

*Priority 5:
Food Quality and Safety
3rd Thematic call*

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Work Programme

*for the specific programme for research,
technological development and demonstration:*

*"Integrating and strengthening
the European Research Area"*

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0 General Introduction

For the latest version of the general introduction see the document entitled “General Introduction” on the website http://www.cordis.lu/fp6/sp1_wp.htm

I. Focusing and Integrating Community Research

5 Priority thematic areas 5: Food Quality and Safety

5.1 Introduction

The primary objective of this Thematic Priority is to improve the health and well-being of European citizens through higher quality food and improved control of food production and related environmental factors. This approach re-addresses the classical “farm-to-fork” approach by giving priority to consumers’ demands and rights for high quality and safe food. Taking the “fork-to-farm” approach provides the primary driver for developing new and safer food production chains and foods, relying in particular on biotechnology tools and taking into account the latest results of genomics research. The anticipated benefits will be achieved by developing and integrating research in a way that food from farming, including fishing and aquaculture, is produced, distributed and consumed along the various stages of the food production chain and includes consideration of associated environmental factors and their influence on human health.

The research areas within this Thematic Priority thus address key aspects of food quality, safety and consumer concerns along the food chain. The approach starts with consumer health and well-being, quality, safety and consumer concerns, identifying the major issues, and then proceeds along the production chain, outlining issues associated with primary production, animal feeds, processing, distribution, consumption and environmental health risks related to the chain.

In all cases, a wider and innovative combination of disciplines beyond those traditionally used will be deployed, depending on the issue. In addition to combining production, processing, nutritional and analytical expertise, consortia should also draw on expertise from such areas as genomics, medicine, information technologies, ethics, environmental, economic and social sciences, as appropriate, to achieve their aims. Accordingly, integrated approaches that cross-cut several research areas and adopt a “total food chain” approach are anticipated.

The work programme outlines the research areas as described in the Specific Programme in which project proposals can be presented. The first area on “Total Food Chain” is all-encompassing and is intended to reinforce the desired “fork-to-farm” approach. The other areas focus on particular aspects of food quality and safety.

Taken in combination, the specified research areas form the backbone of the work programme and will be valid for all calls for proposals. The “Technical Content” section shows the topics selected for the call for 2005, with indicative topics¹ for 2006.

5.2 Objectives, Structure and Overall Approach

The research areas as described for 2005 specify crucial research topics along the complete food chain “from fork-to-farm” which have to be addressed. The rationale for the selection of these topics is based on several inputs, such as emerge from an analysis of the expressions of interest submitted in 2002. This analysis provided substantial information and guidance on the most immediate and pressing research challenges in the food safety and quality domains. The

¹ The indicative topics for 2006 can be subject to change during the next update of the work programme for this thematic priority.

views and opinions of the Programme Committee, Scientific Advisory Groups and the relevant Commission departments have also been taken into account in selecting the appropriate research topics. The specific research topics for the instruments of integrated projects and networks of excellence embrace – within a food chain context – human nutrition and quality of food on the plate, through to animal and crop production, whilst also addressing related processing factors and increasingly important environmental hazards associated with foodstuffs.

Strengthening the competitiveness of the European food 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. SMEs play a vital role in the food chain and will be key to promoting innovation. With a target of 15% of the budget reserved for the participation of SMEs within FP6, all project consortia should make every effort to include SMEs wherever appropriate, in particular in Integrated Projects and Networks of Excellence.

International co-operation with third countries world-wide is an important dimension for Framework Programme 6^{2,3}. A particular focus is on co-operation with the INCO target countries (list in Annex C), which includes the large majority of emerging, transition and developing economies, and also with countries that have signed bilateral science and technology co-operation agreements with the EU (Argentina, Australia, Brazil, Canada, Chile, China, India, Mexico, Morocco, Tunisia, Russia, South Africa, Ukraine, United States)⁴. Funding is available to participants from nearly 150 INCO target third countries (see list in Annex C), in all areas of this workprogramme.

Evaluation of the Integrated Projects and Networks of Excellence will take place in a 2-stage procedure. Details can be found within the call (see section 5.8) and in the documents “Guidelines on proposal evaluation and selection procedures”⁵ and the relevant Guide for Proposers⁶. 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 “Relevance” for both integrated projects and networks of excellence, “S&T excellence” and “Potential impact” for integrated projects and “Degree of integration and the joint programme of activities” for networks of excellence. 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. Note that, for topics involving these instruments, following the second stage evaluation up to one proposal will be funded per topic.

For proposals submitted to this work programme, there will be one closing date for the first stage evaluation for Integrated Projects and Networks of Excellence, and a further closing date for the full evaluation of the other instruments available in Priority 5 (Specific Targeted Research Projects, Coordination Actions, and Specific Support Actions). In addition, there will be a third closing date dedicated only to Specific Support Actions.

² Information on the international scientific cooperation policy is available at: http://europa.eu.int/comm/research/iscp/index_en.cfm

³ See “INCO infopoint on international cooperation activities at: http://www.cordis.lu/fp6/inco_focus.htm

⁴ List correct at April 2004

⁵ <http://www.cordis.lu/fp6/find-doc.htm>

⁶ see the details for this 3rd call at the website <http://www.cordis.lu/food/home.html>

When making proposals, consortia should take the following into account:

- Projects supported from the first call in 2003⁷ and topics already published in the second call in 2004. Overlaps should be avoided wherever possible, but synergies between new proposals and funded projects are encouraged. Similarly, where topics within the work programme have links between them, proposers should address potential synergies and be careful to avoid redundancy by duplicating work described elsewhere. Several indicative footnotes are marked within the text on the topics (section 5.4). Additionally, synergies with the Information Society Technologies priority (thematic priority 2) in relation to health, and past projects related to information technology for health promotion and disease prevention, should be developed where relevant⁸.
- Current European policies, strategies and action plans. In particular, relevance to the Environmental Technology Action Plan (ETAP),⁹ the Life Sciences and Biotechnology Action Plan,¹⁰ and the European Environmental Health Strategy (SCALE initiative).¹¹ The ETAP was adopted on 24 January 2004 and seeks to exploit technologies for their potential to improve both the environment and competitiveness. The Life Sciences and Biotechnology Action Plan was adopted on 23 January 2002 and seeks to promote the development of biotechnology consistent with European standards and safeguards. The European Environmental Health Strategy, adopted on 11 June 2003, aims to reduce diseases caused by environmental factors through better identification and understanding of diseases caused by environmental degradation. The relevant action plan of SCALE was adopted by the Commission in Spring 2004. As emphasised by the S in the acronym, there is a strong focus in the SCALE initiative on science as a necessity for the development of strong policies.
- On 1 May 2004, 10 new countries became Member States of the European Union. These countries have been participants in the 6th Framework programme since its inception. In addition, however, to these 10 new Member States, three countries remain as associated candidate countries,¹² with full rights of participation in the work programme. Other associated states to the framework programme have rights of participation, albeit with some limitation on eligibility criteria (see section 5.8).
- The work programme has been designed to attract enhanced involvement from industry and, in particular, from SMEs, and proposals involving such partners are encouraged. At least 15% of the budget of the call is targeted at SME participation.
- Similarly, international co-operation with third countries is supported and encouraged throughout all areas of this thematic priority¹³ and many topics have been formulated to encourage international links. This includes partners worldwide (see “Cross-cutting issues” in the section “General information”). Significant funds are earmarked for support of partners from the nearly 150 INCO target countries listed in Annex C, and applications involving partners from these countries are particularly welcome.

⁷ See “Projects to be funded following 1st call for proposals” on <http://www.cordis.lu/food/home.html>

⁸ See http://www.cordis.lu/ist/directorate_c/ehealth/projectbooklet/projects.html (FP6) and <http://www.cordis.lu/ist/ka1/health/projectbooklet/projects.htm> (FP5)

⁹ <http://europa.eu.int/comm/environment/etap/>

¹⁰ http://europa.eu.int/comm/biotechnology/introduction_en.html

¹¹ http://europa.eu.int/comm/environment/health/index_en.htm

¹² Bulgaria, Romania and Turkey

¹³ See “International cooperation in FP6: <http://www.cordis.lu/food/inco.htm>

5.3 Technical content

The work programme presented below introduces each area and gives a description of the topics open in 2005, for which project proposals are invited. For each topic, the work programme specifies a limited number of instruments to be used and, in most cases, states which instrument exactly. The “indicative topics for 2006” can be subject to change (reformulation, replacement, deletion, additions, ...) during the next update of the work programme for this thematic priority.

5.4 Areas

5.4.1 Area: Total food chain

Projects will address quality and safety aspects of the complete food chain from consumption back to primary production including feed production. The objective will be to develop foods with higher quality and safety together with clear health benefits for consumers. Sustainable production systems should be developed under appropriate ethical, animal welfare, environmental, economic and societal considerations.

These benefits may result from approaches such as:

- **Foods from low input production systems**
- **The integration of recent human nutritional results and considerations within improved food production systems**
- **Developments using genomics of a European crop with proven human health advantages**
- **Process innovation leading to low or zero pathogenic loads on food.**

These approaches will utilise diverse strategies and will incorporate a variety of methodologies and disciplines relevant to the whole food chain by cutting across the areas as outlined in the Specific Programme for this priority.

Topics for 2005

T5.4.1.1 Increasing fruit consumption through a trans-disciplinary approach delivering high quality produce from environmentally friendly, sustainable production methods (IP)

The aim is to contribute to a healthier diet by improving the quality, appeal, and consumption, of those fruit and fruit-based products that are produced by perennial fruit species. To achieve this aim, the project will be driven by, and regularly check progress against, consumer expectations. It will address and resolve critical bottlenecks, including access and availability, all the way down the chain, including point of sale, post-harvest handling and sustainable production on the farm in order to stimulate the production and delivery of products that meet proven consumer needs. The project management should develop synergistic links with appropriate projects that are already on-going, while avoiding overlaps. It may include work on genetic improvement (including genetic engineering) of fruit to address consumer expectations and organoleptic preferences. Special efforts should be made to ensure significant participation by industry, particularly by SMEs. The topic is limited to woody perennial species (phanerophytes).

T5.4.1.2 Improving quality and fostering innovation of European traditional food production systems (IP or NoE)

The objective is to develop innovation that will improve the safety and quality of food from traditional food production systems by developing methods for integrating modern technology with the traditional production processes. As a result, it will promote process- and product-innovation in traditional European food production practices including low input production systems and specified systems, such as Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), Traditional Speciality Guaranteed (TSG), and products from other regionally important food production systems. The project should address consumer expectations by improving aspects such as food safety, nutritional quality, processing technology, efficient distribution and effective marketing. The consortium should reflect the important role of SMEs in producing traditional products. Emphasis will be placed on the dissemination of results to end-users. Special attention should, therefore, be given to activities such as technology transfer and training. The results are expected to include increased production and sales of food products offering improved safety and nutritional quality, and practical processes and guidelines to help stakeholders in the food chain deliver more affordable, convenient and innovative processed products from traditional production systems. Proposals should address the objectives of the ETAP where relevant.

T5.4.1.3 Improving the quality and safety of ready-to-eat products and semi-prepared foodstuffs by the exploitation of new and innovative technologies (STREP)

The objective is to improve the safety and nutritional and eating quality of ready-to-eat products and semi-prepared foodstuffs through a better monitoring of the quality and safety of raw materials and the development of innovative processes along the production chain. The work will encompass consumer demands for increased choice and a lower level of some ingredients (such as salt, sugar or saturated fats) and address the safety and quality of raw materials from different geographical origins. The involvement of SMEs would be of high importance. The results will include new products (including improved traditional products) based on innovative manufacturing processes and dedicated monitoring techniques for the prevention of chemical and pathogen contamination throughout the entire food chain.

Indicative topics for 2006

T5.4.1.4 Improving the quality and safety of pork and pork products for the consumer (IP)

The aim will be to improve the quality and safety of pork and pork products by identifying and addressing those aspects of the entire food chain from fork-to-farm that influence quality, impact on consumption or may give rise to societal concerns. Multi-disciplinary approaches covering food safety and quality, animal health and welfare, economic performance, production, processing and consumer expectations in a wide range of production systems (from intensive to extensive, and covering high and low input systems) will be preferred. The project will lead to pork products with both improved safety and nutritional aspects that are more convenient to prepare and match consumer demands in their diversity. Industrial partners are expected to play a pivotal role in this topic. Proposals should address the objectives of the ETAP.

5.4.2 Area: Epidemiology of food-related diseases and allergies

The objective is to examine the complex interactions between food intake and metabolism, immune system, genetic background and socio-economic factors to identify key risk factors and develop common European databases.

Many diseases and disorders prevalent in Europe today can be linked to diet, genetic make-up and lifestyle. Research in this area will use pan-European epidemiological studies concentrating

on the most important nutrition-related diseases and disorders to identify vulnerable population groups, links to diet, genetic factors, and assess how an improved diet might reduce prevalence in the future.

Research will focus on: epidemiological studies of the effect of diet, food composition and lifestyle factors, on the health of consumers and specific population groups such as children, and the prevention or development of specific diseases, allergies and disorders; methodologies for measuring and analysing food composition and dietary intake, risk assessment, epidemiological and intervention models; influences of genetic variability using advances in functional genomics.

Synergies with the Information Society Technologies priority are encouraged (see 5.2, above).

Topics for 2005

T5.4.2.1 Influence of diet and lifestyle on children's health (IP)

The objective is to study the effect of children's diet, food choices and lifestyle on children's health with particular emphasis on the prevention of nutrition-related diseases and disorders that can develop either during childhood (e.g. obesity, attention deficit hyperactivity disorders) or later in life (e.g. osteoporosis).¹⁴ The age to be covered is from 2 years to the beginning of puberty. Expected results will provide better understanding of the mechanisms for the prevention and development of these diseases and disorders leading to dietary and lifestyle strategies for children and to advice for those who take care of them.

T5.4.2.2 Developing a trans-European methodology to study food consumption (STREP)

The objective is to develop a methodology to collect information on individual food and beverage consumption patterns, allowing comparisons between European countries and regions and taking into account the efforts already made in previous studies such as EFCOSUM and DAFNE. The expected result will be a harmonised European instrument in the local languages that reflects different cultural identities. The instrument has to be validated in selected countries or regions with obviously different consumption patterns and should be able to identify and address compliance and uncertainty in a reliable and consistent way. It should be usable in future epidemiological studies and surveys on health and dietary status in Europe. The participation of new Member States, candidate countries and European and international organisations is necessary.

T5.4.2.3 Health risks and benefits of increased global trade in foods and food ingredients (STREP)

The objective is to study the health risks and benefits of exotic and/or imported foods, raw materials and ingredients for the health of European consumers. The benefits of these foods (such as nutritional and sensory quality, seasonal availability) will be compared with their potential risks (such as contamination, allergies and adulteration effects). The expected results will help to establish strategies for balancing the related risks and benefits. The participation of industry, including SMEs, and international cooperation are both highly recommended.

Indicative topics for 2006

T5.4.2.4 Nutrient status and requirements of specific population groups (NOE)

The aim is to provide data about the status and the requirements of selected nutrients, particularly micronutrients, for specific vulnerable population groups such as infants, children, adolescents,

¹⁴ Aspects related to allergy are included in Topic 5.4.8.6.

pregnant women, lactating women, post-menopausal women, elderly people, migrants and low-income groups in order to harmonise dietary recommendations Europe-wide. Existing epidemiological data from different population groups will be compared and harmonised. As a result, consumer understanding will be improved and behavioural changes will be facilitated by communication to consumers, food chain operators, health professionals and policy makers. The participation of industry, new Member States and candidate countries is recommended, while the involvement of consumer organisations is essential.

T5.4.2.5 Influence of dietary history on coeliac disease (STREP)

The main objective will be to study the influence of dietary history including early nutrition on the development of coeliac disease in relation to genetic factors. An expected result is the identification of the molecules involved in the expression of the disease and the genes they are linked to.

5.4.3 Area: Impact of food on health

There is increasing evidence that consumption of certain types of food within a balanced diet may have a positive and even protective effect on health. The objective is to provide the scientific basis for improving health through diet. This will involve the use of dietary advice strategies, the development of new health promoting foods, e.g. new products, products resulting from low-input or organic farming, functional foods, products containing genetically modified organisms and those arising from recent biotechnology developments. It will be achieved by means of an improved understanding of food metabolism and by harnessing the opportunities now available from proteomics and biotechnology.

Research will focus on: overall relationship between diet and health; health promoting properties of foods; effects of food components, pathogens, chemical contaminants and new agents of prion type on health; nutrient requirements and health promoting intervention strategies; determinants of consumer attitudes towards food products and production; methodologies for risk/benefit assessment of nutrients and of bioactive compounds; specificities of different population groups, particularly the elderly and children.

Synergies with the Information Society Technologies priority are encouraged (see 5.2, above).

Topics for 2005

T5.4.3.1 Understanding consumer choices and dietary habits (NOE)

The objective is to understand the main factors underlying consumer knowledge on nutrition, perceptions, attitudes, preferences, choices and dietary habits, taking into account factors such as, on the product side, physicochemical properties, sensory attributes, perceived product values and labelling, as well as gender, age, lifestyle and socio-economic status on the consumer side. The expected result will be a better understanding of the relationships between food choice, consumer lifestyle and the well-being and health status of European consumers – leading to initiatives to help the consumer make informed, healthy choices – in addition to structuring European research, training and communication in this emerging area. The involvement of European consumer organisations and industry will be crucial for this topic, since they are the main end-users of the results.

T5.4.3.2 Diet and cardiovascular disease (IP)

The aim will be to study the impact of selected food components, foods/beverages and diets in the forms and amounts available in practice, together with the human genetic background, so as to reduce the risk of, and to treat cardio-vascular diseases. The expected result will be a better understanding of

the gene/nutrient interaction in cardiovascular diseases, providing guidelines (particularly to those populations at risk) and new healthy foods. The participation of patient organisations is expected.

T5.4.3.3 Improving patients' health through diet (IP)

The objective is to study the interaction between diet and therapies for patients whose health is compromised by infectious diseases, transplants, organ failures, burns, immunodeficiencies or cancers. The focus is on diet during treatment and not diet as a risk factor for disease. Expected results are new foods intended for special medical purposes (FSMP) and dietary recommendations to improve patients' appetite, health and well-being. Partnership with industry, hospital caterers, patient groups as well as international cooperation are recommended.

T5.4.3.4 Catering and eating out of home (CA)

The objective is to understand and effectively improve the eating habits of consumers in Europe in relation to outside home meals such as canteens, schools, hospitals, residential homes, restaurants, train, airline and ship caterers, snack bars and snacks from retailers. Strategies for better meal quality and safety should be developed and the acceptance of healthy meals should be increased. The expected results are recommendations and training for stakeholders in the sector on issues such as portion size, composition and best practices for preparation, packaging and presentation (including labelling) of healthy and safe meals and snacks. In addition, recommendations to policy makers and consumers for optimal food choices outside home have to be developed. The participation of industry, including SMEs, working in the catering sector and consumer associations as well as consideration of ETAP are very much encouraged.

Indicative topics for 2006

T5.4.3.5 Milk and dairy products with optimised bioactivity (IP)

The objective is to study components and metabolites in milk and dairy products with health effects that are either proven to be beneficial (e.g. vitamins, minerals), tentatively beneficial (e.g. conjugated linoleic acids, bioactive peptides) or putatively deleterious (e.g. milk fat globules membrane proteins, protein-bound toxins in bulk milk). Expected results are new breeding and feeding strategies of ruminants, modified or new safe (bio-)technological processing methods including energy savings and the valorisation of by-products as well as innovative dairy products with improved functionality. Legal issues, health claims and consumer acceptability should also be addressed as well as ETAP issues. Industry participation is necessary for this topic.

T5.4.3.6 Food components preventing dental diseases (STREP)

The objective is to investigate the effects of food and beverage components on the mechanism of development of major diseases of the oral cavity (caries, periodontal disease) with the aim of prevention and possibly designing specific functional foods. The project should aim to identify the individual components in such foods that are responsible for these observed effects and should also consider oral microflora. Processing methods able to increase the positive impact of these components on oral health should be investigated. The participation of industry, including SMEs, is encouraged.

T5.4.3.7 Optimising food processing for nutritional and environmental quality (STREP)

The topic aims to study the impact of processing on the environment and on the nutritional quality of food and its benefits on consumers' health by following markers of food quality. The single and combined effects of formulations, unit operations, packaging and storage should be taken into account. Expected results are improved quality and safety of foods as a result of better process management on

an industrial scale with respect to health benefits, environmental (ETAP) and economical aspects as well as consumer acceptance. Partnership with the industry is necessary.

5.4.4 Area: Traceability processes along the production chain

The objective is to increase consumer confidence in the food supply by strengthening the scientific and technological basis for ensuring complete traceability along the entire food chain including animal feed. It will ensure that products can be linked to their source while also protecting products of declared origin (both geographical and production system). It will also help to support the traceability of genetically modified organisms, and other products based on recent biotechnology developments, from raw material origin to purchased food products.

Topics for 2005

T5.4.4.1 Chilled and frozen supply chain (IP)

The objective is to identify, scale up and validate cost-effective technologies, devices and approaches for continuous monitoring and recording of environmental conditions, quality, safety and potential energy savings throughout the chain of production, transportation, storage and distribution for chilled or frozen foods. Special attention should be given to refrigerated transport as the most hazardous chain element. Monitoring and control devices may include suitable tools for *in situ* measurements, sensors to register environmental factors, modern wireless transceiver technologies, spatial remote sensing platforms, data collection platforms, global navigation satellite systems, radio-frequency identification, open and scaleable software etc., along with devices to register the handling of refrigerated perishable goods. Attention should also be paid to both innovative and cost effective aspects of these devices. The project will identify and validate novel chilling and/or freezing techniques to ensure improved transportation and storage conditions as compared to the currently most common methods, thereby contributing to the ETAP's objective of promoting energy saving and environmentally friendly approaches, processes and technologies. Microbiological risks during cold storage as well as technical, regulatory and socio-economic aspects of market penetration should be assessed by employing HACCP approaches wherever appropriate. The partnership should reflect industry's involvement in this field and preferably take advantage of advanced knowledge available in non-EU third countries. Addressing the interests of INCO target countries in the field, in the work programme and possibly in the partnership, will be an asset.

T5.4.4.2 Vulnerability of food and feed chains to dangerous agents and substances (STREP)

The objective is to develop an approach to optimise, for a selected number of widely used products (possibly including drinking water), the traceability process in terms of exposure of the food or feed chains to undesired agents or substances at critical chain links. It will include agents or substances of malicious origin (e.g., chemical or biological terrorism). Works may include: identification and prioritisation of the critical links in the total chain where there is a risk of contamination with, or proliferation of, an infectious agent or a toxic compound; and proposal of a set of recommendations on how to identify critical points and develop corrective measures. As a basis for doing this, the project will first have to develop a framework to identify and prioritise a range of 'high risk' products to be included in the study (these will not necessarily be only widely-used products, but may also be lower volume produce with high risk in terms of vulnerability) as well as a framework for ranking the risks themselves. To make the maximum contribution to achievement of the ETAP, the criteria for ranking these risks should also consider risks of environmental damage. The results could take the form of the preparation of a guide that could be used by stakeholders in the food and feed chains to address vulnerabilities in those chains. The partnership implementing the project should take advantage of knowledge available in non-EU third countries that have a similar interest in assessing the vulnerability of their food and feed chains.

Indicative topics for 2006

T5.4.4.3 Origin and development of unintended micro-organisms in the food and feed chains (IP)

The objective is to develop methods for tracing the origin of biological agents contaminating food and animal feed (including as the result of a criminal act) and to model their development (growth and proliferation) as a function of ambient (e.g., temperature and relative humidity) and processing conditions and their point of entry into the food chain. These methods and models should eventually become integrated in food/feed chain traceability systems. Work will include, among other things, the utilisation of available genomic and other information on micro-organisms and their toxins, e.g. mycotoxins, that negatively affect food or feed safety, the use of bio-markers and fingerprinting, the compilation of ecological data on the most important agents and substances that potentially form a hazard in the food/feed chain, the building on existing models and where appropriate the development of new models. In addition to the main focus of the project, the results and information collected in the course of the project should also be analysed so as to distil a set of recommendations that can help to control any risks. The partnership implementing the project should reflect industry's involvement in this field and preferably take advantage of knowledge available in non-EU third countries. Addressing the interests of INCO target countries in the field, in the work programme and possibly in the partnership, will be an asset.

T5.4.4.4 Monitoring handling practices in the total chain (IP)

The objective is to identify, scale up, validate and demonstrate the latest technologies for routine traceability applications to be integrated in food/feed production, transportation/distribution systems and to monitor handling practices in the total chain, e.g., smart packaging (nanotechnologies, smart sensors, new surfaces), near infra-red spectroscopy, genomics for microbial identification, genetic traceability of animal products, including milk products, aquaculture, etc. The scaling-up will require a strong scientific component to conceive and develop its scientific bases in order to ensure reliable results and to verify and guarantee that the standards achieved in laboratory or small-scale applications are also met under industrial and routine field conditions. Scientific inputs are further needed to ensure that the technologies comply with the ETAP's objective of promoting energy saving and environmentally friendly approaches, processes and technologies. Similarly, the appropriateness of the relevant technologies should be assessed for the possible presence of technical, economic, regulatory and social barriers to market penetration. The partnership implementing the project should reflect industry's involvement in this field and preferably take advantage of knowledge available in non-EU third countries. Addressing the interests of INCO target countries in the field, in the work programme and possibly in the partnership, will be an asset.

5.4.5 Area: Methods of analysis, detection and control

The objective is to contribute to the development, improvement, validation and harmonisation of reliable and cost-effective sampling and measurement strategies for chemical contaminants and existing or emerging pathogenic micro-organisms (such as viruses, bacteria, yeasts, fungi, parasites, and new agents of the prion type including development of ante mortem diagnostic tests for BSE and scrapie) so as to control the safety of the food and feed supply and ensure accurate data for risk analysis.

With changes in production methods, processing technologies and distribution systems, many pathogens and contaminants are controlled ever more rigorously today. However, new pathogens or food safety issues may arise as a consequence of factors outside the control of the food producer. Increasingly, foods do not come from one source or one country, but are a combination of raw materials coming from many diverse countries and very different production systems. The aim will be to improve detection and control techniques along the food production chain, using

powerful new and more sophisticated technologies linked to primary production, ensuring that the original contamination does not enter the chain at critical points. Particular attention will be given to possible anticipation and control of emerging risks in food and feed including new contaminants and pathogens, non-conventional agents and stress adaptation of pathogens. Projects should take account of aspects of communication with stakeholders, especially consumers.

Research will focus on: methods and standards for analysing and detecting food-borne pathogens and chemical contaminants, including pre-normative aspects; modelling and approaches to improve existing prevention and control strategies; detection tests and geographical mapping of prions; transfer and longevity of prions.

Topics for 2005

T5.4.5.1 Novel tools for harmonised risk assessment and risk communication (IP)

The aim is to develop and validate different tools for harmonised risk assessment and subsequent communication related to complex low-level hazard mixtures in food and diet by contributing directly to a risk-benefit analysis. These tools should allow risks to be assessed related to low-level exposure to complex hazard mixtures over a long period, taking account of any synergy between different hazards present in different foods due to exposure of specific population groups by studying immunotoxic and immunosuppressive effects. They should also solve extrapolation from animals to humans by contributing to the replacement of animal testing by *in vitro* testing. This work should also lead to the fine-tuning of 'omics' applications in hazard characterisation. The research should finally consist of targeted scientific education programmes for communicators to allow them to design and implement a targeted communication strategy based on the results of the above risk assessment tools. Exposure to hazards in different countries should be included, and the research should actively support regulatory activities of various international bodies. Active participation of SMEs should be sought in the areas of modelling, instrumentation, *in vitro* testing and communication.

T5.4.5.2 Advanced rapid, non-destructive and non-invasive techniques for screening of foods and feeds (IP)

The aim is to develop, validate and apply advanced, standardised and rapid on-line, at-line, in-situ and retail sampling and measurement approaches for screening food and feed raw material quality and safety. These approaches should be reliable, rapid, non-invasive and non-destructive (e.g. optical sensor devices) and easy to use in field applications by ensuring representativity, avoiding 'spot-sampling' and closing current gaps, i.e. 'fit for purpose'. Sensitive and high-throughput quantification methods should be developed in order to strengthen process control in plants based on in-line screening approaches together with automated sampling devices. SMEs should be heavily involved in the research and necessary demonstration activities, along with the relevant expertise from food industry and food safety research organisations. The technologies should be developed according to the strategy laid down in the ETAP.

T5.4.5.3 Investigating the fundamentals of TSE enabling the rational development of detection and control strategies (STREP)

This aim will be to focus on the molecular biology and comparative structural characteristics of common TSE strains as well as novel scrapie and BSE strains, in order to establish what defines a 'strain' and what causes the 'species barrier effect'.

Indicative topics for 2006

T5.4.5.4 A multi-sector strategy for quality and safety control of food (NoE)

The topic will develop strategies for common technologies and for harmonising and validating detection systems, and cost-effective HACCP systems based on performance criteria. These strategies should also design interoperable and user-friendly databases for various hazards in food based on standardised data input and output. Its activities should also be beneficial and generate highly targeted tools that will stimulate e-learning, training and consumer science (including consumer perception issues), such as the production of ready-to-use guidelines on risk assessment by building on ongoing and future research activities. Integration of European expertise in this field and the development of common technology strategies can give rise to a large number of start-up companies and be a driving factor for innovation and standardisation in the sector. The involvement of SMEs specifically engaged in high technology is essential. These strategies should also take the ETAP into account and discuss its implementation.

T5.4.5.5 Developing improved TSE inactivation methods (STREP)

This STREP will develop technologies which inactivate TSE infectivity in preferably all of the following substrates: abattoir equipment, abattoir products and meat and bone meal. Technology transfer to a medical setting (medical instruments, blood and blood products) is desirable. The technologies must perform in a manner appropriate to the requirements of the end-user. They should be rapid, cost effective, simple and safe to operate and may produce useful by-products where appropriate. The possible uses of inactivation methods raise sensitive issues and they must address consumer concerns and legislative aspects. The involvement of consumer groups and SMEs is greatly encouraged. Strong emphasis is placed on demonstration of inactivation by the technologies taking active account of existing research work.

5.4.6 Area: Safer and environmentally friendly production methods and technologies and healthier food stuffs

The objective is to develop lower input farming systems (agriculture and aquaculture) based on systems such as integrated production, and organic agriculture. It will emphasise the use of plant and animal genomics, biotechnologies, and other innovative technologies, for improved transformation processes delivering safer healthier nutritious, functional and varied foodstuffs, and animal feed, which respond to consumer expectations.

Consumers require healthy, safe and high quality food. Food production systems are tending towards those which are more sustainable, more environmentally- and welfare-friendly, and which have lower requirements for inputs, such as lower-input crops. Following the fork-to-farm approach, research on production methods should aim to meet these consumer requirements.

Topics for 2005

T5.4.6.1 Improving crops for quality and human health (IP)

The objective is to assemble the knowledge required, and to use modern breeding techniques, including genetic engineering, so as to produce annual fruit and/or vegetable crops with improved composition that will satisfy the proven needs of consumers, as well as of processors and producers (e.g. for consumers, improved content of functional molecules with demonstrated value for human health, taste and quality; for processors, improved handling characteristics; for producers, important agronomic characteristics). Tree fruit (phanerophytes) are not eligible.¹⁵ As well as developing new knowledge in the areas of genetics and genomics, the project will build on existing resources inside and outside

¹⁵ Topic 5.4.1.1 covers perennial fruit species

Europe. For example, it will search for useful germplasm that is already preserved *in situ* or in gene banks, and it should take care to work with existing projects that are relevant to this area. So as to assure dissemination and transfer of the results, industry and farmers' and consumers' representatives should be included from the beginning. Participation in international genomics programmes is particularly encouraged, as is collaboration with and to the benefit of INCO target countries.

T5.4.6.2 Novel processing methods for the production and distribution of high-quality and safe foods (IP)¹⁶

The objective is to develop novel processing, preservation and packaging tools that might be further developed by industry using a wide range of specified technologies (for example, bioprocessing, advanced mechanical and thermal processing) and modern eco-friendly materials (for example, bioactive and smart surfaces, smart packaging, biodegradable materials, etc.) to prolong shelf life while maintaining nutritional quality. Projects should address the minimisation of water usage and waste production. In order to maximise efficacy, development will concentrate on incremental innovation. The results will be new technologies promoting a sustainable distribution of high quality and safe foods. The project is expected to have significant SME involvement and to take into consideration the objectives of the ETAP.

T5.4.6.3 Genomics and epigenetics to develop sustainable animal breeding strategies for improved long-term product quality and safety (IP)

The objective is to develop genomics and epigenetics research with the aim of supporting the development of more sustainable, environmentally and welfare friendly, low input animal production (including fish and poultry production). Results will assist breeders and producers to re-focus from purely production-orientated animal breeding, support the development of lower input systems and help in the maintenance of biodiversity while preserving, or improving, food quality and safety for the consumer. Having first defined and justified a set of species to address, the project will take an essentially fundamental approach and might include, where applicable, genome sequencing. The results will be genomics and genetics data on specified traits (including food quality and safety-related traits) in livestock (and may include traits in livestock in INCO target countries, where relevant and appropriate) for application to breeding in a wide range of production systems.

T5.4.6.4 Network on epizootic disease diagnosis and control (NoE)

The objective is to integrate the relevant expertise in Europe so as to strengthen the European response to epizootic diseases and thus ensure a continuous, safe and high-quality food supply derived from animals (including poultry and fish). Results would include integration of the main EU stakeholders, emphasising consumer focus and support for sustainable agriculture and aquaculture. The project might include improved production of, and access to relevant sequencing and diagnostics data, vaccination strategies, surveillance, determination of the impact of environmental factors and a decision support system. The improved response to epizootic disease control will need to be compatible with sustainable husbandry and control methods and address food safety issues where relevant. Links to partners from countries outside the EU and with international organisations should be developed within the network.

T5.4.6.5 Sustainable apiculture and honey production (STREP)

The objective is to help ensure higher quality and safer honey production by concentrating both on the effective control of specific pests and pathogens in apiaries so as to reduce residues in honey and on methods to reduce contamination acquired during foraging. The project will build, where appropriate, on recent knowledge derived from the publication of the bee genome and on maintaining or enhancing the role of European strains of honey bee, if necessary by addressing specific husbandry practices to

¹⁶ Topic 5.4.3.7 covers additional aspects of processing on human health

ensure sustainable production that may promote authentic, high quality, European honey production. Bee production is important in many countries including the new Member States and others outside the EU, and links with INCO target countries will be welcomed. Participation of SMEs is encouraged and the project will take into consideration the objectives of the ETAP, where relevant.

T5.4.6.6 Methods for the control of helminths in livestock (STREP)

The objective is to create more user- and consumer-friendly, low input and sustainable helminth control strategies, using novel ideas, such as helminth refugia, vaccination, improved genetic resistance, etc., to reduce the incidence of helminthoses in livestock, and of food-borne helminthoses in man (through the reduction of infective stages to humans in animal products or the environment). The control methods should reduce the need for anthelmintics, and thus the risk of residues in food and the environment and address the development of anthelmintic resistance in Europe and specified INCO target countries. The potential food safety benefits and risks of any proposed new forms of treatment should be assessed. The results will be low input, consumer friendly parasite control protocols.

T5.4.6.7 Developing efficient and stable biological containment systems for GM plants (STREP)

The objective is to develop efficient and stable biological containment systems for transgenes in important European crops that will have positive environmental and socio-economic impacts when the developed transgene biological containment systems are deployed. It should, if possible, cover representatives of those crops that are harvested for their fruits, or for their seeds, as well as those harvested for their vegetative parts. In addition to the necessary technical expertise, participation is required from sociologists, economists and experts in communication. Seed companies should be included in the partnership, and close contact should be fostered with legislators and representatives of civil society so as to ensure effective communication, dissemination and uptake of project results. The expected outcome is that the co-existence of conventional, organic and genetically modified (GM) crop production will be facilitated and hence the great potential offered by plant biotechnology for the long-term sustainability and technological development of European agriculture can be achieved.

T5.4.6.8 Improved rabbit production (STREP)

The objective is to ensure safer and higher quality supply of meat, by improving rabbit health and welfare through research on new rabbit production systems. More welfare-friendly production systems, such as colony-type housing and other sustainable systems, will be used and research will address the improvement of the quality and safety of rabbit meat by, for example, reducing the need for antibiotic treatment of epizootic rabbit enterocolitis. Results will focus on practical guidelines to help ensure the production of a high quality product throughout the EU, bearing in mind the relevance of the sector in the new Member States.

T5.4.6.9 Rational use of water for quality and safe crop products (STREP)

The general aim is to enable the application of recent research on plant-water relations, for improved crop quality and safety and for a more rational use of water in crop and horticultural production. Researchers will work with industry (notably SMEs) to develop new and improved irrigation systems and to implement them in practice. Particular aims are to devise and develop: means of adjusting water application for improved product taste and appearance; means of assuring product safety (e.g. freedom from water-borne contaminants such as enteric pathogens, protozoa and parasites, or algal toxins); means of improving prediction of water needs; and means of optimising water usage on the farm (including the validation of existing water-saving methodologies). The work should seek to implement the objectives of the ETAP. All proposals should include industrial partners capable of and intending to transfer the results into practice. Proposals that aim to work with and for INCO target countries will be particularly welcome.

T5.4.6.10 *Mycobacterium avium* sub-species *paratuberculosis* diagnosis and control (STREP)

The purpose will be to generate new tools for the diagnosis of MAP in animals, for its elimination from animal products and for studying its potential role in Crohn's disease. Results from the project will be increased knowledge about the organism, including rapid, reliable tests using modern genomic and immunological technology, as well as practical methods of inactivation in food products. Diagnostics should be effective in sub-clinically infected animals and be relevant to the isolation and diagnosis of the presence of the organism in humans. In particular, diagnostics should be reliable and practical enough to permit the future development of reliable databases from surveillance investigations along the slaughter and food chains. Research will also address susceptibility and epidemiological factors affecting infection in animals and potentially affecting infection in humans.

Indicative topics for 2006

T5.4.6.11 Reduction of chemical pesticides in crop production (NoE)

The purpose is a durable restructuring of European research and development work on the use of chemicals (insecticides, nematicides, acaricides, herbicides and fungicides) in integrated and organic crop production. The aim should be to adopt a total system approach by including and integrating work in all relevant areas such as understanding the biology, ecology and behaviour of insect, nematode and acarian pests, also weeds and fungi, and their natural control agents; understanding the interactions between crop plants, weeds, pests and natural enemies; sensing and predicting numbers of pests and natural enemies; and improving the delivery and efficacy of pesticides (including natural methods). The network should include industries (including farmers), advisors and research scientists, so that the research and technology is brought immediately into application in integrated pest management. Special emphasis will be placed on including the expertise and knowledge available in the new Member States, and on the inclusion of projects already under way. It would be desirable to include in the network those working in and for developing countries whose agricultural products are exported to Europe. Integrating activities should include jointly executed programmes, restructuring of teams and programmes, and activities to spread excellence and expertise. By creating a critical mass of resources and expertise in the area of crop pest control the NoE should establish itself as a world leader for the development and implementation of durable control strategies, and should become recognised as the first point of reference in Europe not only for scientists but also for legislators.

T5.4.6.12 Management of waste from farms and fisheries (CA)

The objective is to coordinate research of relevance to policy issues by identifying solutions to current critical issues in sustainable waste management and helping to reduce the environmental and nuisance value (particularly odour) of wastes from intensive farming (including aquaculture and fisheries) systems. Results will be improvements in knowledge and technologies for the control of odour and pollution and for alternative waste handling systems. The project may also include alternative production systems and, in relevant cases, reduced levels of contaminants within feeds (for example within the aquaculture industry). The project will take into consideration the objectives of the ETAP.

T5.4.6.13 Disease risk from alternative and enriched cage systems (STREP)

The purpose of this project is to evaluate the risk to the consumer of increased contamination of eggs (with infectious agents, or with the veterinary treatments used to control them) resulting from a move to more welfare-friendly egg-production systems that will replace the un-enriched battery cage. Concentrating on production in various improved cage and alternative systems, it will propose methods of reducing any additional risks generated by these systems, taking into account the need to maintain a high quality product. Un-enriched cages are due to be phased out in 2012 and it is important to understand any potential risks of this move to human health.

T5.4.6.14 Network linking national research communities working on *E. coli* O157 research (CA)

The objective is to add value to European and international research groups (including those from INCO target countries) working on *E. coli* O157H7 and other potentially pathogenic strains of *E. coli*. The result will be a durable network of such groups, increased synergy in research outputs and, eventually, reduced incidence of *E. coli* O157 infection in humans.

5.4.7 Area: Impact of animal feed on human health

The objective is to improve understanding of the role of animal feed, including products containing genetically modified organisms and the use of sub-products of different origins for that feed, in food safety. It will aim to reduce the use of undesirable raw materials and develop alternative new animal feed sources. This will include novel sources of the major feed components, energy, protein and fat, and the evaluation of the impact of additives in feeds, and of alternatives to common additives.

Topics for 2005

T5.4.7.1 Impact of aquaculture feeds of different origins on human food quality, safety and health (IP)

The objective is to investigate the impact of aquaculture feeds on the quality of seafood products and, ultimately, on consumers' health. The research should aim to develop the potential for novel feed blends (e.g. from plants, algae and sustainable marine resources), and their interaction with genotype and growing conditions thereby leading to improved, healthy seafood products. It will address the impact of tailored feeds on food quality and safety and, thus, of the toxic or beneficial effects of components in the feed on the health of the consumer. Emphasis is placed on studies on environmental contaminants, veterinary drug residues and metabolites toxic to fish, and the development of new production systems exploring means of reducing contaminants (including by-products). Participation of SMEs and of organisations from outside the EU, including organisations from INCO target countries, is encouraged.

T5.4.7.2 Development of alternative sources of nutrients in livestock feeds (STREP)

The objective is to develop alternative sources of nutrients in animal (including poultry, but excluding fish) feeds. Alternative sources (e.g. from plants and algae), the safe use of traditional sources (e.g. from safely processed animal by-products) and more novel ideas that can form the basis for further development by industry could be considered. Results will be the determination and quantification of the nutritive and economic value of alternative sources of raw material to animals (including poultry) and their impact on the quality and safety of the animal product. Consortia should demonstrate that their proposals are pre-competitive. Participation of SMEs and of organisations from outside the EU is encouraged. The environmental impact of the sources (both on their production and excretion) will be considered in terms of the ETAP.

Indicative topics for 2006

None currently defined

5.4.8 Area: Environmental health risks

The objectives are to identify the environmental factors that are detrimental to health, understand the mechanisms involved and determine how to prevent or minimise these effects and

risks.

(a) Risks linked to the food-chain (chemical, biological and physical).

(b) Combined exposures of authorised substances, including impact of local environmental disasters and pollution on the safety of foodstuffs, with emphasis being placed on cumulative risks and health impacts of environmental pollutants, transmission routes to human beings, long-term effects and exposure to small doses, prevention strategies, as well as the impact on particularly sensitive groups, and especially children.

The environment can significantly affect human health. Environmental impacts on human health result from a complex interaction between genetic susceptibility, metabolic activity, environmental exposure and behaviour and socio-economic factors. Food is clearly an important exposure route but it should not be considered in isolation since other direct environmental exposures, via air, soil and water, can be equally or more important.

Research will focus on: identification of causal agents including contaminants, and physiological mechanisms, of environmental, and food-linked environmental hazards; understanding of exposure pathways, estimation of cumulative, low dose and combined exposures; long-term effects; definition and protection of susceptible subgroups; environmental causes and mechanisms responsible for the increase in allergies; impact of endocrine disrupters; chronic chemical pollution and combined environmental exposures, transmission of illnesses linked to water (parasites, viruses, bacteria, etc.).

The research activities carried out within this thematic priority area will include exploratory research at the leading edge of knowledge on subjects closely related to one or more topics within it. Two complementary approaches will be utilised: one receptive and open, the other proactive.

Topics for 2005

T5.4.8.1 Assessing the health impact of metals: Sources, benefits and toxic effects (IP)

The objective will be to investigate the effects of metals ingested from environmental and, particularly, food related sources on human health. Sources of human exposure to metals should be assessed, including via uptake by plants grown on contaminated sites or from other natural or anthropogenic sources. Research should focus on individual susceptibility (including vulnerable population groups such as the elderly and children); mechanisms of action; long-term low concentration impacts, consequences of intake of metal mixtures; threshold concentrations for specific metals/mixtures and (geno)-toxic/carcinogenic effects. Results should be directly relevant to the SCALE initiative and might include methods to detect low doses; biosensors and environmental monitoring systems applicable to human health. SMEs might be involved in the development of test methods and biosensors. New Member States might offer specific exposure situations as a result of previous industrial activities (as well as geological/hydrological conditions). The topic might also be of particular interest to certain developing countries where, particularly mining activities, have led to high levels of population exposure

T5.4.8.2 Developing biomarkers of exposure to chemicals and biomarkers of effects, using mother-child birth cohorts and biobanks (IP)

The aim will be to identify biomarkers of exposure to chemicals of relevance to human health and disease (such as cancer or immune disorders) and chemical and biological analytical methods to assess key modes of action for selected chemicals. This would include validated biomarkers of effects that are highly sensitive, highly selective, have high throughput capabilities and are cost-effective. Full advantage should be taken of the latest research techniques available (such as genomics technologies). The project should utilise (where possible) existing mother-child cohorts representing different

geographic exposure profiles and biobanks (both in Europe and elsewhere) to improve integrated exposure assessment. Research should focus particularly on long-term effects of low-dose exposures to chemicals primarily from food and other consumer products, especially those occurring in sensitive life stages. Where possible, *in vitro* approaches should be adopted. It should also be directly relevant to the SCALE initiative. SME involvement might be envisaged in the development of specific biomarker test kits.

T5.4.8.3 Assessing health benefits against potential effects of environmental contaminants in selected food groups (STREP)

Development of comprehensive risk analysis methods which integrate both the adverse and beneficial effects of foods on consumer health and well-being. Studies should include consideration of potential impacts of environmental contaminants, bio-accumulated pollutants, etc., and draw on existing research results and monitoring data where reliable data exist. Consideration should be given to criteria for establishing the quality of data and their inter-comparability. Results should include development and validation of novel comprehensive risk ranking, analysis methodology and predictive models that integrate positive and negative impacts on health outcomes and quantify and separate uncertainty and variability, which should then be made available as web-enabled software to all stakeholders. SMEs would be well placed to develop the required software and possibly databases. The broad interest in the potential results should be attractive to both European and international participants.

T5.4.8.4 Risk assessment of non-dioxin-like polychlorinated biphenyls (PCBs) (STREP)

This project should focus on elucidating the overall toxicological properties of non-dioxin-like PCBs ingested via food (for example, neurotoxic, neurodevelopmental and reprotoxic effects, tumour promotion) in the context of risk assessment and regulatory decision-making including consideration of the quality and validation of analytical methods. The project has relevance worldwide and in particular to new Member States, where high exposure scenarios may occur. SMEs could have a role in test development and validation.

Indicative topics for 2006

T5.4.8.5 Investigating the cause of asthma and allergy (IP)

The aim will be to explore potential preventable causes explaining the rise of immune-mediated health problems, such as food allergies and asthma, utilising, where possible, non-invasive testing methods and taking full advantage of genomics/proteomics techniques. Investigation should focus on complex interactions between changes in environment, food or lifestyle (including possible role of consumer products such as cosmetics, etc). "Classic" hypotheses (air pollution, hygiene hypothesis, etc.) and novel hypotheses (related to changes in lifestyle – hyperpermeability hypothesis) should be investigated. The primary focus will be on the causes, rather than triggers, of allergy and asthma onset. However, determination of thresholds which elicit sensitisation and allergic reactions to food allergens in support of recent food labelling legislation should be carried out. SME involvement in the development of detection methods and test kits and other aspects of the study is encouraged. Involvement of new Member States would help to exploit geographical and lifestyle differences within Europe. Involvement of non-EU countries could be advantageous.

T5.4.8.6 Investigation of potential health impacts of long-term exposure to disinfection by-products in drinking water (STREP)

The aim is to investigate potential human health risks (e.g., cancer, premature births, miscarriage, birth defects, reproductive effects) associated with long-term exposure to low levels of disinfectants and disinfectant by-products occurring in water for human consumption and use in the food industry. The studies should include quantitative assessments of risk associated with microbial contamination of

drinking water versus chemical risk. The main outcome will be improved risk assessment/management. SMEs specialised in measurement of water contamination would be encouraged to take part.

5.5 Specific Support Actions

The objectives of Specific Support Actions under this priority are to help implement the ERA, support, stimulate and facilitate the participation and cooperation of SMEs and participants from third and candidate countries, and improve policy support and exploitation of results. SSAs are also invited which will contribute towards the “EU Strategy for Life Sciences and Biotechnology”. Support Actions under these headings can include conferences, seminars, studies and analyses, working and expert groups, operational support, and dissemination of information and communication, or combinations thereof.

Mentioned below, for each horizontal objective, are a number of strategic actions, which serve as examples. This list is not exhaustive and any proposal that fits one or a number of the horizontal objectives may be submitted under this call. **The topic of the SSAs has to fall within the general objectives and scope of the thematic priority “Food quality and safety” as described in the decision on the specific programme¹⁷.**

Realising ERA objectives

- Preparation of Technology Platforms

Promoting SME participation

- Targeted measures to increase SME participation in specific areas of food quality and safety research

Stimulating international cooperation

- Initiatives (international workshops, brokerage events, platforms, fora, networks, etc.) aimed at stimulating the co-operation with countries having signed bilateral S&T co-operation agreements with the EU in the field of agri-food research and development.
- Initiatives aimed at facilitating the participation of INCO target countries (via information dissemination, match-making, brokerage, networking, expert meetings etc) in food quality and safety research projects
- Initiatives (international workshops, networks...) towards addressing specific areas of global challenges, such as environmental impact and malnutrition.
- Networking of European and International Research on issues related to conservation, management and sustainable use of genetic resources for food, aquaculture and agriculture.
- Initiatives intended to review the existing scientific knowledge concerning agricultural biotechnology in developing countries.

¹⁷ see the relevant section of the Specific Programme: Council decision No 2002/834/EC of 30.09.02

- Bi-regional co-operation platforms for food quality and safety research with Developing countries.
- Initiatives to improve international coordination of research in the field of endocrine disruption, such as joint EU, US and JP workshops.
- Initiatives aimed at networking and training national contact points from INCO target countries for food quality and safety research.

Linking with new Member States and associated candidate countries

- Facilitating integration of new Member States and associated accession countries in European research, in areas such as environment and health, through networking, conferences, workshops or other activities

Supporting policy development

- Expert groups, workshops and other actions supporting policy development, such as on:
 - Analysis of the impact of the new EU “feed and food control” regulation on developing countries; policy and strategy options
 - The economic impact of dietary strategies
 - Stakeholder workshops on future scenarios for food (including seafood) and agricultural research
 - Multi-stakeholder fora on traceability/ on bio-active compounds and functional food from the marine food chain, etc.

Stimulating exploitation

- Transregional discussion platforms on innovation and research partnerships among regional public and private actors
- Tools to facilitate uptake of new technologies by SMEs

Contributing to the EU Strategy for Life Sciences and Biotechnology

- Networks of biotechnology clusters in specific fields of science and technology relevant to food safety and quality
- Multi-stakeholder platform for information and debate on chances and perspectives of life sciences and technology in an enlarged EU, including the media
- Exploiting the EU agricultural public intellectual property resources through portfolio analysis, networks (EurAgri; EC Agbio IP workshop)
- Consumer consensus, education and stakeholder communication strategy

- Initiatives aimed at strengthening the links between science and the media
- Workshop on exploratory methods for assessing potential cumulative and long-term effects of GM crops and food produced therefrom

SSA proposals that fall under public procurement laws, such as prospective studies, impact assessment, actions supporting legislation, etc., cannot be financed under an open call for proposals.

It is envisaged to issue a separate call for tenders for SSAs falling under public procurement laws, which will indicatively address the impact assessment of food and agricultural research conducted under the Quality of Life Programme (1998-2002) key actions 1, 4 and 5. This call for tender, to be published in 2004, will use part of the 2005 SSA indicative budget, up to 750.000 euros; the award of the contract(s) stemming from this call should take place in 2005.

A separate call for tender focused on foresight initiatives in the field of food quality and safety research could also be issued in 2005.

Detailed financial plans, including co-financing or contributions in kind of third parties, should be submitted with the proposal. In the case of applications for networking or other support services, the financial plans should also indicate how sustainable functioning of these services is to be achieved once EU support comes to an end.

5.6 Links to other Research Topics

Fundamental knowledge in genomics (including human/animal/plant) is covered by the first priority, as is its applications to human health. Applications to food are covered by the fifth priority (for example relating to nutrition/better quality food). Other issues related to life sciences are addressed under the sixth priority or covered, as appropriate, by policy oriented research. This includes the common agricultural policy (CAP) and the common fisheries policy (CFP) as well as Community policies related to health and environment.

5.7 Implementation Plan and Related Issues

The selected topics may be open only for the call indicated, and it is envisaged that, for topics utilising the Integrated Project or Network of Excellence instruments, up to one project will be funded for each topic. 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.

Topics for 2006 are indicative only. The work programme for 2006 will be finalised during 2005, and the topics indicated may be included, amended or excluded depending on the recommendations made during consultation.

Number of participants and budget per instrument for each area in the third call for proposals

Instrument	Number of participants	Indicative budget per group of instruments
Integrated Projects	See general Rules for Participation	€152m
Networks of Excellence	See general Rules for Participation	
Specific Targeted Research Projects	See general Rules for Participation	€54m
Co-ordination Activities	See general Rules for Participation	
Specific Support Actions	See general Rules for Participation	€10m (divided over two calls) ¹⁸

¹⁸ Part of the SSA credits, up to €0.75m, will be reserved for impact assessment studies

ROADMAP – Thematic priority 5 “Food quality and safety”

Type of Activity		Indicative budget							Type of instrument Open in each call IP – integrated project NoE – network of excellence STREP – specific targeted research project CA – coordination action SSA – specific support action
Focussing and integrating Community research		Date of publication in OJ: [date]							
Thematic Priority	Area	April 2003	February 2004	September 2004	October 2004 ¹⁹	February 2005	September 2005	December 2005	
5. Food quality and safety	Total food chain	€167M indicative €204M maximum EC contribution	€192M		€152M	€59M		€144M	IP, NoE, STREP, CA, SSA
	Epidemiology of food-related diseases and allergies								
	Impact of food on health								
	“Traceability” processes along the food production chain								
	Methods of analysis, detection and control								
	Safer and environmentally friendly production methods and technologies and healthier foodstuffs								
	Impact of animal feed on human health								
Environmental health risks									
5. Food quality and safety	Total food chain								SSA
	Epidemiology of food-related diseases and allergies								
	Impact of food on health								
	“Traceability” processes along the food production chain								
	Methods of analysis, detection and control								
	Safer and environmentally friendly production methods and technologies and healthier foodstuffs								
	Impact of animal feed on human health								
Environmental health risks									

¹⁹ Deadline for stage one of 2-stage evaluation. See section 5.8

5.8 Call Information

Call information – Integrated projects and Networks of Excellence

1. Specific Programme: Integrating and strengthening the European Research Area

2. Activity: Priority thematic area of research “Food quality and safety”.

3. Call title: Thematic call in the area of “Food quality and safety”.

4. Call identifier: ²⁰ FP6-2004-FOOD-3-A

5. Date of publication²¹: 24 July 2004

6. Closure date(s)²²: 07 October 2004 at 17.00 (Brussels local time).

For those proposals passing the first stage evaluation, there will be a deadline of 08 February 2005 17:00 (Brussels local time) for full proposals.

7. Total indicative budget: 152 million € broken down as follows

Instrument ²³	EUR (millions)
IP and NOE	152
STREP and CA	0
SSA	0

8. Areas called and Instruments:

Area	Topic	Instrument
5.4.1 Area: Total food chain	T 5.4.1.1	IP
	T5.4.1.2	IP or NoE
5.4.2 Area: Epidemiology of food-related diseases and allergies	T5.4.2.1	IP
5.4.3 Area: Impact of food on health	T5.4.3.1	NoE
	T5.4.3.2	IP
	T5.4.3.3	IP
5.4.4 Area: Traceability processes along the production chain	T5.4.4.1	IP
5.4.5 Area: Methods of analysis, detection and control	T5.4.5.1	IP
	T5.4.5.2	IP
5.4.6 Area: Safer and environmentally friendly production methods and technologies and healthier foodstuffs	T5.4.6.1	IP
	T5.4.6.2	IP
	T5.4.6.3	IP
	T5.4.6.4	NoE
5.4.7 Area: Impact of animal feed on human health	T5.4.7.1	IP
5.4.8 Area: Environmental health risks	T5.4.8.1	IP
	T5.4.8.2	IP

²⁰ The call identifier shall be given in the published version of this call.

²¹ The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

²² When the envisaged publication date is advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.

²³ IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

9. Minimum number of participants²⁴:

Instrument	Minimum number of participants
IP, NOE	<u>3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC.</u>

10. Restriction on participation: None.

11. Consortia agreements:

- Participants in IP and NOE are required to conclude a consortium agreement.

12. Evaluation procedure:

- The evaluation shall follow a two stage procedure, the second stage of which will include a remote evaluation.
- For the first stage, proposals should consist of no more than 20 pages using a minimum of a 12 point font
- For proposals which pass the first stage, coordinators will be asked to submit a full proposal by the given deadline (section 6, above)
- Proposals will not be evaluated anonymously.

13. Evaluation criteria:

- See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds) per instrument.
- For the first stage evaluation, the criteria scored will be:
 - For integrated projects: Relevance; Potential Impact; S & T Excellence. The overall threshold will be a score of 12 out of a total possible 15.
 - For Networks of Excellence: Relevance; Degree of Integration and the Joint Programme of Activities. The overall threshold will be a score of 8 out of a total possible of 10
- For the second stage evaluation the criteria and the individual and overall thresholds will be as described in Annex B of the work programme.

14. Indicative evaluation and contractual timetable:

- Evaluation results: Results from the first stage will be available early in November 2004 and final results are estimated to be available within some 4 months after the February 2005 closure date.
- Contract signature: it is estimated that the first contracts related to this call will come into force before the end of 2005.

²⁴ MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.

Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

Call Information – Specific Targeted Research Projects, Coordination Actions and Specific Support Actions

1. **Specific Programme:** Integrating and strengthening the European Research Area
2. **Activity:** Priority thematic area of research “Food quality and safety”.
3. **Call title:** Thematic call in the area of “Food quality and safety”.
4. **Call identifier:**²⁵ FP6-2004-FOOD-3-B
5. **Date of publication**²⁶: 24 July 2004.
6. **Closure date(s)**²⁷: 08 February 2005 at 17.00 (Brussels local time).
7. **Total indicative budget:** 59 million € broken down as follows

Instrument ²⁸	EUR (millions)
IP and NOE	0
STREP and CA	54
SSA	5

8. Areas called and Instruments:

Area	Topic	Instrument
5.4.1 Area: Total food chain	T5.4.1.3	STREP
5.4.2 Area: Epidemiology of food-related diseases and allergies	T5.4.2.2	STREP
	T5.4.2.3	STREP
5.4.3 Area: Impact of food on health	T5.4.3.4	CA
5.4.4 Area: Traceability processes along the production chain	T5.4.4.2	STREP
5.4.5 Area: Methods of analysis, detection and control	T5.4.5.3	STREP
5.4.6 Area: Safer and environmentally friendly production methods and technologies and healthier foodstuffs	T5.4.6.5	STREP
	T5.4.6.6	STREP
	T5.4.6.7	STREP
	T5.4.6.8	STREP
	T5.4.6.9	STREP
5.4.7 Area: Impact of animal feed on human health	T5.4.6.10	STREP
	T5.4.7.2	STREP
5.4.8 Area: Environmental health risks	T5.4.8.3	STREP
	T5.4.8.4	STREP
5.5 Specific Support Actions	(See Section 5.5 for details)	SSA

²⁵ The call identifier shall be given in the published version of this call.

²⁶ The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

²⁷ When the envisaged publication date is advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.

²⁸ IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

9. Minimum number of participants²⁹:

Instrument	Minimum number of participants
STREP and CA	<u>3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC.</u>
SSA	1 legal entity from a MS or AS

10. Restriction on participation: None.

11. Consortia agreements:

- Participants in STREP, CA, and SSA resulting from this call are encouraged, but not required, to conclude a consortium agreement.

12. Evaluation procedure:

- The evaluation shall follow a single stage procedure, which may include a remote evaluation stage.
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:

- Evaluation results: estimated to be available within some 4 months after the closure date.
- Contract signature: it is estimated that the first contracts related to this call will come into force before the end of 2005.

²⁹ MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.

Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

Call Information – Specific Support Actions

1. **Specific Programme:** Integrating and strengthening the European Research Area
2. **Activity:** Priority thematic area of research “Food quality and safety”.
3. **Call title:** Thematic call in the area of “Food quality and safety”.
4. **Call identifier:** ³⁰ FP6-2004-FOOD-3-C
5. **Date of publication**³¹: 24 July 2004.
6. **Closure date(s)**³²: 07 September 2005 at 17.00 (Brussels local time).
7. **Total indicative budget:** 5 million € broken down as follows

Instrument ³³	EUR (millions)
IP and NOE	0
STREP and CA	0
SSA	5

8. Areas called and Instruments:

Area	Topic	Instrument
5.5 Specific Support Actions	(See Section 5.5 for details)	SSA

9. Minimum number of participants³⁴:

Instrument	Minimum number of participants
SSA	1 legal entity from a <u>MS or AS</u>

10. Restriction on participation: None.

11. Consortia agreements:

- Participants in SSA resulting from this call are encouraged, but not required, to conclude a consortium agreement.

³⁰ The call identifier shall be given in the published version of this call.

³¹ The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

³² When the envisaged publication date is advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.

³³ IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

³⁴ MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.

Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

12. Evaluation procedure:

- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:

- Evaluation results: estimated to be available within some 4 months after the closure date.
- Contract signature: it is estimated that the first contracts related to this call will come into force in early 2006.

II. GENERAL ANNEXES

A) Overview of Calls for Proposals foreseen in this Work Programme (see relevant work programme part for details)

For the latest version of Annex A see the document entitled “Overview of calls for proposals” on the website http://www.cordis.lu/fp6/sp1_wp.htm

B) Common evaluation criteria for evaluating proposals

For the latest version of Annex B see the document entitled “Common evaluation criteria for evaluating proposals” on the website http://www.cordis.lu/fp6/sp1_wp.htm

C) List of Groups of target countries for specific measures in support of International Co-operation

For the latest version of Annex C see the document entitled “List of groups of INCO target countries” on the website http://www.cordis.lu/fp6/sp1_wp.htm