach defined by the Common Monitoring and Evaluation Framework established in the rural development regulation.

Funding scheme: Small collaborative project

Expected impact: The project results will help understand the contribution of rural development programmes to EU priorities and feed into the development of the next generation of rural development policies, leading to more effective targeting of measures and use of resources.

KBBE-2007-1-4-12: Policy and institutional aspects of sustainable agriculture, forestry and rural development in the Mediterranean partner countries Call: FP7-KBBE-2007-1

This project will provide research on the impact of (EU and national) agricultural, rural and environmental policies; impact of agri-food trade liberalisation on the Mediterranean partner countries: studies on structural changes, impact on rural populations, including employment, poverty, income distribution and possible migration trends; commercial relations with major trade partners such as the EU; increasing competition on the export market with emerging economies; impact of consumers' changing demands, prospects for quality products; impact of norms and standards on trade; institutional and traditional management of access to resources (land, water, etc.) .

Funding scheme: Small collaborative project

Expected impact: The project results will support the trade negotiations by assessing the impact on Mediterranean partner countries.

KBBE-2007-1-4-13: New sources of employment in rural areas Call: FP7-KBBE-2007-1

The project will identify labour market, demographic and economic trends in rural areas across EU-27 and the potential for new sources of employment outside traditional primary and secondary sector activities. It will take into account the European Guidelines for Employment, technological change and the shift to a knowledge based economy. It will focus

¹⁸ A complementary topic on the impact of the CAP is open in area 8.2.2 of the "Socio-economic sciences and humanities" Theme (Theme 8)

on human capital, skills and adaptability as well as demand for labour in sectors such as the provision of environmental services, recreational amenities and traditional skills. It will examine the interaction between different types of rural area (peri-urban, remote, high environmental/amenity value etc.) and the evolution of labour markets, travel to work areas and changing work patterns. It will identify employment growth areas where rural development programmes can be targeted to increase their contribution to employment creation.

Funding scheme: Small collaborative project

Expected impact: The project results will allow a better targeting of rural development measures and future evolution of rural development policies in line with the Lisbon Strategy.

KBBE-2007-1-4-14: Cost of production using FADN¹⁹ data Call: FP7-KBBE-2007-1

The project aims to define and to develop one (or more) economic model(s) for estimating the cost of production of various types of agricultural products using the FADN data. As a first step, a methodology concerning the development of the model(s), the evaluation of the accuracy of the results provided by the model(s) and the estimation of the error(s) per model should be developed. In the next step and on the basis of the outcome of the first part of the project one or more models should be developed, validated and tested covering at least 3 types of products (to be defined during the first phase, once the methodology is developed). Finally a mechanism/methodology for maintaining and updating the model(s) should be described and applied and tested at least for one type of product (to be defined during the initial phase). The model(s) will be used for evaluating the impact of the various agricultural measures on agricultural income and business using FADN data.

Funding scheme: Small collaborative project

Expected impact: The project results will allow the accuracy of the impact assessment of CAP measures to be improved.

KBBE-2007-1-4-15: Assessing the socio-economic consequences and costs benefits of measures promoting good animal welfare Call: FP7-KBBE-2007-1

This project will assess the benefits and costs to society, the livestock industry, and to the animal, of measures aimed at promoting animal welfare. It will include analysis of welfare standards in the EU and in third countries, evaluation of methods used for documentation of animal welfare and behaviour and implications on international trade and competitiveness. Typically, European consumers demand high levels of animal welfare in livestock production. Regulation to improve animal welfare, however, raises fears of unfair competition for imported livestock products. Despite this, some high welfare standards may not imply significant additional costs, and some may result in added value and increased economic benefits.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will support the development of European policy on animal welfare and, in particular, the implementation of the Community Action Plan on the Protection and Welfare of Animals 2006-2010²⁰.

¹⁹ FADN – Farm accountancy data network

²⁰ http://ec.europa.eu/food/animal/welfare/actionplan/actionplan_en.htm

KBBE-2007-1-4-16: Establishment of an information platform on the protection and welfare of animals **Call: FP7-KBBE-2007-1**

This project will develop a forum for the interchange of information on animal welfare research by different stakeholders. It will identify best practices, disseminate information on such practices and develop information tools and communication strategies in the animal welfare field. It will identify areas within current and proposed animal welfare legislation where more knowledge is needed and will help identify and prioritise needs for animal welfare research of interest to Europe.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will support the development of European policy on animal welfare and, in particular, the implementation of the Community Action Plan on the Protection and Welfare of Animals 2006-2010²⁰

KBBE-2007-1-4-17: Models for the extrapolation of maximum residue limits (MRLs) from one species to another **Call: FP7-KBBE-2007-1**

This project should develop models that allow the extrapolation of maximum residue limits (MRL) from toxicological studies in one species another species. MRLs are an important tool in the strategy to protect public health from veterinary medicines in animal products. Currently, individual studies need to be established in all each species that a medicinal product is licensed for. Using data across species would improve the efficiency of licensing if such extrapolation could be carried out in a robust fashion.

Funding scheme: Coordination and support action aiming at coordinating research activities

Expected impact: The project will support community policy on human and animal health with regard to licensing medicines. It will significantly reduce the overall cost of licensing medicines and shorten the licensing process.

KBBE-2007-1-4-18: External costs of pesticides **Call: FP7-KBBE-2007-1**

Internalisation of external costs of pesticides is an option considered by some Member States as a valid policy action to reduce their use and limit their negative impacts on humans and on the environment. Research is needed to assess the feasibility and benefits of such an approach. The project should; (i) identify true external costs of pesticides, taking into account the direct impact on the operators and indirect impact on bystanders, residents, consumers and the environment; (ii) develop options/criteria for an effective and realistic system of taxes/levies on pesticides; (iii) study the potential support of incentives to implement the substitution principle to pesticides (preferred use of plant protection products with lower risks to human health and the environment) and; (iv) study the possible implementation and feasibility of such a system.

Funding scheme: Small collaborative project

Expected impact: The project will contribute to the further development of market-based instruments to support the development and implementation of the Sustainable Use of Pesticides thematic strategy. In the preparation of the strategy, following detailed research and taking into due account the specificities of both pesticides' supply and demand, the Commission finally considered that knowledge and instruments were not yet ripe to allow taxation to be part of the TS - this research should contribute to fill this knowledge gap.

KBBE-2007-1-4-19: Governance for an operational regional ecosystem approach to fisheries management **Call: FP7-KBBE-2007-1**

The project will evaluate the options for a gradual transition from the current management regime to a mature ecosystem approach, with specific focus on operational strategies for the implementation of the ecosystem approach to fisheries management at the regional level. The

project will focus on governance issues; how institutional frameworks are developed which will enable industry groups, citizen groups, managers and other stakeholders to share knowledge and reach decisions regarding the management of fisheries in a marine ecosystem approach. Ecological, social and economic values have to be considered in the development of management objectives and operational instruments. The project should cover at least two different eco-regions.

Funding scheme: Small collaborative project

Expected impact: Introducing an ecosystem approach to the management of the fisheries is an objective of the CFP. However, implementation is not straightforward because this requires a fundamental change in both the production of knowledge and the governance setup. The project will evaluate options for this difficult transition and inform its implementation.

KBBE-2007-1-4-20: Addressing uncertainty and complexity – governance for fisheries management

Call: FP7-KBBE-2007-1

The project will investigate how different actors in the marine sector, including fisheries, make use of scientific knowledge, how the roles that scientists play help formulate policies and how governance approaches can be developed which enable policy decisions to address uncertainty and complexity based on research and with the participation of stakeholders. Like other aspects of environmental regulation, the demand on scientific expertise in marine management is very strong. Inevitably, scientific knowledge is incomplete and uncertain and, whichever advice is delivered, has economic, social and political impacts upon a wide array of agents with conflicting interests, values and objectives. In addition, with calls for addressing multiple objectives in an integrated manner, handling knowledge as a basis for decision making becomes increasingly complex. The project will collect and build on experiences from a diverse range of EU policy areas which address interactions between human activities and nature.

Funding scheme: Small collaborative project

Expected impact: The project will support the development of governance for marine management which is inclusive of stakeholders while addressing the uncertainties and complexities inherent in marine management. As the CFP is perhaps the most science-driven of all the common EU policies, carrying out research on fisheries would also generate lessons useful in other policy arenas.

KBBE-2007-1-4-21: Interactions of fisheries and aquaculture of bluefin tuna

Call: FP7-KBBE-2007-1

The objective of this task is to establish the scientific knowledge based on the interactions between bluefin tuna (BFT) aquaculture and fisheries from biological, economic and societal short- to long-term perspectives. The fattening of BFT in cages based on the capture of wild fish is an increasing practice in Mediterranean countries. However, there is a growing concern among different stakeholders about interactions between fisheries and BFT aquaculture, which could have profound impacts. Despite some research efforts, there are still many gaps in the knowledge base required for a controlled development of this activity, e.g. impact of catching different age classes, impact of fishing of feed species, economic and social impacts.

Funding scheme: Coordination and support action aiming at supporting the KBBE

Expected impact: The project will establish a code of conduct for bluefin tuna aquaculture supporting the sustainable development of the sector.

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-2-1-01: Networking of food consumer science in Europe and development and application of social and behavioural sciences to food research

Call: FP7-KBBE-2007-1

The food consumer is critical to the food and agriculture industries in shaping demand and, particularly in this context, responding to new products (e.g. functional foods) and production methodologies (e.g. GMO safety). However, food consumer science is currently a rather poorly defined field involving a broad range of scientific disciplines. There is therefore a need to develop new knowledge and new working methods in this field. The network should involve the most important disciplines and promote new knowledge through strengthening consumer science in Europe. Objectives of this topic will be the development of a critical mass (scientists, scientific disciplines, facilities, etc.), facilitation and promotion of data exchange, joint activities (protocols, metrics, collaborative studies, etc.) and comparability of research actions in the field of consumer science in food.

Funding scheme: Network of Excellence

Expected impact: New knowledge and harmonised working methods in this field; Increased comprehension of societal problems through the development of a critical mass in food consumer science; strategies to involve relevant communities, stakeholders, practitioners in the making and/or diffusion of research; better targeted public policies that address consumer needs, in particular the policies of the Health and Consumer Protection Directorate General in the fields of health, nutrition and food safety (e.g. obesity, nutritional claims, supplementation, new food technologies).

KBBE-2007-2-1-02: Developing research tools for food consumer science in the Western Balkan Countries

Call: FP7-KBBE-2007-1

The countries of the Western Balkans (WBC) have little tradition in consumer science related to food, but are showing increasing interest in this field. Research should focus on developing research tools for assessing consumer behaviour of the WBC populations within this area. Capacity building and support to consumer food science should be fostered through an integrated information exchange, technology transfer and education programme. This might include not only support and assistance to the research/education sector but also to consumer organisations in the area. Research should focus on a specific geographical area with homogeneous socio-cultural behaviour.

Funding scheme: Small collaborative project

Additional information: Specific International Cooperation Action (SICA) – Minimum Number of Participants: 2 from different MS or AC (including Croatia and non-EU Black Sea countries) and 2 from the Western Balkan ICPC countries.

Expected impact: Determination of consumer behaviours (drivers and determinants) in the countries of the Western Balkans and Black Sea Region; Contribution to regional and

European nutrition and health policies; Increased dialogue between consumers and food producers, including industry, in the area; Enhanced cooperation in the area of consumer science with EU and neighbouring countries; Contribution to consumer policy making, in particular in the areas related to health, nutrition and food safety, relevant to the Health and Consumer Protection Directorate General.

KBBE-2007-2-1-03: Food labelling and consumer behaviour **Call: FP7-KBBE-2007-1**

Labelling of food, the information derived/perceived by consumers and the way in which they react to such information are increasingly important. Behavioural and cognitive sciences will be required to determine what information is required and desired by the consumer, how that information might be presented and what behavioural consequences and changes in purchasing and consumption patterns this produces in the purchaser and the interaction/feedback from consumers. The inter-relationship between labelling information and the other influencing factors should be considered. Particular attention should be paid to advertising in relation to food targeted at children. Full account should be taken of European legislation on food labelling (e.g. health claims, fortification and supplementation). The participation of agro-food SMEs would help to better identify their specific needs on labelling and target the research component in this area.

Funding scheme: Small collaborative project

Expected impact: Assessment of inter-relationship between food labelling information and its 'attractiveness'; interpretation framework to apply information generated in order to influence consumer habits with respect to established food-related health issues; contribution to consumer policy (Health and Consumer Protection Directorate General) through the assessment and impact of European legislation on food labelling and health claims on consumer behaviour.

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-2-2-01: Effect of diet on the mental performance of children

Call: FP7-KBBE-2007-1

Research needs to be conducted to improve the knowledge of the effect of diet on mental performance. The objective is to study the role, the mechanisms and the risks and benefits of specific nutrients and food components to respond to specific needs and improve the mental performance of children. The research will include areas such as quantification of the nutrient effects of early programming on later cognitive and mental disorders, effects of food on mental state and performance such as mood, activation, attention, sleep, motivation, effort,

perception, memory and intelligence and effects of food on mental illness (depression, anxiety, stress, etc.).

Funding scheme: Large collaborative project

Expected impact: To increase knowledge of nutrient effects in mental performance, to stimulate technological innovation and improve research methodology in this area, to provide sound scientific data to substantiate health and nutrition claims and to develop harmonised dietary recommendations for specific population groups. To enhance the cooperation and dialogue between different scientific disciplines (nutrition, food science, paediatrics, neuro-sciences, etc.). To increase the excellence and innovation potentials of the European nutrition research communities by means of stronger links to cognitive- and neuro-sciences.

KBBE-2007-2-2-02: Impact of diet on ageing

Call: FP7-KBBE-2007-1

The objective of this topic is to address nutritional issues that affect the ageing process in the hope of improving the health and quality of life of the ageing population. Specific issues/needs linked to the degree of dependency (nursing homes, patients at home) and increasing malnutrition will be addressed. Inadequate dietary patterns leading to pathologies in the elderly will be further studied. Existing epidemiological data from different population groups (elderly with different diets) will be compared and new data will be provided in view of developing European dietary recommendation and nutritional policies for the elderly.

Funding scheme: Large collaborative project

Expected impact: To advance the state of the art in the field of food and the ageing process. Enhancement of the cooperation and excellence in the relevant area between researchers in Europe and in other geographic regions to develop dietary recommendations for healthy ageing and well being of the elderly based on sound knowledge. New food will be designed to satisfy nutritional needs, e.g. nutrient-dense, tasty, familiar foods, available in convenient, easy-to-open packaging, and reasonably priced. To provide sound scientific data to substantiate health and nutrition claims, and to contribute to the European Commission Health and Consumer Protection Directorate General policy in this area.

KBBE-2007-2-2-03: Malnutrition in developing countries

Call: FP7-KBBE-2007-1

This topic aims at fostering cooperation with International Cooperation Partner Countries, particularly taking into consideration the specific needs of the poorest countries (low-income and lower-middle-income Countries) with a view to improve the quality of diet and increase the nutritional value of food to alleviate malnutrition, in particular in children. The aim is to prevent undernutrition during pregnancy and during the first years of life of children, instead of trying to reverse the effect of undernutrition at an older age. Approaches could include the diversification of diet, better use of local food resources, optimised by methods of producing traditional food, improved food processing, conservation and preparation, as well as production and use of supplements, when appropriate, taking into full consideration traditional knowledge and local food habits.

Funding scheme: Large collaborative project

Additional information: Specific International Cooperation Action (SICA) – Minimum Number of Participants: 3 from different MS or AC and 3 from different ICPC (with a special focus on low-income and lower-middle-income countries).

Expected impact: Development of knowledge and strategies to prevent malnutrition during pregnancy and during the first years of life of children. Contribution to the EU commitment towards the United Nations Millennium Development Goals. Enhancement of the collaboration between different scientific disciplines and stakeholders (nutrition, paediatrics, local food companies, etc.).

KBBE-2007-2-2-04: Optical technologies for monitoring the human nutrition status and the onset of nutrition-related health problems **Call: FP7-KBBE-2007-1**

Recent advancements in the optics/photonics industries and current progress in the miniaturisation of electronic micro-systems create potentials for designing easily operated and portable sensor systems for monitoring the human nutrition status. Research should focus on non- and minimally-invasive sensor systems for monitoring nutritional status with respect to beneficial food compounds and for detecting the exposure to dietary risk factors, and/or for diagnosing the early onset of nutrition disorders (via disease-related biomarkers). A close cooperation of nutrition experts with engineering disciplines and/or (bio)-physics as well as the participation of high-technology SMEs are compulsory.

Funding scheme: Small collaborative project

Expected impact: Improvement of the quality of life and well being of people suffering from nutrition-related disorders and diseases by providing them and/or their therapists with devices for making routine measurements of their individual nutrition status, risk factors and nutritional needs. A closer collaboration between different scientific disciplines and stakeholders (nutritionists, clinicians, engineers and high technology companies, etc.) will contribute to increasing the excellence of health-oriented nutrition research in the ERA. These developments will constitute an important technology innovation step towards the personalised nutrition concept.

KBBE-2007-2-2-05: Diet for patients in hospitals and at home: disease-related malnutrition **Call: FP7-KBBE-2007-1**

The degree of malnutrition often increases during hospital stay, contributing to the high prevalence of disease-related malnutrition in patients in the community. The aim is to study the interaction between diet and disease processes and between diet and therapies for wasting diseases such as infectious diseases, burns, immuno-deficiencies, or cancers, and those associated with interventions such as major surgery, transplants, or organ failures. The data obtained should allow the development of personalised nutrition recommendations, foods with nutrition and health claims, and foods intended for special medical purposes (FSMP) in order to help to improve health conditions, quality of life and clinical outcome for patients during their treatment in the hospital, during their recovery and at home. Dietary recommendation to improve patients' appetite and health will be established.

Funding scheme: Small collaborative project

Expected impact: Advancement of the state of the art in the field of diet and diseases process/therapies. Development of strategies to prevent malnutrition of patients living in hospitals and at home and development of dietary recommendation to improve patients' appetite and health. Contribution to the EU Health Care Policy, in particular the development of safe, high quality and efficient health services. Increase the cooperation and dialogue between different stakeholders (food industry, nutritionist, clinicians, etc.). Improvement of patients' appetite and health through optimised food quality and the development of functional foods.

KBBE-2007-2-2-06: Impact of exogenous factors in the development of allergy

Call: FP7-KBBE-2007-1

The aim will be to investigate the mechanisms of early protective effect of exposure to exogenous factors such as diet, lifestyle and/or living environment on allergy development, using cohort studies and well defined model systems to study the immunological pathways involved, particularly in relation to events in early life. The primary focus will be on the preventable causes, rather than triggers, of allergy onset and on the elucidation of how

exogenous factors affect the immune system, mucosal barrier, gut colonisation and development of allergy.

Funding scheme: Small Collaborative Project

Expected Impact: Creation of comprehensive and innovative knowledge on the immunological and physiological mechanisms underlying the cause of allergy and its rise in prevalence. Promoting health and quality of life of allergy sufferers by addressing health determinants such as diet and lifestyle conditions. Provide new knowledge on when exposure to these putative protective agents or mechanisms can improve health by preventing further increase of allergy

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-2-2-07: Diet and its effect on the development of intestinal microflora and on the immune system through the entire life span **Call: FP7-KBBE-2007-2A**

Further research is needed to understand the complex interactions and mechanisms at molecular level within the gut microflora (bacteria-bacteria) and between the gut microflora and the intestinal immune system. This is important in all stages of life, from infancy through ageing, especially as modern lifestyle (stress, medications, imbalanced diet) can weaken the immune system. The objectives are twofold: 1) to describe the effects of diets on the development of the intestinal flora at the molecular level using cutting-edge technologies, 2) to unravel the effects of the interaction between the gut microflora and the diet on the development and the functioning of the immune system; both risks and benefits of the approach will be considered. The work will focus on specific target groups (age, countries).

Funding scheme: Large collaborative project

Expected impact: Increase the knowledge of the influence of diet on the gut flora and the impact of gut flora and specific groups of microorganisms on the immune system and the interaction with other organ systems. Increase the cooperation between different scientific disciplines (nutrition, microbiology, immunology, etc.). To provide sound scientific data to substantiate health claims and to contribute to the European Commission Health and Consumer Protection Directorate General policy in this area.

KBBE-2007-2-2-08: Systems Biology and bioanalytical tools for nutrition research

Call: FP7-KBBE-2007-2A

The regulation of human metabolic pathways as well as the underlying control circuits of nutritional homeostasis are poorly understood, both at the cell and organism level, representing a bottleneck in health-related nutrition research. This can be addressed by the integration of high-throughput bioanalytical tools, *in vivo/in vitro* test models and computational systems biology tools. The main challenges facing tool development such as instrumentation, data acquisition and storage, standardisation, data analysis and interpretation including *in silico* modelling should be addressed. Relevant theoretical disciplines such as biomathematics and systems engineering should be integrated at a high level. Consortia should include industrial IT partners, including SMEs.

Funding scheme: Large collaborative project

Expected impact: To improve and strengthen the collaboration between theoretical (dry-lab) and bioanalytical (wet-lab) research to increase the knowledge and give new impetus for health-oriented nutrition research. Computer based tools describing mathematical models of metabolite and energy control is a basic demand for the further development of nutrigenomics and personalised nutrition concepts.

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-2-3-01: Smart control for improved food and feed technologies

Call: FP7-KBBE-2007-1

The aim is to develop robust and reliable quality sensing systems, in combination with computer simulation programmes, for process design, monitoring and control, such as applications of Process Analytical Technology. They should gradually replace ex-post quality control systems taking into account product properties and quality as well as environmental constraints. Scientific trends in technologies will be adequately considered in order to improve the diversity of foods and feeds taking into account the needs of consumers and of small and large industries in terms of applicability. Collaboration of food technologists, sensor and information technology (IT) specialists as well as industrial quality managers is needed. SMEs from the IT and sensor sector should be involved, in particular for the demonstration activities.

Funding scheme: Large collaborative project

Expected impact: Increased excellence in the field of IT applications to food processes. More sustainable processes in terms of energy and waste, performance improvement and reduced production costs of high-quality foods supporting the competitiveness of European food, sensor and IT industries, in particular SMEs. Increased number of patents in the area and new market opportunities.

KBBE-2007-2-3-02: Assessment and improvement of existing food and feed technologies

Call: FP7-KBBE-2007-1

The food technology of today is based both on traditional, local and experience-based processes and on long-established, science-based processes. These classical technologies have not been analysed thoroughly. The aim is to (re)assess and to improve some selected key technologies in an exhaustive approach from industrial processing to catering and home preparation covering safety, nutritional, environmental and economic issues. Collaboration of food technologists, nutritionists, toxicologists, microbiologists, consumer scientists, economists, and technology-applying companies is needed. Expected deliverables are clearly improved technologies as measured against specific indicators. The deliverables will be described in technical best practice guides and recommendations for standards. The collaboration with SMEs is essential.

Funding scheme: Small collaborative project

Expected impact: Bridging scientific fields for spreading the excellence and for an innovation-driven increase of the competitiveness of food producers and food equipment manufacturers, measurable increase of food safety and quality, reinforcement of consumer trust in food, better informed decisions taken by policy and regulatory bodies.

KBBE-2007-2-3-03: (Bio-)Technologies for the production of food additives, colorants, and flavours **Call: FP7-KBBE-2007-1**

Food product innovation is closely related to the ability of the industry to produce new food additives in order to create new textures, flavours, and colours, and to increase safely the shelf life of processed foods. The aims of this topic are to investigate new biological sources for food additives and to develop alternative (bio-)processes to replace chemically synthesised additives by natural ones. Prototypes of new food additives are expected; risk-benefit assessments, process optimisations and nutritional assessments have to be carried out; food (bio-)technologists, microbiologists, nutritionists and toxicologists have to cooperate.

Funding scheme: Small collaborative project

Expected impact: Development of sustainable bioprocesses for new and innovative food ingredients from biological sources, supporting the competitiveness of European industries, in particular SMEs, from the biotech and food technology area. Increased number of patents in the area and new market opportunities. Reinforcing consumer trust in food by replacing chemically synthesised additives by natural ones.

KBBE-2007-2-3-04: Nano-devices for quality assurance, food safety and product properties **Call: FP7-KBBE-2007-1**

The aim is to develop nano-devices to be used online, at-line and in situ for monitoring food quality, safety and product properties along the entire food chain. Developed instrumentation should be able to interact with information technology tools in order to enhance quality control systems and determine parameters to correlate the quality and safety of the product. Activities also include the identification, development and/or implementation of smart nano-based tools for packaging and delivery systems for food quality preservation, safety, monitoring and control. Nano-devices should be considered to incorporate sensing, preservation, biocide, reporting and remote control properties. Hazard testing and risk analysis have to be performed as nano-technologies develop. Collaboration of food technologists, sensor specialists and industrial quality managers is needed; SMEs should be involved.

Funding scheme: Small collaborative project

Expected impact: Development of innovative process/product control systems based on robust and reliable sensor technologies compatible with food systems. Optimised ways to integrate the sensing, reporting and remote control of the quality, safety and properties within food products throughout the production process. Increased European scientific excellence throughout the European Research Area by an increased number of patents in the area and new market opportunities.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-2-3-05: Harmonising and integrating research on food technology, safety and nutrition through commonly shared food models **Call: FP7-KBBE-2007-2A**

Food industry and the scientific community are lacking 'real complex food' models that can simultaneously help assess (risk, benefits, safety) and optimise the processes applied to foodstuffs as well as evaluate and improve the nutritional quality of real foods for the consumers. Expected deliverables are a number of real foods with complex micro- and macro-structure and composition to be used as validated models together with Standard Operating Procedures in food processing, food safety, food quality, and nutrition research. These tools will have to be developed, disseminated and used in common by researchers and other stakeholders (industry, authorities) in order to facilitate a standardised multidisciplinary approach to food research.

Funding scheme: Large collaborative project

Expected impact: New knowledge and development of common approaches for food research disciplines, increase of the sustainability and the competitiveness of the EU food research and EU food industries, with support to food safety policies. All major food categories will have been modelled by 2015. Standardisation in food models will strengthen multidisciplinary approaches, increase European scientific excellence and lead to broadly agreed results across disciplines through the European Research Area. Better informed decisions taken by policy and regulatory bodies.

KBBE-2007-2-3-06: Network for facilitating the implementation of high-tech processing at industrial scale **Call: FP7-KBBE-2007-2A**

The EU-based food research needs to valorise its research results by transferring them to the industry. Translating scientific results into cost-efficient commercial applications should strengthen the competitiveness of food industries in order to face the world-wide competition. The aims of the network are to develop and demonstrate the efficiency of new methods and tools for a better integration and transfer of new (bio-)technologies and research results to the European food industry, in particular SMEs. It is expected that industrial needs and available knowledge will be collected, mapped, monitored and linked. In order to reach a large audience and to provide evidence of the efficiency of these methods, strong quantitative input from consumer sciences is needed. It is expected that quantifiable and verifiable evidence of the implementation in industry will be demonstrated. Participation of industries, Innovation Relay Centres, SMEs and/or associations is mandatory.

Funding scheme: Network of Excellence

Expected impact: Innovation and technology transfer within the European Research Area for the development and sustainability of the competitiveness of European food industries, in particular SMEs. Increase of European technological excellence and encouragement of early adopters to test innovations. Food product innovation rate increased by 20% until 2020. Increased number of patents in the area and new market opportunities. Better informed decisions taken by policy and regulatory bodies.

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-2-4-01: Exposure to food additives, flavourings, and migrants coming from food contact materials – Dietary intake models **Call: FP7-KBBE-2007-1**

The aim is to assess consumer exposure to food additives, flavourings and substances migrating from food contact materials. The use of QSAR (quantitative structure activity relationship) for the migration from food contact material shall be explored. Dietary intake models will also be developed, which take into account high consumption, special groups of consumers and different age groups. Harmonised methods will be developed for data collection and the construction of a European database.

Funding scheme: Large collaborative project

Expected impact: A risk management tool consisting of a database containing information on the levels of food additives, flavourings and migrants from packaging in food and corresponding consumption data. Addressing policy needs in the area of food additives, flavourings and food contact materials (European Commission Health and Consumer Protection Directorate General).

KBBE-2007-2-4-02: Detecting contaminants in the food and feed chain

Call: FP7-KBBE-2007-1

The control of potential hazards to ensure food and feed safety requires the development of simplified, inexpensive control and detection methods. Research will focus on key potential hazards including crop protection agents, veterinary pharmaceuticals, persistent organic pollutants, perfluorinated compounds, heavy metals and biological toxins, including alkaloids.

Funding scheme: Large collaborative project

Expected impact: Improved toxicological exposure assessments for key potential hazards, new approaches to assessing the hazard posed by chemical risks, contribution to the development of validated predictive models for behaviour of relevant hazards in foods and feed. Addresses policy needs, in particular regulatory control and enforcement aspects, in the area of feed and food safety.

KBBE-2007-2-4-03: New methods for the monitoring and control of food-borne viruses

Call: FP7-KBBE-2007-1

New, emerging and re-emerging food-borne viruses of public health importance will be studied to reduce the incidence of food-borne viral diseases. The project will develop and validate methods, technologies and strategies to monitor, prevent and control contamination of food and feed by such pathogens. Improvement and application of risk assessment and modelling will enhance the understanding of the acquisition, maintenance and spread of food-borne viruses along the food chain. Control methods will be based on both physical and procedural methods. Research should be relevant to international regulation and include the development and validation of science-based risk management procedures in both animals and humans: predictive models and modelling tools will interpret the impact of interventions at any point along the food chain.

Funding scheme: Small collaborative project

Expected impact: Methods to prevent and control contamination of food and feed with new and emerging viruses. Validated models to minimise risks from food-borne viruses based on improved understanding of viral epidemiology and predicting interactions between foods, the ecosystems and viruses. Addresses public health and consumer policy needs (European Commission Health and Consumer Protection Directorate General).

KBBE-2007-2-4-04: Innovative and safe packaging

Call: FP7-KBBE-2007-1

The aim is to support the development and safety assessment of modern packaging solutions (active, intelligent, recyclable, easy-to-use, organic, antibacterial, etc.) that will improve food quality by increasing shelf life, provide additional information to the consumers such as indication of food spoilage, and will be easy to use, re-use, and recycle. The project should develop biosafety assessment and assess the risk versus the benefit of the use of recycled materials. Key aspects include: i) safety assessment of non-intentionally added substances coming from raw material or formed during processing, ii) the use of novel technologies such as active packaging and nanotechnologies iii) chemical characterisation and toxicological profile of complex mixtures migrating from food contact materials.

Funding scheme: Small collaborative project

Expected impact: Novel food packaging technologies and novel tools for risk-benefit assessment of these technologies, including the potential use of recycled materials. Results would provide a basis for a risk management tool and address policy needs in the area of food contact materials (European Commission Health and Consumer Protection Directorate General).

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-2-4-05: Food sampling strategies for risk analysis

Call: FP7-KBBE-2007-2A

The aim is to improve and harmonise sampling techniques that can be incorporated in food safety assurance schemes. Methods and protocols for accurate and precise fit-for-purpose sampling strategies should be developed for specific situations, food products and risks (biological and chemical). Aspects related to sampling, sample preparation, protocols for end-users along the food chain, costs and training for applying these techniques, as well as economic inputs, should be considered also.

Funding scheme: Large collaborative project

Expected impact: The project should a) improve and harmonise sampling techniques along the food chain for supporting and advancing food safety risk assessment and enhancing fraud detection; b) provide information and support for food safety policies in the areas of contaminants, chemical and microbiological safety (European Commission Health and Consumer Protection Directorate General).

KBBE-2007-2-4-06: Protecting animal and human health from prions in food, feed and the environment

Call: FP7-KBBE-2007-2A

Protection of animal and human health from prions requires the prevention of transmission and the ability to detect disease. Prion protein structure, function, conversion and pathogenesis on a molecular and cellular level, including the human-ruminant species barrier will be the subject of research, contributing to the development of improved detection and decontamination methods and more realistic estimation of risks to human health. Further research will increase our understanding of transmission mechanisms in humans and ruminants (which may include investigation of persistence, accumulation and mobility of prions in soil), including an investigation of genetic susceptibility and resistance. Epidemiological evaluation and surveillance of human and animal disease will evaluate the risks of secondary transmissions and oral exposure as well as the effectiveness of current intervention strategies. Surveillance may be extended to regions outside Europe to which BSE may have been exported and which may represent a risk for re-importation.

Funding scheme: Large collaborative project

Expected impact: An up-to-date estimation of the past and current exposure risk to humans from TSE will contribute to the European Commission Directorate General for Health and Consumer Protection's TSE policy, as will the evaluation of current intervention strategies, the development of improved decontamination techniques and an improved understanding of the fundamental nature of the disease.

Area 2.2.5 Environmental impacts and total food chain

Protecting both human health and the environment through a better understanding of the environmental impacts on and of 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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-2-5-01: Assessment of short- and long-term effects of GMOs on human and animal health **Call: FP7-KBBE-2007-1**

There is a need to continually assess potential foreseen or unforeseen short- and long-term effects of GMOs on human and animal health. Currently these effects are estimated during the pre-market safety assessment but there is a requirement for post-market monitoring. The research shall develop appropriate techniques for such assessments and analyse their possible limits. It shall include the possible differentiation of the types of post-market monitoring according to the objectives and type of GMOs, the level of exposure and the ethical considerations that are raised.

Funding scheme: Small collaborative project

Expected impact: Improved knowledge of GMO effects on human and animal health after authorisation. Improved techniques for post market monitoring of GMOs. Support to policy needs of the European Food Safety Authority, the European Commission Health and Consumer Protection Directorate General, and the European Commission Environment Directorate General.

KBBE-2007-2-5-02: Converging technologies and their potential for the food area

Call: FP7-KBBE-2007-1

The ‘converging technologies’ (Bio- and Nanotechnology, Neuro- and Cognitive sciences, Informatics) offer significant potential for the food industry by improving the understanding of the physical, chemical and biological properties of food and food ingredients in different conditions such as during production, storage, release and consumption. This potential might be more easily realised if methods and results from existing studies were brought together under an integrating platform. The aim is to explore and understand both the power and the limitations of converging technologies in food, through multi- and cross-disciplinary research, and to better understand the role of food for the health and well-being of consumers. Consideration should also be given to factors such as harmonisation of data and ethical issues.

Funding scheme: Small collaborative project

Expected impact: To explore and understand both the power and limitations of converging technologies in the food sector. To achieve scientific and technological breakthroughs in the development of integrated tools, devices and methods for practical and industrial applications in the food sector (e.g. novel structures, processes, and/or systems).

KBBE-2007-2-5-03: Development and application of computational biology as a complementary tool to *in vivo* and/or *in vitro* trials **Call: FP7-KBBE-2007-1**

Computational biology, as both an enabling and an enabled technology, also covers bio-simulations and the term '*in silico*' is added to *in vivo* and *in vitro* to describe experimental conditions. The aim is to define and/or simulate macromolecular interactions and cellular metabolism '*in silico*'. Research activities will include the development and application of data-analytical and theoretical methods, mathematical modelling and computational simulation techniques to the study of biological and behavioural systems. Predictive tools allowing the development of novel risk-benefit assessment procedures need to be further developed. This multidisciplinary research will require the standardisation of experimental protocols, which will lead to improved reproducibility, increased sensitivity and unified means for comparing data obtained from different sets.

Funding scheme: Coordination and support action aiming at coordinating research activities

Expected impact: Development of new shared computational methods to deal with the massive flow of data emerging from modern experimental approaches in the food sector. Development of new biological hypotheses for web-lab research on complex biological systems, with the aim to reduce costs, time scales for product development, and minimise the need for animal testing. Predictive models and tools for studying simultaneously many variables of the food, nutrition and biology domains (i.e. numeric, sensory and perceptions, structure, biological, chemical and vision food-related data).

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-2-5-04: Sustainability of the food chain **Call: FP7-KBBE-2007-2A**

Research using life cycle assessment in combination with other tools for 'system analysis', should establish to what extent food chains differ with respect to their sustainability. Parameters affecting the sustainability at the global level of food supply systems will be identified and will enable the development of pilot models to be used for identification of more sustainable production systems, taking into account also the issues of fair and ethical trade. Secondly, technological and management solutions to increase sustainability may be developed for the identified 'hot spots' within production, processing, packaging and transportation, from a food chain perspective. Thirdly, research will develop methods for increasing the transparency of sustainability attributes with the aim of enhancing consumer trust and facilitating food choice. Participation of third countries, especially of ICPC developing country partners, is encouraged.

Funding scheme: Large collaborative project

Expected impact: Systems analysis of the food supply systems will provide data required to improve the sustainability of food chains. Technologies to be developed to aid implementation of sustainability strategies. Help will be provided to the consumer in choosing sustainably produced foodstuffs.

KBBE-2007-2-5-05: Reducing mycotoxin contamination in the food and feed chain

Call: FP7-KBBE-2007-2A

The research should focus on reducing the mycotoxin contamination of the food and feed chain by novel methodologies, improved handling procedures and information and education strategies. The project will involve relevant International Cooperation Partner Countries. Research on the effect of food processing technologies, further processing, preservation methods on mycotoxin levels in food and feeds will also be carried out. The principle of mutual interest and shared benefits will underpin this international cooperation with Third Countries.

Funding scheme: Large collaborative project

Additional information: Specific International Cooperation Action (SICA) – Minimum Number of Participants: 3 from different MS or AC and 3 from different ICPC

Expected impact: The project should a) develop novel methodologies and improved handling procedures, b) generate and disseminate information and education strategies for reducing the risk for human mycotoxicoses c) enhance cooperation between researchers in Europe and in other geographic regions.

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

Area 2.3.1 Improved biomass and plant based renewables

Strengthening the knowledge base and developing advanced technologies for terrestrial or marine biomass 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 biomass 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 biomass production practices, transportation, and storage and market deployment of bio-products.

Using or developing biotechnologies 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 bioenergy stocks.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-3-1-01: PLANT CELL WALLS - Understanding Plant Cell Walls for optimising Biomass potential

Call: FP7-KBBE-2007-1

Plant Cell Walls characterise the major biomass resource on the planet. They are composed of high energy polymers as well as complex mixtures of additional polysaccharides, proteins and small molecules. In principle, biorefining can convert these cell walls into sugars and other renewable feedstocks for industrial biotechnology. They have however naturally evolved to resist breakdown from mechanical and microbial forces so unlocking the components in these biomaterials represents a massive scientific and technical challenge. Multidisciplinary integrated research is called for which addresses the chemistry of cell wall polymers, particularly the lignins, microcrystalline cellulose, hemicelluloses and pectins; the cell biology of the wall; bioprocessing of the raw material, to design novel and more efficient fractionation systems; enzyme biochemistry and technologies of hydrolases involved in cell wall degradation; genomics, transcriptomics, proteomics and metabolomic analysis of cell wall biosynthesis and metabolism to devise new plant breeding strategies for the production of raw materials enhanced for biorefining including microarray technologies.

Funding scheme: Large collaborative project

Expected impact: Demonstration of EU-US collaboration in tackling a fundamental technical bottleneck in the development of biomass potential. Essential generic knowledge for the exploitation of plant material in the production of industrial products, including food.

KBBE-2007-3-1-02: ENERGY PLANTS - Novel plants for energy production

Call: FP7-KBBE-2007-1

Crops which are grown specifically for the production of renewable energy offer new opportunities for sustainable forestry and agricultural systems. Where this involves marginal land, new economic potential can be realised. Our current knowledge of dedicated energy crops is limited, both in relation to the biological processes involved in the synthesis of substances acting as raw material for biofuel production, as well as, in relation to the discovery, domestication and/or development of new energy crops. Realising the potential of this area will necessitate the application of genetic and genomic technologies to facilitate gene discovery and fast-track breeding. developing greater knowledge of supply chain issues including life cycle analysis and environmental impact.

Funding scheme: Small collaborative project

Expected impact: Market driven, hardy, viable and profitable energy crops with enhanced traits derived from conventional and biotechnological breeding techniques which exploit the post genomic knowledge base.

KBBE-2007-3-1-03: GREEN OIL - Plants providing oils of the future

Call: FP7-KBBE-2007-1

Alternative sources of energy and industrial feedstocks are currently being sought and the seed oils of plants, structurally similar to long chain petroleum hydrocarbons, represent excellent renewable resources for oleochemical production. Multidisciplinary, concerted, integrated research is thus sought to establish the knowledge base and molecular tools required for optimising the production of industrially important oils in high-yielding crops. To realise the potential in this area, a new platform of understanding is urgently required in order to allow the rational development of designer oil products at sufficient yields to make them commercially viable. This necessitates the molecular genetic dissection of the overall biochemical process leading to oil production in target oil-producing species. This could facilitate the rapid domestication of under-utilised species as new industrial crops, the improvement of existing oil crops and the development of novel oil crops through gene transfer methods. The full range of applications will be investigated. Research performed here provides an opportunity to apply new genomic knowledge in the development of vegetable oils for industrial use, along with the agronomic and rural implications for their introduction. It allows for strong EU/US collaboration, as well as international co-operation with relevant ICPC while addressing long term objectives of the biofuel directives, CAP reform and sustainability. A close interaction between private companies and scientists will provide a unique opportunity to develop the technology platforms that will underpin a robust, bio-based economy.

Funding scheme: Large collaborative project

Expected impact: Market driven, hardy, viable and profitable oil seed crops with enhanced traits derived from conventional and biotechnological breeding techniques which exploit the post genomic knowledge base.

KBBE-2007-3-1-04: FOREST PRODUCTS - New forest based products and processes

Call: FP7-KBBE-2007-1

The forest is our most ancient and abundant source of renewable and sustainable material. The exploration of forest based products for including novel plant species and sustainable processes which improve properties and processing facilities will be sought along with the production of high added value products made of wood based fibres with high durability, usability and recyclability. Meeting consumer demand for new products by replacement of “unsustainable products” with wood based products as well as energy saving processing, and

replacement of hazardous components (glues, painting, and preservatives) with environmentally friendly biobased products will be investigated.

Funding scheme: Large collaborative project

Expected impact: Diversification of the forest based industries and opportunity to apply post-genomic knowledge in the production of derived forest products.

KBBE-2007-3-1-05: BIO-VET-PHARMING -Plant made recombinant pharmaceuticals for animals **Call: FP7-KBBE-2007-1**

The production of recombinant veterinary pharmaceuticals in plants can potentially address many of the difficulties and challenges posed by existing methods of production. The combination of low cost coupled with high scale manufacturing capacity is particularly important for many veterinary products and will enable the development of new applications that are currently not achievable with fermenter-based technologies. Applications include veterinary products that are required in very large quantities, such as sub-unit vaccines or monoclonal antibodies including their biotechnological modifications. Veterinary medicines that are specifically designed for production in plants, such as recombinant immune complexes, recombinant toxic chimeric molecules, etc. Our growing understanding of protein production in plants has led to the ability to engineer molecules with enhanced immunological properties. Research should focus on: Identification of animal diseases where plant derived pharmaceuticals can solve existing problems, novel molecular engineering and expression technologies for molecular farming processes to be optimised. The cultivation of these plants should follow the relevant environmental risk assessment as required by the appropriate legislation.

Funding scheme: Network of Excellence

Expected impact: The production of new pharmaceuticals derived from plant expression systems, and applying post-genomic knowledge. Solving some of the extraction and purification barriers to make the technology industrially exploitable.

KBBE-2007-3-1-06: BIOPOLYMERS - Biological Polymers from plants

Call: FP7-KBBE-2007-1

This topic aims at studying the successful demonstration and scale up of useful biopolymer production in agricultural plants. These include, but are not limited to, the synthesis of polymers with plastics and elastomeric properties such as polyhydroxyalkanoates and rubbers, starch-based plastics, as well as fibres and adhesives based on proteins or poly-amino acids. The scientific challenges include cost-effective production of high-performance biopolymers from agricultural plants through a multidisciplinary approach; finding ways to express microbial polymers such as polyhydroxyalkanoates, and proteins such as silk and adhesin in plants in sufficient concentrations without compromising the agronomic qualities of the plant; defining modifications of starch that can be implemented in plants leading to better starch-based biopolymers; developing European alternatives for natural rubber production; investigating protein co-products such as zein from corn and soybean meal as potential bioplastic raw material including their modification in plants. Economic assessments, environmental impact and life cycle analyses will be examined to identify the respective strength and weaknesses of the various production, use and disposal scenarios.

Funding scheme: Large collaborative project

Expected impact: Profound understanding of how plant and microbial metabolic pathways can be geared towards biopolymer production. The gradual replacement of chemical-based production by biopolymers will have a great environmental benefit.

KBBE-2007-3-1-07: FUTURE CROPS - Technical, socio-economic, environmental and regulatory aspects of future non-food crop systems **Call: FP7-KBBE-2007-1**

The project will analyse parameters that can contribute to establishing non-food crop system alongside food crop systems. This could include land allocation of non-food areas, ways to ensure parallel cultivation with food crops and the safety of the food chain. Parameters can be technical (choice of crop, rotation, yield, raw material characters, distance field/plant etc.), socio-economic (public acceptance, rural development, impacts on market prices etc.), environmental (sustainability criteria, impacts on soil and water resources) and regulatory (co-existence; safety measures when using crops for both food and non-food uses). The research should help the EU to be competitive in developing its bioeconomy and should involve all players along the chain, taking into account ongoing activities world-wide.

Funding scheme: Coordination and support action aimed at coordinating research activities

Expected impact: Research should provide answers as to whether a competitive bioeconomy is a viable option for Europe.

KBBE-2007-3-1-08: BIOMASS SUPPLY AND IMPACT – Identification of optimal terrestrial and aquatic biomass and waste for Bioproducts **Call: FP7-KBBE-2007-1**

In the context of the anticipated expansion of the farming area designated to biomass and biofuel production, there is a need to quantify the potential, and identify the best sources, of European biological feedstocks for industry, while at the same time evaluating the sustainability of biomass and biofuel production with respect to their availability, production, supply cost and environmental impacts. Furthermore, an overview on the present status of research is needed, as are tools for assessing the suitability of different types of land for different types of biomass/biofuels production. Identification of the optimum Life Cycle Assessment and economic and environmental impact schemes must be included in the study.

Funding scheme: Coordination and support action aimed at coordinating research activities

Expected impact: EU sanctioned guidelines for farmers and policy makers as to the best biomass sources to cultivate according to region, climate, policy, life cycle assessment, processing, access, etc. Optimised use of industrial and agricultural waste as resources for added value products contribute to more sustainable industrial production and better resource uses.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-3-1-09: GREEN FACTORY – The expression and accumulation of valuable industrial compounds in plants **Call: FP7-KBBE-2007-2A**

Plants can act as cheap, renewable ‘factories’ for the production of chemicals, recombinant proteins and industrial raw materials of value to a wide range of non-food industrial sectors, at the same time improving their environmental and economic potential. The objective is to understand and subsequently optimise the use of plants as “Green Factories”. The scope encompasses natural plant compounds such as primary and secondary metabolites and recombinant products expressed in transgenic plants (new transfection technologies; development of rapid expression systems; identification systems; understanding of metabolic pathways and their regulation; enhancing the performance of metabolic pathways; elucidation and modification of protein targeting; protein folding and assembly; protein storage and breakdown; the influence of external factors such as growing conditions). The cultivation of these plants should follow the relevant environmental risk assessment as required by the appropriate legislation.

Funding scheme: Large collaborative project

Expected impact: Fundamental knowledge concerning plant metabolic pathways for the production of useful commodities which can be exploited for industrial use. Closely tied with other topics this represents part of the huge impact “the plant factory” will have on society in the coming years.

Area 2.3.2 Bioprocesses

Addressing the application of industrial biotechnologies within whole crop and forest biomass 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 biocatalytic process design.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-3-2-01: LIGNOCELLULOSIC ENZYMES - Development of cellulases for lignocellulosic biomass pre-treatment²¹ Call: FP7-KBBE-2007-1

The use of lignocellulosic biomass could offer significant advantages compared to the current use of sugar or starch as the main substrate for fermentation processes. Such biomass feedstock would primarily be produced on the basis of either waste products from agriculture (straw), forestry (thinning wood, residuals) or wood-based industries (saw dust, ‘black liquor’ from pulp and paper industry) or from specific energy crops such as short rotation forestry or other cellulosic material. However, efficient enzyme mixtures of cellulases and other necessary enzymes for the hydrolysis of lignocellulosic biomass into fermentable sugars are not readily available. This lack presents a formidable significant bottle-neck for the further development of the bio-based economy in Europe.

Funding scheme: Small collaborative project

Expected impact: Expanded knowledge base on metabolic pathways and mechanisms for the complete breakdown of lignocellulosic material in either waste or dedicated forestry/plant based feedstock streams.

KBBE-2007-3-2-02: LIPID ENZYMES - Development of enzymes for lipid modification and activation Call: FP7-KBBE-2007-1

Most of the processes in industrial biotechnology start with readily available carbohydrates feedstocks such as sugar or glucose. Lipids on the other hand are rarely used as a feedstock in industrial biotechnology because they are water insoluble and only a few fermentation systems have been studied. Furthermore in the case of lipid modification only a few enzymes such as conventional lipases are used in practice. Consequently, the oleochemical industry relies more on the use of conventional chemistry than on biotechnology for its processes. There is an urgent need for the development of enzymes and fermentation systems that can readily use this vegetable oil feedstock and turn it into useful products.

Funding scheme: Small collaborative project

Expected impact: Knowledge of metabolic pathways and enzyme systems which can readily utilise diverse lipid feedstocks in the production of industrial products.

²¹ Complementary topics are open in the “Energy” Theme (Theme 5) with a main focus on bioethanol production and including pilot plant testing

KBBE-2007-3-2-03: DESIGNER ENZYMES - Improved biocatalysts for bioprocesses

Call: FP7-KBBE-2007-1

Enzymes are increasingly used as efficient biocatalysts to perform a wide range of chemical reactions. Research is needed on how enzymes can be successfully engineered through directed evolution in the laboratory involving rational design over a short timescale. In order to fully harness the power of directed evolution for better catalysts, a sustained effort is needed to develop high-throughput screening methods specifically directed towards enzymes. There is a general need in industrial biotechnology for generic platform technologies and methods for fast and accurate enzyme activity determination and generic methods to improve enzymes are urgently needed.

Funding scheme: Large collaborative project

Expected impact: Enzyme dedicated, high-throughput screening techniques, improved enzyme systems, purer products.

KBBE-2007-3-2-04: MICROBIAL STRESS IN CONTAINMENT - Study of microbial stress for more robust industrial micro-organisms

Call: FP7-KBBE-2007-1

The use of industrial microbial production strains for the conversion of renewable resources into a wide range of useful substances is an essential cornerstone of the bio-based economy. Metabolic engineering for the improvement of micro-organisms typically leads to improvements of yield and expression but with a loss of reliability when compared to wild type strains. The study of microbial stress is a particularly important aspect of microbial physiology as industrial micro-organisms typically need to function under conditions of high substrate or product concentration, low pH, high concentration of toxic substances, double phase systems, etc. for which individual solutions must be found. The rapid inhibition induced by different microbial stresses limits their usefulness in industrial fermentation situations.

Funding scheme: Coordination and support action aimed at coordinating research activities

Expected impact: A better understanding of how wild type and engineered micro-organisms can cope with growth phase related stress will be presented. Acquired knowledge could also serve microbial behaviour outside containment.

KBBE-2007-3-2-05: IMPROVED MICROBES - Metabolic engineering and modelling

Call: FP7-KBBE-2007-1

Metabolic engineering of micro-organisms is an essential cornerstone for the bio-based economy. Industrial micro-organisms are increasingly used for the fermentative production of useful metabolites from renewable resources. In the near future, many chemical building blocks will be derived from renewable resources in this way. Metabolic engineering is currently used to improve microbial metabolism for these purposes, leading to so-called "designer bugs". Present metabolic engineering typically goes through a long trial and error process as predictive and reliable models of microbial metabolism are generally lacking. Consequently, the development of useful industrial strains takes several years and this is currently a substantial bottle-neck in the development of industrial biotechnology in Europe.

Funding scheme: Coordination and support action aimed at coordinating research activities

Expected impact: Predictive metabolic models will be developed along with increased knowledge of metabolic pathways to identify ideal strains. Metabolic engineering could boost development of exploitable "tailor made" microbial strains.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-3-2-06: BIOETHANOL AND BEYOND - Novel enzymes and microorganisms for biomass conversion to bioethanol²² Call: FP7-KBBE-2007-2A

After the release of carbohydrates (typically glucose and pentose sugars) following hydrolysis of the biomass feedstock their fermentation into ethanol can take place. The micro-organisms used for fermentation of sugar-containing streams must be able to fully convert the carbohydrates into ethanol, and be robust towards biotic and abiotic stresses during the process. At present no such strains are available and significant challenges still lie ahead to develop such robust micro-organisms and enzymes including those from thermophilic sources. Developing such strains requires a multidisciplinary approach involving metabolic engineering for new pathways and enzymes to expand the substrate usage spectrum of the micro-organism; engineering micro-organisms for better stress response to industrial conditions such as ethanol tolerance, and for higher productivity. To be competitive however the EU needs to develop tailor-made processes to convert the specific EU biomass available such as forest feedstocks, agricultural wastes and by-products into ethanol or other energy sources, including development of optimal enzyme and robust fermentation systems e.g. thermophilic microorganisms and enzymes.

Funding scheme: Large collaborative project

Expected impact: Development of high performance micro-organisms and enzymes for bio-ethanol production.

KBBE-2007-3-2-07: NOVEL ENZYMES – The search for novel enzymes and micro-organisms for different bioprocesses Call: FP7-KBBE-2007-2A

As the limiting factors in enzyme use are their price and availability, finding the most appropriate micro-organisms and enzymes is vital for the economic viability of new bioprocesses and bioproducts. So the search for novel enzymes and micro-organisms from specific or extreme environments (extremophiles) whether by direct isolation or by metagenomics to create an expanding range of biological catalysts for industrial use and the development of robust fermentation microbes to simplify and improve the effectiveness of the fermentation process should be included.

Funding scheme: Large collaborative project

Expected impact: European companies already produce 70% of the world's industrial enzymes, and have a well-established research base but the impact here will be the discovery and development of micro-organisms and enzymes for specific applications, thus increasing their competitiveness and production diversity.

KBBE-2007-3-2-08: BIO-INFORMATICS - Microbial genomics and bio-informatics

Call: FP7-KBBE-2007-2A

A rapid progress has been made in the techniques and equipment of, high-throughput technologies (sequencing, omics) enabling relatively fast knowledge acquisition of microbial genomes. The vast amount of information generated in this way has to be stored, structured, indexed, and analysed and tied up to available experimental data. This need has resulted in the development of the field of bio-informatics at the intersection of biology and information science. The data on candidate genes is of no use until it has been successfully mined and translated into actual knowledge. The gap between data generation and its analysis and successful exploitation is becoming wider. There is a real need for new methods and decision tools to analyse this data faster which this project will develop.

²² Complementary topics are open in the "Energy" Theme (Theme 5) with a main focus on bioethanol production and including pilot plant testing

Funding scheme: Large collaborative project

Expected impact: A better knowledge of their genetics would improve the understanding of the activities of micro-organisms. With appropriate genome mapping, the identification of new networks can be developed. Metabolic pathways and the adaptation to manufacturing processes can be accelerated, Designing a database and developing an interface whereby researchers can both access existing information and submit new entries is necessary to strengthen the competitiveness of Europe.

KBBE-2007-3-2-09: BIOREFINERY - Biotechnology for the conversion of biomass and waste into value-added products **Call: FP7-KBBE-2007-2A**

Through the use of bio-refineries, Europe can achieve the integration of agricultural production, forestry, chemical and biological industries. The conversion of biomass, agricultural by-products and waste into a diverse range of value-added products such as food, fibres, chemicals, and energy from a single feedstock will be demonstrated. The main area of research is to find the best ways to apply the integrated chain and whole crop approach, and to apply all necessary technologies to improve the product base with a special emphasis on industrial biotechnology.

Funding scheme: Large collaborative project

Expected impact: Demonstration of working biorefinery with a processing/marketing link between agriculture and industry developing new and modified products in close cooperation with agriculture, the processing industry and end users.

Area 2.3.3 Environmental biotechnologies; Use of waste and by-products

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.

CALL 1: FP7-KBBE-2007-1

KBBE-2007-3-3-01: SYNTHETIC BIOLOGY FOR THE ENVIRONMENT - The use of Synthetic Biology for the solution of environmental problems **Call: FP7-KBBE-2007-1**

Use of the Synthetic Biology approaches to engineer complex systems and redesigning biological components for the reduction of wastes and the elimination of industrial pollution. This effort should be based on databases containing all available information on microbial routes for total or partial catabolism of recalcitrant compounds, along with their corresponding regulation.

Funding scheme: Coordination and support action aiming at coordinating research activities

Expected impact: Synthetic biology significantly expands the scope of metabolic engineering so that in theory just about any compound can be made from renewable resources through fermentation. With an enhanced knowledge of microbial metabolism, metabolic engineering and production systems, it will become possible to create completely new pathways to bio-produce new molecules that are not synthesised as such in nature.

KBBE-2007-3-3-02: IMPROVED MICROBES FOR THE ENVIRONMENT - Microbial gene expression under condition of stress **Call: FP7-KBBE-2007-1**

The aim is to understand how microbial population dynamics and gene expression are connected to multiple environmental stresses. The questions at stake are: (i) understanding the control of expression of, in particular, catabolic genes in their natural environment and how bacteria evolve the ability to respond transcriptionally and post-transcriptionally to novel

environmental signals (for instance, xenobiotic compounds or abiotic stresses); (ii) how such a response is integrated in the global regulatory network of single cells and influence the signals and behaviours of microbial communities.

Funding scheme: Large collaborative project

Expected impact: Expanding our knowledge of bacterial responses to stress and especially the catabolic pathways can contribute to knowledge based use of biotechnology for solving environmental problems. This knowledge is expected to contribute to our understanding of gene activation (information useful for several aspects of biology) and to provide environmental solutions exploitable by industry (including SME).

KBBE-2007-3-3-03: ANIMAL BY-PRODUCTS - Novel methods of treatment of animal by-products for the production of substances with biologically valuable functional properties

Call: FP7-KBBE-2007-1

By-products of the animal processing industry represent an increasing volume of biomass, whose potential is under-utilised. Development of efficient biotechnological methods for the treatment of non-valuable meat and poultry processing intermediates, for the production of proteins and other biologically valuable substances with specific functional properties to be used as raw material for other industrial uses. The aims of this project are: Optimisation of new enzymes (e.g. collagenase, keratinase, peptidase) and multienzyme blends for rational design of functional properties of the target products; Application of the newly obtained products with programmed functional properties (e.g. high food and feed value, as bioactive peptides, high water retention, optimal amino acid composition, low allergenicity, optimised immunological response and protection against infectious diseases, etc.) for alimentary animal-feeding, pharmaceutical or cosmetic industry and other uses. Establishing modern and efficient technological methods for biofuel (biodiesel, biogas) production from animal by-products. Development of a technology platform for multi-purpose processing of industrial by-products, to be adapted in different industrial sectors. This topic excludes fish-based waste.

Funding scheme: Small collaborative project

Additional information: SICA - Specific International Cooperation Action - Minimum Number of Participants: 2 from different MS or AC and 2 from different federal units (provinces, oblasts, republics or states) from Russia

Expected impact: Processing of industrial animal by-products for generating added value compounds and for energy production. Increased industrial capacity and profitability in EU countries and emerging economies such as Russia. Lowering pressure of industrial waste on the environment. The project is expected to contribute to the "EU-Russia Common Space for Education and Research" and to the S&T bilateral agreement between the EU and the Russian Federation, on the basis of mutual interest and shared benefits.

CALL 2A: FP7-KBBE-2007-2A

KBBE-2007-3-3-04: USEFUL WASTE - Novel biotechnology approaches for utilising wastes, including aquaculture wastes, to make high added value products

Call: FP7-KBBE-2007-2A

Our ability to exploit agricultural, industrial and municipal and aquaculture wastes for use as raw materials for bioproducts requires the application of new technologies to arrive at novel and economically viable solutions. For example, the full armoury of genomics techniques may be brought to bear on optimising the microbial or enzymatic processing of recalcitrant or toxic wastes with clear environmental benefits. In addition, value may be added to waste by using enzymes and microorganisms for the production of valuable bioproducts such as fine

chemicals, biofuels and biomaterials. Emphasis should be placed on local solutions to local problems which may include small scale operations. This is a very fragmented research field, and waste could be an important feedstock resource in Europe to produce a wide range of products. This project is expected to bring together the players of the diverse waste resources with a view towards adopting common approaches and supply lines.

Funding scheme: Large collaborative project

Expected impact: A coordinated European programme for the biological utilisation of organic waste streams (excluding municipal waste) making a wide range of market driven food and non-food derivatives.

KBBE-2007-3-3-05: ACTIVITY MINING IN METAGENOMES – Exploring molecular microbial diversity in aquatic environment or the soil **Call: FP7-KBBE-2007-2A**

It is estimated that only 0.1-1% of microorganisms can be cultivated using different techniques. The microbial metagenome is the largest reservoir of genes that determine enzymatic reactions. The aim is to use microbial metagenomic techniques to determine microbial enzymatic reactions of valuable chemical biotransformations, particularly in pathways for biodegradation of recalcitrant and xenobiotic molecules.

Funding scheme: Large collaborative project

Expected impact: In the process of biodegradation and biotransformation lies the unlimited power of microbial genetic diversity which needs to be unraveled and exploited with the new metagenomic technologies. This is the basis for the development of gene function databases. Gene activity is exploitable at different levels (academia, industry) and is a platform for an international dialogue.

Activity 2.4 Other activities

KBBE-2007-4-01: National Contact Point Network

Reinforcing the network of National Contact Points (NCP) for the Seventh Framework Programme under Theme “Food, Agriculture and Fisheries, and Biotechnology”, by promoting trans-national co-operation. The action will focus on identifying and sharing good practices. This may entail various mechanisms such as benchmarking, joint workshops, training, and twinning schemes. Practical initiatives to benefit cross-border audiences may also be included, such as trans-national brokerage events. The specific approach should be adapted to the nature of the Theme and to the capacities and priorities of the NCPs concerned. Special attention will be given to helping less experienced NCPs rapidly acquire the know-how accumulated in other countries.

Proposals are expected to include all NCPs from EU Member States, Candidate Countries and FP-Associated Countries, who have been officially appointed by the relevant national authorities. Other participants from the EU and associated countries are ineligible. If certain NCPs wish to abstain from participating, this fact should be explicitly documented in the proposal. Other participants are ineligible. An extension of this network to national information points from third countries is foreseen for 2008.

The Commission expects to receive a single proposal under this heading.

Funding scheme: Co-ordination and support action (aimed at supporting the development of the Framework Programme); indicative budget: €3m. It is expected that the project should last for a maximum of 5 years, and should in any case finish before March 2013.

Expected impact:

- An improved NCP service across Europe, therefore helping simplify access to FP7 calls, lowering the entry barriers for newcomers, and raising the average quality of submitted proposals.

- A more consistent level of NCP support services across Europe.

Indicative budget for the “Food, Agriculture and Fisheries, and Biotechnology” Theme for the 2007 Work Programme

	2007 (M €)
Call KBBE 2007-1²³	190.09 M €
Call-KBBE-2007-2A²⁴	
Call-ERANET-2007-RTD	2.0 M €
General activities (cf Annex 4)	15.48 M €
Other activities:	
Evaluations (1.4m EUR)	
Monitoring, evaluation and impact assessment (0.25m EUR)	1.65 M €
Estimated total budget allocation	209.22 M €

Summary Budget allocation to general activities for 2007 (cf Annex 4)

Cordis	0.41 M €
Eureka/Research Organisations	0.05 M €
COST	1.77 M €
ERA-NET	3.72 M €
RSFF	9.53 M €
TOTAL:	15.48 M €

²³ Specific International Cooperation Actions (SICA) make up *ca* €14M of the total budget.

²⁴ An amount from the 2008 budget is expected to be added to this call for which a new financing decision to cover the budget for that year will be requested at the appropriate time

III IMPLEMENTATION OF CALLS

CALL FICHE

- Call identifier²⁵: *FP7-KBBE-2007-1*
- Date of publication 22 December 2006
- Deadline 2 May 2007 at 17.00 hrs (Brussels local time)
- Indicative budget: 192.09 M€ from 2007 budget²⁶

Activity	Funding Schemes	Indicative amount (million €)
Call Identifier: FP7-KBBE-2007-1		
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments	Large collaborative projects and Networks of Excellence	15.00
	Small collaborative projects and CSAs	67.00
Activity 2.2: Fork to farm: Food (including seafood), health and well being	Large collaborative projects and Networks of Excellence	32.50
	Small collaborative projects and CSAs	29.09
Activity 2.3: Life sciences biotechnology and biochemistry for sustainable non-food products and processes	Large collaborative projects and Networks of Excellence	35.00
	Small collaborative projects and CSAs	10.50
Activity 2.4: Other activities	Large collaborative projects and Networks of Excellence	0
	Small collaborative projects and CSAs	3.00

²⁵ For topics KBBE-2007-1-2-07 and KBBE-2007-1-3-02 see the ERANET call in annex 4

²⁶ Specific International Cooperation Actions (SICA) make up about €14m of the total budget, other actions with an important international contribution about €42m. Support to ERA-NETS is in the order of €2m and is subject to a joint call for ERA-NETs across the Themes. See Annex 4 of the work programme

• Topics called:

Activity/ Area	Topics called	Funding Schemes*
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments.		
2.1.1	<i>KBBE-2007-1-1-01: Development of new tools and processes to support R&D in crop plants: molecular breeding</i>	<i>Small collaborative project</i>
2.1.1	<i>KBBE-2007-1-1-02: Mining genomics information of farm animals to generate new information on the genetic basis of phenotypes important to sustainable animal production</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-01: Annual Food crops with improved tolerance to multiple abiotic stresses</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-02: Genomics for cereal improvement for food, feed and non-food uses</i>	<i>Large collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-03: Development of more efficient risk analysis techniques for pests and pathogens of phytosanitary concern</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-04: Reducing the need for external inputs in high-value protected horticultural and ornamental crops</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-05: Novel forest tree breeding</i>	<i>Large collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-06: Developing new methods for valuing and marketing of currently non-marketable forest goods and services</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-08: Reduction of N excretion in ruminants</i>	<i>Large collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-09: From capture based to self-sustained aquaculture</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-10: Improving cost-efficiency in the fisheries</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-11: Improving research in support to scientific advice to fisheries management outside EU waters</i>	<i>Coordination and support action (Coordinating)</i>
2.1.2	<i>KBBE-2007-1-2-12: Consolidate alliances with third countries in the field of aquaculture</i>	<i>Coordination and support action (Coordinating)</i>
2.1.2	<i>KBBE-2007-1-2-13: Mitigating adverse impacts of fisheries</i>	<i>Small collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-14: The structure of fish populations and traceability of fish and fish products</i>	<i>Small collaborative project</i>
2.1.3	<i>KBBE-2007-1-3-01: Breeding tools for improved livestock products</i>	<i>Small collaborative project</i>
2.1.3	<i>KBBE-2007-1-3-03: Optimising research efforts for the development of the most effective tools for controlling infectious animal diseases</i>	<i>Coordination and support action (Coordinating)</i>
2.1.3	<i>KBBE-2007-1-3-04: Development of rational strategies for the eradication of bovine tuberculosis</i>	<i>Small collaborative project</i>
2.1.3	<i>KBBE-2007-1-3-05: Evaluating and controlling the risk of</i>	<i>Small collaborative</i>

	<i>African Swine Fever in the EU</i>	<i>project</i>
2.1.3	<i>KBBE-2007-1-3-06: Emerging vector-borne diseases, in particular: West Nile fever, Rift Valley Fever and Crimean-Congo haemorrhagic fever</i>	<i>Coordination and support action (Coordinating)</i>
2.1.4	<i>KBBE-2007-1-4-01: Developing the KBBE</i>	<i>Coordination and support action (Supporting)</i>
2.1.4	<i>KBBE-2007-1-4-02: Enabling efficient transfer of technology in the knowledge-based bio-economy</i>	<i>Coordination and support action (Supporting)</i>
2.1.4	<i>KBBE-2007-1-4-03: The farm of tomorrow</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-04: GMO cost-effective and crop-specific co-existence measures</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-05: Enlargement network - Agro-economic policy analysis of the accession and the candidate states and the countries of Western Balkan</i>	<i>Coordination and support action (Supporting)</i>
2.1.4	<i>KBBE-2007-1-4-06: Comparative analysis of factor markets for agriculture across the Member States</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-07: Costs of different standard setting and certification systems for organic food and farming</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-08: Drivers and limits of enhanced trade in agricultural and food products</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-09: Trade and agricultural policies - India</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-10: Containment of Sharka virus in view of EU-expansion</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-11: Assessing the impact of Rural Development policies (including Leader)</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-12: Policy and institutional aspects of sustainable agriculture, forestry and rural development in the Mediterranean partner countries</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-13: New sources of employment in rural areas</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-14: Cost of production using FADN data</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-15: Assessing the socio-economic consequences and costs benefits of measures promoting good animal welfare</i>	<i>Coordination and support action (Supporting)</i>
2.1.4	<i>KBBE-2007-1-4-16: Establishment of an information platform on the protection and welfare of animals</i>	<i>Coordination and support action (Supporting)</i>
2.1.4	<i>KBBE-2007-1-4-17: Models for the extrapolation of MRLs from one species to another</i>	<i>Coordination and support action (Coordinating)</i>
2.1.4	<i>KBBE-2007-1-4-18: External costs of pesticides</i>	<i>Small collaborative project</i>

2.1.4	<i>KBBE-2007-1-4-19: Governance for an operational regional ecosystem approach to fisheries management</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-20: Addressing uncertainty and complexity – governance for fisheries management</i>	<i>Small collaborative project</i>
2.1.4	<i>KBBE-2007-1-4-21: Interactions of fisheries and aquaculture of bluefin tuna (BFT)</i>	<i>Coordination and support action (Supporting)</i>
Activity 2.2: Fork to farm: Food (including seafood), health and well being.		
2.2.1	<i>KBBE-2007-2-1-01: Networking of food consumer science in Europe and development and application of social and behavioural sciences to food research</i>	<i>Network of Excellence</i>
2.2.1	<i>KBBE-2007-2-1-02: Developing research tools for food consumer science in the Western Balkan Countries</i>	<i>Small collaborative project</i>
2.2.1	<i>KBBE-2007-2-1-03: Food labelling and consumer behaviour</i>	<i>Small collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-01: Effect of diet on the mental performance of children</i>	<i>Large collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-02: Impact of diet on ageing</i>	<i>Large collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-03: Malnutrition in developing countries</i>	<i>Large collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-04: Optical technologies for monitoring the human nutrition status and the onset of nutrition-related health problems</i>	<i>Small collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-05: Diet for patients in hospitals and at home: disease-related malnutrition</i>	<i>Small collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-06: Impact of exogenous factors in the development of allergy</i>	<i>Small collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-01: Smart control for improved food and feed technologies</i>	<i>Large collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-02: Assessment and improvement of existing food and feed technologies</i>	<i>Small collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-03: (Bio-)Technologies for the production of food additives, colorants, and flavours</i>	<i>Small collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-04: Nano-devices for quality assurance, food safety and product properties</i>	<i>Small collaborative project</i>
2.2.4	<i>KBBE-2007-2-4-01: Exposure to food additives, flavourings, and migrants coming from food contact materials – Dietary intake models</i>	<i>Large collaborative project</i>
2.2.4	<i>KBBE-2007-2-4-02: Detecting contaminants in the food and feed chain</i>	<i>Large collaborative project</i>
2.2.4	<i>KBBE-2007-2-4-03: New methods for the monitoring and control of food-borne viruses</i>	<i>Small collaborative project</i>
2.2.4	<i>KBBE-2007-2-4-04: Innovative and safe packaging</i>	<i>Small collaborative project</i>

2.2.5	<i>KBBE-2007-2-5-01: Assessment of short and long term effects of GMOs on human and animal health</i>	<i>Small collaborative project</i>
2.2.5	<i>KBBE-2007-2-5-02: Converging technologies and their potential for the food area</i>	<i>Small collaborative project</i>
2.2.5	<i>KBBE-2007-2-5-03: Development and application of computational biology as a complementary tool to in vivo and/or in vitro trials</i>	<i>Coordination and support action (Coordinating)</i>
Activity 2.3: Life sciences biotechnology and biochemistry for sustainable non-food products and processes.		
2.3.1	<i>KBBE-2007-3-1-01: PLANT CELL WALLS - Understanding Plant Cell Walls for optimising Biomass potential</i>	<i>Large collaborative project</i>
2.3.1	<i>KBBE-2007-3-1-02: ENERGY PLANTS - Novel plants for energy production</i>	<i>Small collaborative project</i>
2.3.1	<i>KBBE-2007-3-1-03: GREEN OIL - Plants providing oils of the future</i>	<i>Large collaborative project</i>
2.3.1	<i>KBBE-2007-3-1-04: FOREST PRODUCTS - New forest based products and processes</i>	<i>Large collaborative project</i>
2.3.1	<i>KBBE-2007-3-1-05: BIO-VET-PHARMING -Plant made recombinant pharmaceuticals for animals</i>	<i>Network of Excellence</i>
2.3.1	<i>KBBE-2007-3-1-06: BIOPOLYMERS - Biological Polymers from plants</i>	<i>Large collaborative project</i>
2.3.1	<i>KBBE-2007-3-1-07: FUTURE CROPS - Technical, socio-economic, environmental and regulatory aspects of future non-food crop systems</i>	<i>Coordination and support action (Coordinating)</i>
2.3.1	<i>KBBE-2007-3-1-08: BIOMASS SUPPLY AND IMPACT - Identification of optimal terrestrial and aquatic biomass and waste for Bioproducts</i>	<i>Coordination and support action (Coordinating)</i>
2.3.2	<i>KBBE-2007-3-2-01: LIGNOCELLULOSIC ENZYMES - Development of cellulases for lignocellulosic biomass pre-treatment</i>	<i>Small collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-02: LIPID ENZYMES - Development of enzymes for lipid modification and activation</i>	<i>Small collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-03: DESIGNER ENZYMES - Improved biocatalysts for bioprocesses</i>	<i>Large collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-04: MICROBIAL STRESS IN CONTAINMENT - Study of microbial stress for more robust industrial micro-organisms</i>	<i>Coordination and support action (Coordinating)</i>
2.3.2	<i>KBBE-2007-3-2-05: IMPROVED MICROBES - Metabolic engineering and modelling</i>	<i>Coordination and support action (Coordinating)</i>
2.3.3	<i>KBBE-2007-3-3-01: SYNTHETIC BIOLOGY FOR THE ENVIRONMENT - The use of Synthetic Biology for the solution of environmental problems</i>	<i>Coordination and support action (Coordinating)</i>
2.3.3	<i>KBBE-2007-3-3-02: IMPROVED MICROBES FOR THE ENVIRONMENT - Microbial gene expression under condition of stress</i>	<i>Large collaborative project</i>
2.3.3	<i>KBBE-2007-3-3-03: ANIMAL BY-PRODUCTS - Novel methods</i>	<i>Small collaborative</i>

	<i>of treatment of animal by-products for the production of substances with biologically valuable functional properties</i>	<i>project</i>
Activity 4: Other activities.		
<i>2.4.1</i>	<i>KBBE-2007-4-01: National Contact Point Network</i>	<i>Coordination and support action (Supporting)</i>

* **Small collaborative projects (“small or medium-scale focused research actions”) are projects with a requested Commission contribution up to € 3 million²⁷, large collaborative projects (“large-scale integrating projects”) and Networks of Excellence between € 3 million and € 6 million and Coordination and Support Actions (CSA) up to € 1 million. It is important to note that the above mentioned funding thresholds will be applied as eligibility criteria and that the proposals not fulfilling these thresholds are considered as ineligible.**

- Particular requirements for participation, evaluation and implementation:

— The minimum number of participating legal entities required for all funding schemes is set out in the Rules for Participation.

— Please note, for Coordination and Support Actions aiming at supporting research activities and policies, the minimum number shall be the participation of one legal entity. For Coordination and Support Actions aiming at coordinating research activities, the minimum condition shall be the participation of three legal entities.

— For collaborative projects for specific cooperation actions dedicated to international cooperation partner countries identified in the work programme, the minimum conditions concerning participation rules are stated for each topic

- Evaluation procedure:

— The general eligibility criteria are set out in Annex 2 to this work programme

— The evaluation shall follow a single stage procedure

— Proposals may be evaluated remotely

— The evaluation criteria (including weights and thresholds) and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme

— Proposals will not be evaluated anonymously

- Indicative evaluation and contractual timetable:

— Evaluation results: two months after the relevant deadline mentioned above.

- Consortia agreements: Participants in large-scale collaborative research projects and Networks of Excellence are required to conclude a consortium agreement. For other projects consortia agreements are recommended.

- Particular requirements for participation, evaluation and implementation:

The selected topics may be open only for the call indicated, and it is envisaged that up to one project will be retained for each topic, unless otherwise indicated. 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.

²⁷ In general, projects supporting policy through a study-type approach will be significantly less than this – applicants should ensure that the budget is appropriate to the work carried out.

- The forms of grant and maximum reimbursement rates which will be offered are specified in Annex 3 to the Cooperation Work Programme
- 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 budgets may be adjusted by the authorising officer where the adjustments are not more than 20% of the indicative amount.

End of call fiche

Please note that the call fiche has been updated with respect to the provisional version published in CORDIS on 22 December 2006. The substantive modification is as follows:

- p64 – the title of topic **KBBE-2007-1-3-08** has been amended by the deletion of the word “food-borne” in order to bring it into line with the text on page p23

CALL FICHE

- Call identifier: *FP7-KBBE-2007-2A*
- Date of publication²⁸: 8 May 2007
- Deadline²⁹: 1st stage deadline 11 September 2007 at 17.00 hrs (Brussels local time).
For those proposals passing the first stage evaluation, there will be a deadline for full proposals of 31 January 2008 at 17.00 hrs (Brussels local time).
- Indicative budget³⁰: 0 M€ from 2007 Budget³¹

Activity	Funding Schemes
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments	Large collaborative projects and Networks of Excellence
Activity 2.2: Fork to farm: Food (including seafood), health and well being	Large collaborative projects and Networks of Excellence
Activity 2.3: Life sciences, biotechnology and biochemistry for sustainable non-food products and processes	Large collaborative projects

- Topics called:

Activity/ Area	Topics called	Funding Schemes*
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments.		
2.1.1	<i>KBBE-2007-1-1-03: Development of genetic systems for crop improvement through a systems biology approach</i>	<i>Large collaborative project</i>
2.1.1	<i>KBBE-2007-1-1-04: Development of technologies and tools for the exploitation of livestock genome</i>	<i>Large collaborative project</i>

²⁸ The Directorate-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication

²⁹ At the time of the publication of the call, the Director-General responsible may delay this deadline by up to two months

³⁰ An amount from the 2008 budget is expected to be added to this call for which a new financing decision to cover the budget for that year will be requested at the appropriate time

³¹ Specific International Cooperation Actions (SICA) make up about million € of the total budget and other actions with an important international dimension about million €

2.1.1	<i>KBBE-2007-1-1-05: Using new technologies to identify (re-) emerging pathogens from wildlife reservoirs</i>	<i>Large collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-15: Reducing the utilisation of mineral fertilisers by improving the efficiency of nutrient use in European crops</i>	<i>Large collaborative project</i>
2.1.2	<i>KBBE-2007-1-2-16: Essential biological functions related to the most relevant stages of aquaculture fish life-history</i>	<i>Large collaborative project</i>
2.1.3	<i>KBBE-2007-1-3-07: Improving animal health, product quality and performance of organic and low-input livestock systems through breeding</i>	<i>Large collaborative project</i>
2.1.3	<i>KBBE-2007-1-3-08: Improved epidemiological tools for zoonoses: application of geographical information for live animals and animal products</i>	<i>Network of excellence</i>
2.1.3	<i>KBBE-2007-1-3-09: Neglected zoonoses in developing countries: integrated approach for the improvement of their control in animals</i>	<i>Large collaborative project</i>
Activity 2.2: Fork to farm: Food (including seafood), health and well being.		
2.2.2	<i>KBBE-2007-2-2-07: Diet and its effect on the development of intestinal microflora and on the immune system through the entire life span</i>	<i>Large collaborative project</i>
2.2.2	<i>KBBE-2007-2-2-08: Systems Biology and bioanalytical tools for nutrition research</i>	<i>Large collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-05: Harmonising and integrating research on food technology, safety and nutrition through commonly shared food models</i>	<i>Large collaborative project</i>
2.2.3	<i>KBBE-2007-2-3-06: Network for facilitating the implementation of high-tech processing at industrial scale</i>	<i>Network of Excellence</i>
2.2.4	<i>KBBE-2007-2-4-05: Food sampling strategies for risk analysis</i>	<i>Large collaborative project</i>
2.2.4	<i>KBBE-2007-2-4-06: Protecting animal and human health from prions in food, feed and the environment</i>	<i>Large collaborative project</i>
2.2.5	<i>KBBE-2007-2-5-04: Sustainability of the food chain</i>	<i>Large collaborative project</i>
2.2.5	<i>KBBE-2007-2-5-05: Reducing mycotoxin contamination in the food and feed chain</i>	<i>Large collaborative project</i>
Activity 2.3: Life sciences, biotechnology and biochemistry for sustainable non-food products and processes.		
2.3.1	<i>KBBE-2007-3-1-09: GREEN FACTORY – The expression and accumulation of valuable industrial compounds in plants</i>	<i>Large collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-06: BIOETHANOL AND BEYOND - Novel enzymes and microorganisms for biomass conversion to bioethanol</i>	<i>Large collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-07: NOVEL ENZYMES – The search for novel enzymes and micro-organisms for different bioprocesses</i>	<i>Large collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-08: BIO-INFORMATICS - Microbial genomics and bio-informatics</i>	<i>Large collaborative project</i>
2.3.2	<i>KBBE-2007-3-2-09: BIOREFINERY - Biotechnology for the conversion of biomass and waste into value-added products</i>	<i>Large collaborative project</i>

2.3.3	<i>KBBE-2007-3-3-04: USEFUL WASTE - Novel biotechnology approaches for utilizing wastes, including aquaculture wastes, to make high added value products</i>	<i>Large collaborative project</i>
2.3.3	<i>KBBE-2007-3-3-05: ACTIVITY MINING IN METAGENOMES – Exploring molecular microbial diversity in aquatic environment or the soil</i>	<i>Large collaborative project</i>

* **Large collaborative projects (“large-scale integrating projects”) and Networks of Excellence are projects with a requested Commission contribution between € 3 million and € 6 million. It is important to note that the above mentioned funding thresholds will be applied as eligibility criteria and that the proposals not fulfilling these thresholds are considered as ineligible.**

- Particular requirements for participation, evaluation and implementation:

— The minimum number of participating legal entities required for all funding schemes is set out in the Rules for Participation.

— For collaborative projects for specific cooperation actions dedicated to international cooperation partner countries identified in the work programme, the minimum conditions concerning participation rules are stated for each topic

- Evaluation procedure:

— The general eligibility criteria are set out in Annex 2 to this work programme

— The evaluation shall follow a two stage procedure

— Proposals may be evaluated remotely

— The evaluation criteria (including weights and thresholds) and subcriteria, together with the eligibility, selection and award criteria, for the different funding schemes are set out in Annex 2 to this work programme

— Proposals will not be evaluated anonymously

- Indicative evaluation and contractual timetable:

— Evaluation results: Results from the first stage will be available within 2 months after the first deadline and final results are estimated to be available within 4 months after the second submission deadline.

— Contract signature: It is estimated that the first contracts related to this call will come into force before the end of 2008.

- Consortia agreements: Participants in large-scale collaborative research projects and Networks of Excellence are required to conclude a consortium agreement.

- Particular requirements for participation, evaluation and implementation:

The selected topics may be open only for the call indicated, and it is envisaged that up to one project will be funded for each topic, unless otherwise indicated. 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.

Evaluation of proposals for large collaborative research projects and Networks of Excellence will take place in a 2-stage procedure. Details can be found in the documents “Rules on proposal submission, evaluation, selection and award procedures” and the “Guide for applicants”. In brief, first stage proposals will be concise suggestions of no more than 20 pages of text (excluding the ‘A’ forms). These will be evaluated by external panels and scored against a limited number of criteria, namely the general aspects of “S/T Quality” and

“Impact”. All proposals passing the minimum thresholds will be invited to submit full proposals for evaluation at the second stage. Only proposals passing the first stage of evaluation for these instruments will be accepted for the second stage.

- The forms of grant and maximum reimbursement rates which will be offered are specified in Annex 3 to the Cooperation Work Programme
- 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 budgets may be adjusted by the authorising officer where the adjustments are not more than 20% of the indicative amount.

End of call fiche

IV INDICATIVE PRIORITIES FOR FUTURE CALLS

Indicative topics of the 2008 work programme:

Area 2.1.1

- Development of new tools and processes to support R&D in crop plants: gene technology breeding
- New and converging technologies for Precision Livestock Farming in European animal production systems
- Genomics to develop improved approaches to the control of endemic infectious, or metabolic, farm animal diseases

Area 2.1.2

- Improved indicators of the relationship between organic/low-input farming and biodiversity
- Improving water stress tolerance in European food crops
- Developing vaccines for the control of roundworm infestation in extensive ruminant production systems
- Framework for effort and capacity management of the fisheries
- Mitigating adverse impacts of aquaculture
- Microbial control for more sustainable aquaculture
- Improved agro-forestry systems for sustainable farming (SICA)
- Development of new detection, diagnostic and management methods in support of Plant Health policy

Area 2.1.3

- Improving production animal health and food safety through investigating the gut physiology of farm animals, the gastro-intestinal microflora and their interactions.
- Biosafety measures for *Campylobacter* at primary production
- Development of a new generation vaccine for FMD

Area 2.1.4

- Deep sea fisheries management
- Spatial analysis of area-based measures in rural development programmes
- Non-tariff barriers
- Societal Benefits of Organic Farming
- Assessing the pros & cons and monitoring the perception of GM animals
- GMOs and possible long-term impacts on biodiversity
- Improving the stakeholder dialogue towards a common vision and joint research priorities for the knowledge-based bio-economy
- Novel approaches for reusing nitrogen
- Valorisation of Andean microbial biodiversity for agroindustry of basic crops, for environmental protection and as a source of novel bioactive compounds – SICA (Latin America-Andean region)
- Assessing the impact of decoupling and of the implementation of cross-compliance on the environment and on rural economies

Area 2.2.1

- Taste, cognitive perception and mood
- Assessment of intervention measures aimed at promoting healthy eating habits
- Risk perception and communication in the food chain and the role of the media

- Applying behavioural models for the prevention of obesity, with a particular focus on children

Area 2.2.2

- Optimal cell function and nutrition
- Methodologies and tools to support the prevention of obesity in Mediterranean Partner Countries (SICA)
- Linking with international databases on food composition and consumption (SICA)
- Functional foods, natural products and bioactive compounds from the Black Sea region (SICA)

Area 2.2.3

- New solutions for improving refrigeration technologies along the food chain
- Sustainable processing, water and energy savings
- Observing and understanding the micro-structure of foods
- Alternatives to SO₂ for food preservation

Area 2.2.4

- Biocides and induced risks of antibiotic resistance in food pathogens
- Effects of combined exposure to chemicals intentionally added to the food chain

Area 2.2.5

- Assessment of impacts from climate change on food
- Food chain management
- Assessment of impacts of scenarios affecting food chain management

Area 2.3.1

- PLANT NATURAL PRODUCTS - Realising the potential of plant natural products for human and animal health
- SWEET SORGHUM - Alternative energy crops for biofuel production in semi-arid and temperate regions – SICA (Latin America)
- NONFOOD SUPPLY - Harvesting storage and transport of raw material

Area 2.3.2

- INDUSTRIAL ENZYMES - Rational design of biocatalysts and enzyme systems with requested properties - SICA (Russia)
- BIO-CHEMICALS - Biofermentation for fine and speciality chemicals
- BAGASSES – Improved chemical and enzymatic treatments of bagasses from energy crops, for increased bio-fuels production yields – SICA (Latin America)
- PLANTS as EDIBLE VACCINES - SICA (Russia)

Activity 2.4

- Network of Third Countries National Information Points – SICA (ICPC and countries with bilateral S&T agreements/arrangements with the EU)