

# SEVENTH FRAMEWORK PROGRAMME COOPERATION

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P2	Austrian Science Fund (Fonds Zur Förderung Der Wissenschaftlichen Forschung) (FWF)	AUSTRIA
P3	Fonds National de la Recherche Scientifique (F.R.S.-Fnrs)	BELGIUM
P4	National Research Council (NRC)	CANADA
P5	Forsknings- og Innovationsstyrelsen (DASTI)	DENMARK
P6	Sihtasutus Eesti Teadusfond (ETF)	ESTONIA
P7	Institut National de la Recherche Agronomique (INRA)	FRANCE
P8	Deutsche Forschungsgemeinschaft (DFG)	GERMANY
P9	Hungarian Academy of Sciences (HAS-SEC)	HUNGARY
P10	Ministry Of Agriculture And Rural Development (MOARD)	ISRAEL
P11	Ministero dell'Istruzione, dell'Universita' e della Ricerca (MIUR)	ITALY
P12	Latvijas Zinatnu Akademija (LZA)	LATVIA
P13	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)	NETHERLANDS
P14	Foundation for Research, Science and Technology (FRST)	NEW ZEALAND
P15	Norges forskningsråd, Research Council of Norway (RCN)	NORWAY
P16	Narodowe Centrum Badan i Rozwoju (NCBiR)	POLAND
P17	Fundacao Para a Ciencia e a Tecnologia (FCT)	PORTUGAL
P18	Ministarstvo Prosvete i Nauke (MPN)	SERBIA
P19	Ministry of Science and Innovation (MICINN)	SPAIN
<b>Observers</b>		
O1	European Plant Science Organisation (EPSO)	EUROPE
O2	Agence Nationale de la Recherche (ANR)	FRANCE
O3	Department of Biotechnology (DBT)	INDIA
O4	Ministry of Agriculture, Food and Forestry (MIPAAF)	ITALY
O5	Japan Science and Technology Agency (JST)	JAPAN
O6	Ministry of Agriculture, Forestry and Food (MAFF)	SLOVENIA
O7	National Science Foundation (NSF)	UNITED STATES

## **ABSTRACT: ERA-CAPS**

Plant sciences face important challenges at the European and global scale due to a burgeoning world population that requires sustenance. Reliable production of high-quality and safe food, feed and renewable Carbon supplies for green chemistry, without the use of excess land, energy, water, pesticides and chemicals is therefore essential.

To ensure that we have the scientific understanding to again revolutionise agricultural capabilities to deliver higher yields with lower inputs in a changing climate, we propose a network focusing on Coordinating Action in Plant Sciences (ERA-CAPS). This will unite the scientific and economic capabilities of member states and enable the coordination of sustainable transnational plant science research programmes.

ERA-PG (2004-2009) successfully initiated a programme to structure the scientific and technological basis for plant genomics programmes in Europe. This has fostered the development of the common knowledge base necessary to build coherent transnational policy frameworks. However, if transnational cooperation and resolute mutual goals in the plant sciences are to be firmly embedded in national policies and processes, these foundations must be strengthened and expanded.

To bring this about ERA-CAPS will pursue the development of a common agenda for plant science in Europe and create a joint research programme. ERA-CAPS will also facilitate data management, access and sharing solutions. Through external engagement ERA-CAPS will enable interaction between researchers, funders and relevant European initiatives, and assist in the systematic exchange of information to facilitate the expansion of the network and the involvement of new members and affiliates.

Such a network will significantly help plant sciences address both current and future challenges in food and non-food crop production.

**LIST OF ABBREVIATIONS**

<b>CA</b>	Consortium Agreement
<b>EC</b>	European Commission
<b>ELIXIR</b>	European Life Sciences Infrastructure for Biological Information
<b>EPSO</b>	European Plant Science Organisation
<b>ERA</b>	European Research Area
<b>ERA-NET</b>	European Research Area Network
<b>ETP</b>	European Technology Platform
<b>EU</b>	European Union
<b>FACCE-JPI</b>	Food security, Agriculture and Climate Change – Joint Programming Initiative
<b>FP</b>	Framework Programme
<b>GLOREA</b>	Global Research Area
<b>HLG</b>	High level Group
<b>IPR</b>	Intellectual Property Rights
<b>ISCPG</b>	International Steering Committee for Plant Genomics
<b>JPI</b>	Joint Programming Initiative
<b>KBBE</b>	Knowledge Based Bio-Economy
<b>MB</b>	Management Board
<b>PCO</b>	Programme Coordinators' Office
<b>PLANT-KBBE</b>	Transnational Plant Alliance for Novel Technologies - toward implementing the Knowledge-Based Bio-Economy'
<b>PPP</b>	Public Private Partnership
<b>SAB</b>	Scientific Advisory Body
<b>SRA</b>	Strategic Research Agenda
<b>TP</b>	Technology Platform
<b>WP</b>	Work package

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## 1. SCIENTIFIC AND TECHNICAL QUALITY

### 1.1 CONCEPT AND OBJECTIVES

#### 1.1.1 Background - Responding to societies' needs

Plants are essential to human life. As both a direct source of food and the basis of animal feed, plants provide the carbohydrates, proteins, fibre, oils, vitamins and antioxidants we need to live healthy lives. Plant-derived compounds form the basis for most medicines as well as providing bio-energy and building materials. Indeed, the cultivation of plants some 10,000 years ago provided the foundations for modern civilisation.

The European and global food production system faces an unprecedented confluence of pressures over the next 40 years. Our burgeoning world population is estimated to reach nine billion by 2050 compared with six billion at present. Much of this population will be wealthier demanding a more varied and higher-quality diet. Globalisation will continue exposing the food system to novel political and economic pressures. Competition for land, water and energy will increase and the need to adapt and mitigate the effects of climate change will become crucial. However, this is an immediate problem not simply a crisis in the making. The 2010 Global Hunger Index<sup>1</sup> was characterised as “serious” with over 1 billion people classified as hungry by the Food and Agriculture Organization of the United Nations in 2009<sup>2</sup>. A further billion are thought to suffer from ‘hidden hunger’, whereby important micronutrients are missing from their diet. This places immediate increased demands on primary plant production for food as well as increased industrial demands for feedstock production.

Addressing these demands will have significant environmental and economic impacts. Simply put; high-quality, safe and reliable food and energy supplies demand high-quality, safe and reliable production methods. Current food production methods are utilising excess energy, water, pesticides and chemicals and will not meet the demands of a growing population. To guarantee food security (access to enough safe and nutritious food to ensure a healthy life for all) the world is in need of new ways to produce adequate and stable food supplies in an environmentally sustainable manner. The challenge for plant science is to provide sufficient food for modern society and a clean and safe environment in which to live. Sustainable, high-yielding crops, better use of plants as a renewable source of materials and a transition towards green energy are at the heart of the solution to these problems. Indeed, plants may be the only source of liquid fuels in an oil-free future.

Improvements in our knowledge of plant biology and agronomy have already underpinned large increases in crop yields and enhanced access to a far greater diversity of food on a global scale. Plants are central to a significant proportion of European industry in sectors ranging from forestry to pharmaceuticals. A deeper understanding of plant growth and development and how these processes are shaped by interactions between genetic factors and the biotic and abiotic environment is essential to drive innovation, to stimulate commercial exploitation and to maintain the competitiveness of Europe's economy.

Modern genomics-based techniques have revolutionised the biological sciences and fundamentally altered the way research is conducted. Large scale genomics, systems biology approaches, and downstream, high-throughput analyses (such as transcriptomics, proteomics and metabolomics),

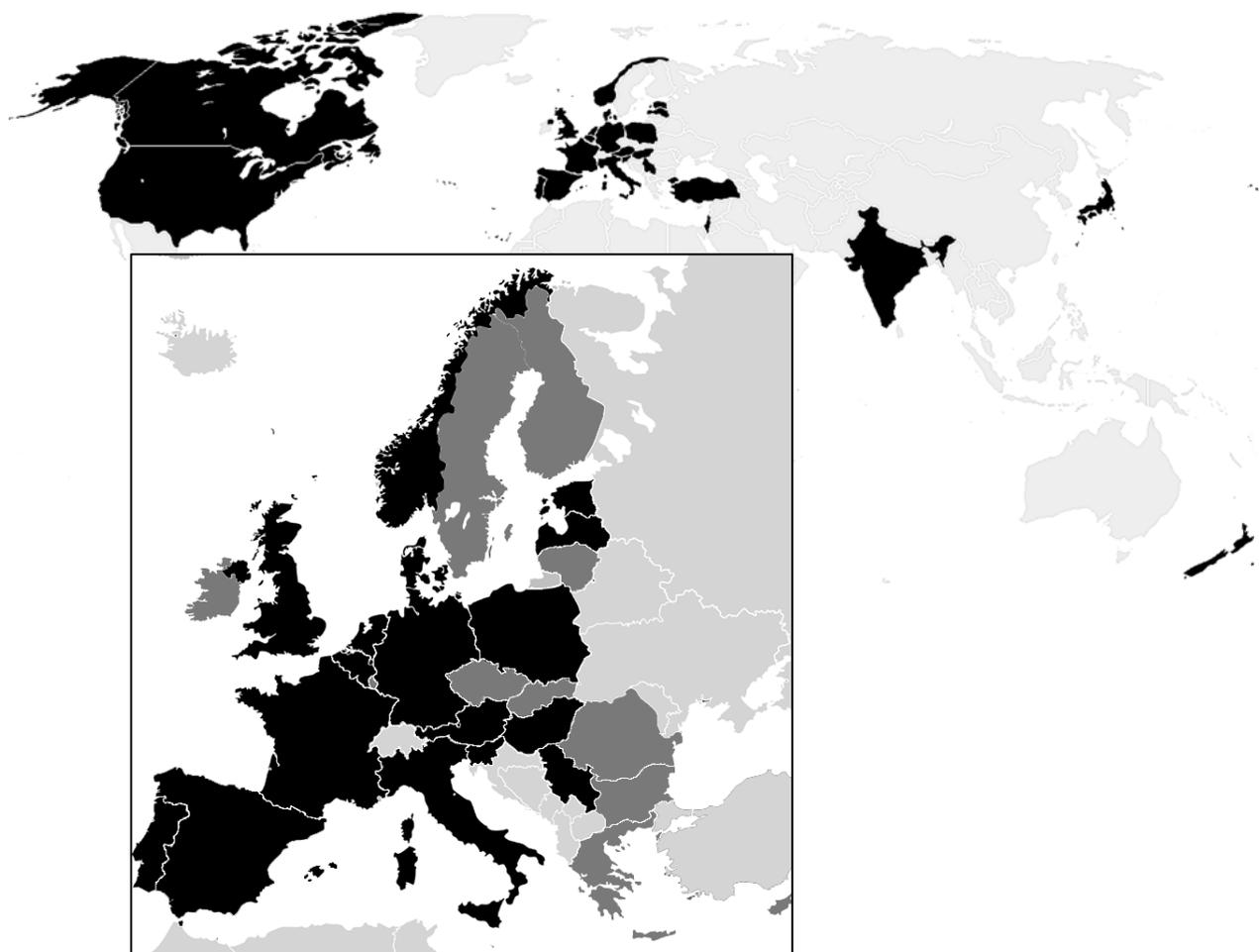
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<sup>1</sup> <http://www.ifpri.org/publication/2010-global-hunger-index>

<sup>2</sup> <http://www.fao.org/hunger/en/>

have enabled huge advances in the study of the plant architecture and regulatory networks controlling molecules, cells, tissues, organisms and populations. Increased integration and rationalisation of these resources is necessary if we are to address the key challenges in crop production. We need to ensure that we have the scientific understanding to again revolutionise agriculture so that it delivers higher yields with lower inputs, varieties capable of growing on marginal land and sustainable feedstock provision for industry.

The principal objective of this European Research Area Network (ERA-NET) Coordinating Action in Plant Sciences (ERA-CAPS) is to increase coordination and unite the resources of European research funding agencies with those of an enlarged Europe and beyond, to enable a pooling of scientific and economic capabilities of member countries (Fig. 1). This will engender the creation and coordination of sustainable transnational plant science research programmes to meet the global challenges of food security and sustainability.



**Figure 1. The global position of ERA-CAPS members and a detailed map of their position within the European Union.**

ERA-CAPS member, 
  EU member, 
  non-member

Members: United Kingdom (BBSRC), Austria (FWF), Belgium (F.R.S.-Fnrs), Canada (NRC), Denmark (DASTI), Estonia (ETF), France (ANR/ INRA), Germany (DFG), Hungary (HAS-SEC), India (DBT), Israel (MOARD), Italy (MIUR./ MIPAAF), Japan (JST), Latvia (LZA), New Zealand (FRST), The Netherlands (NWO), Norway (RCN), Poland (NCBiR), Portugal (FCT), Serbia (MNTR), Slovenia (MAFF), Spain (MICINN), United States (NSF).

### 1.1.2 Coordination of plant science research in Europe

National programmes such as CBSG<sup>3</sup> (The Netherlands), GABI<sup>4</sup> (Germany), GARNET<sup>5</sup>(UK) and GENOPLANTE<sup>6</sup>(France) which specifically focused on plant genomics were first established around 1999. The recognition of the importance of genomics in plant sciences and biotechnology lead to bi- and tri-lateral collaborations between funding organisations in Germany and France and later Spain. It was this evolving network, along with others, that laid the foundations for an ERA-NET in Plant Genomics (ERA-PG)<sup>7</sup>. The ERA-NET scheme was launched under the 6<sup>th</sup> Framework Programme in 2002 with the aim of stepping up cooperation and coordination in research activities at national and regional levels in Member and Associated States. This scheme has helped to restructure the fabric of research in Europe and has been an important driver towards the creation of the European Research Area (ERA). During FP6 ERA-PG was amongst the first actions selected and contributed greatly by improving the coherence of scientific and technological plant genomics programmes, reducing fragmentation in research and capitalising on scientific excellence through transnational collaboration.

ERA-PG began in 2004 with members from 11 countries. The network later expanded to include members from a further six countries demonstrating the success of the activity in starting to unite European plant genomics research and in achieving the critical mass required for joint programmes to be truly effective and drive innovation in this sector (Fig. 2). ERA-PG endeavoured to structure the scientific and technological basis for plant genomics in Europe and to develop the common knowledge base necessary for coherent transnational policy. ERA-PG Partners commenced activities in 2004 with the exchange of information regarding national research programmes and funding schemes and a survey of best practise in procedures for programme development, evaluation and selection. In 2005, the ERA-PG funding bodies, Scientific Advisory Board, academic stakeholders and industrial stakeholders implemented the ERA-PG research programme to promote European collaboration, scientific excellence, synergy and cohesion.

A major objective of the ERA-PG research programme was to fund innovative science using plant genomics based technologies. Projects were required to employ various genomics and quantitative genetics tools and the joint development of new tools for genomics was also within the remit of the ERA-PG calls. In 2006 a transnational call for collaborative research proposals: 'Structuring Plant Genomics Research in Europe', was launched. In response to the successful collaborations formed and high number and quality of proposals in the first ERA-PG transnational joint call, a second joint call 'Strengthening the European Research Area in Plant Genomics – integrating new technologies in plant science' was issued in January 2008.

Projects under the second joint call started in 2009 and will continue into 2012. The joint calls attracted over 500 applicants and were highly competitive. In total, 41 research projects were funded with a total budget of some €55M under the remit of ERA-PG, making this coordinated multinational research initiative one of the largest in the ERA-NET scheme. The scope of the funded projects (Fig. 3) was well aligned to the objectives of several other strategic groups in plant science currently active in Europe, including the European Technology Platform, 'Plants for the Future'<sup>8</sup>.

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<sup>3</sup> <http://www.cbsg.nl/>

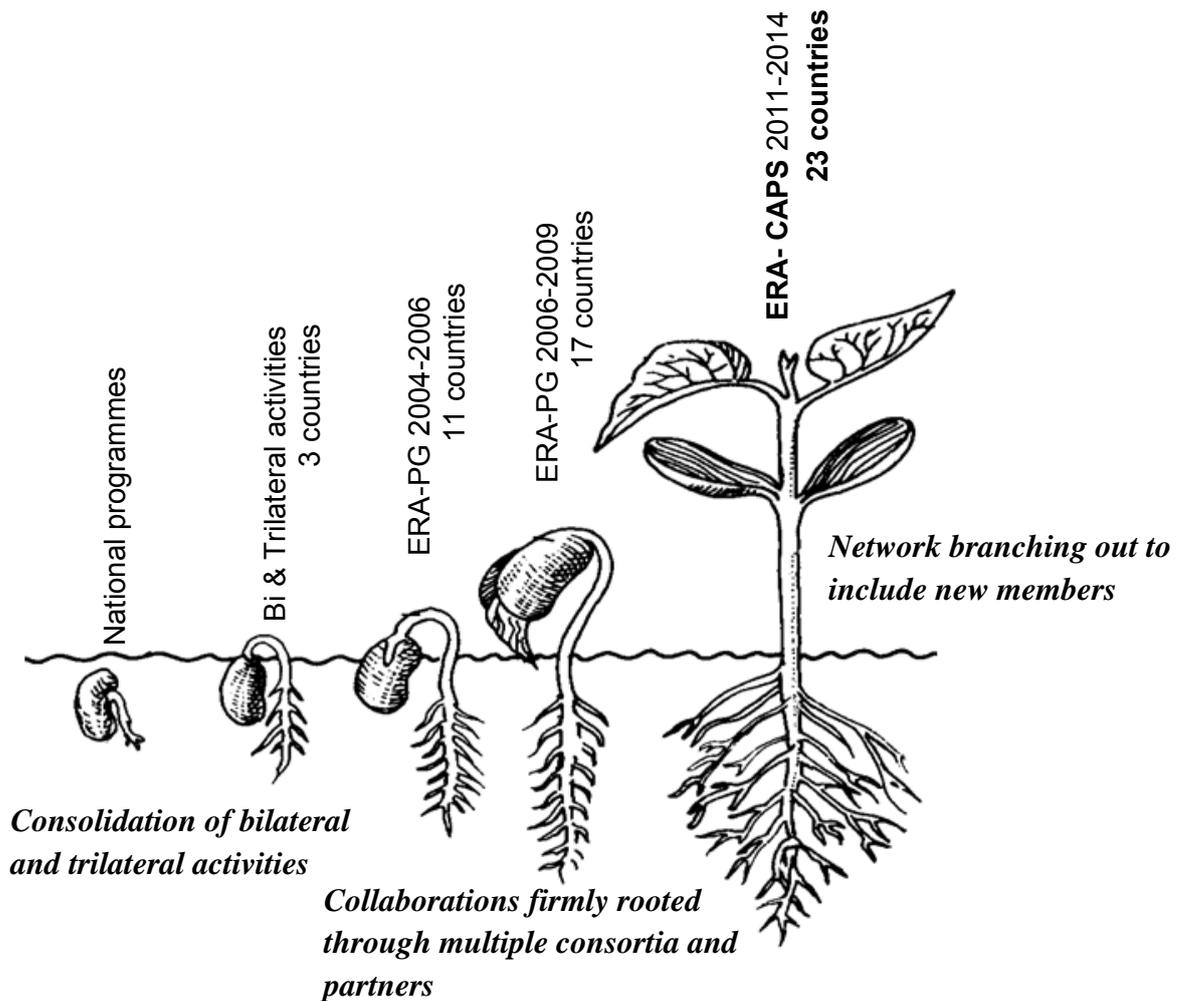
<sup>4</sup> <http://www.gabi.de/>

<sup>5</sup> <http://www.garnetcommunity.org.uk/>

<sup>6</sup> <http://www.genoplante.com/>

<sup>7</sup> <http://www.erapg.org/>

<sup>8</sup> <http://www.plantetp.org/>



**Figure 2. Development of European Coordinating Action in Plant Sciences**

Since the inception of ERA-PG, the European Union has enlarged with the addition of 12 new Member States, many from Central and Eastern Europe. In addition to building on the excellent working relationships established during ERA-PG, ERA-CAPS aims to bring together scientists from an additional 10 countries, including EU accession states and non-EU countries, to increase the global reach and impact of the new network. An extended ERA-NET in this area will build upon this foundation to foster the integration of national and regional programmes necessary for continued policy development and application, whilst continuing to deliver excellence-driven research.

2006: ERA-PG sub call A (broad/ open)	2008: ERA-PG sub call A (broad/ open)
<ul style="list-style-type: none"> <li>▪ Genomic approaches to adaptation and acclimation to abiotic and biotic stress (7)</li> <li>▪ Yield stability of plants (2)</li> <li>▪ Intrinsic genetic potential of plants (1)</li> <li>▪ Crop breeding and development of crop and forage plants for low input systems (3)</li> <li>▪ Development of genomic tools (1)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Genomic approaches to adaptation and acclimation to abiotic and biotic stress (5)</li> <li>▪ Quality traits (1)</li> <li>▪ Intrinsic genetic potential of plants (2)</li> <li>▪ Genomic research into non-food uses for crops (1)</li> <li>▪ Development of genomic tools (2)</li> <li>▪ Other topics contributing to the development of the ERA (1)</li> </ul>
2006: ERA-PG sub call B (PPP-targeted)	
<ul style="list-style-type: none"> <li>▪ Sustainable agriculture (1)</li> <li>▪ Innovative uses for plants (4)</li> <li>▪ Improved quality for food and feed (9)</li> </ul>	

*The number of projects funded in each theme is given in parenthesis [\*]*

### Figure 3. Headline themes funded under the three transnational calls of ERA-PG

This unifying approach has a long-term perspective. By progressively aligning plant science programmes across Europe, ERA-CAPS aims to plan strategically and ultimately fund, research at a transnational level through a structure that will allow the limited resources to be used as efficiently as possible. Besides efficiency savings and the reduction of duplication of research efforts, there are also significant benefits to be realised by bringing together scientists with different areas of expertise, access to varied resources (including e.g. diverse germplasm), and creating an inclusive body of researchers with a critical mass. The Partners believe that this is the only way to meet the European demand for plant science innovation in primary production for food, feed, fibre, bioenergy, medicine and industry.

ERA-PG was a front runner in the ERA-NET community and placed emphasis on networking activities; organising project status seminars in association with the European Plant Genomics Meetings (Plant GEMs) to bring together the owners and managers of national and regional plant genomics programmes, researchers from academia and industry and the policy makers from the ministries, councils and agencies that fund the projects. ERA-PG also developed and maintained close contacts with other ERA-NETs, particularly those in the area of the Knowledge Based Bio-Economy (KBBE)<sup>9</sup> as well as with the European Plant Science Organisation (EPSO)<sup>10</sup>, the

<sup>9</sup> <http://www.plant-kbbe-submission.net/>

<sup>10</sup> <http://www.epsoweb.eu/>

European Technology Platform ‘Plants for the Future’ and the ‘Transnational Plant Alliance for Novel Technologies – toward implementing the Knowledge Based Bio-Economy in Europe’ (PLANT-KBBE). Collaboration with the aforementioned networks will be of great value and importance in expanding the ERA in molecular plant sciences. ERA-CAPS will strive to build upon the wider collaborations and contacts instigated during ERA-PG.

### 1.1.3 Key challenges

The plant science community has produced several ‘vision’ documents and engaged in various foresight activities over the last few years. Although these have been geared towards different audiences, or produced by different subsets of the community, the key messages and challenges arising from them have much in common. A good representative example is that from the European Technology Platform ‘Plants for the Future’<sup>11</sup>. They launched a consultation for a Strategic Research Agenda (SRA) in 2005<sup>12</sup>, and a detailed agenda was published in 2007<sup>13</sup>. The challenges recognised through the plants for the future ETP are further corroborated by a recent UK government-commissioned study to explore the pressures on the global food system between now and 2050. The 2011 Foresight Report on Food and Farming Futures<sup>14</sup> involved over 400 experts from a broad range of disciplines in 35 countries and recommends a drastic overhaul of the global food production system to produce more food sustainably and to provide incentives to the agricultural sector that address malnutrition. These recommendations are in line with the SRA of the ETP which outlined five major challenges which must be addressed to secure future food supplies and a viable bio-economy in Europe:

#### **Key challenges**

- 1. Healthy, safe and sufficient food and feed.** Key areas: the development and production of sufficient diversified and affordable high-quality raw plant material for food products; improving the control and traceability of plant raw material production; tailoring plant materials for specific health benefits; producing high-quality, sufficient, affordable and sustainable feed for quality food.
- 2. Plant-based products – chemicals and energy.** Key areas: biochemical production; bio-energy production and enabling research for plant based products.
- 3. Sustainable agriculture, forestry and landscape.** Key areas: the improvement of plant productivity and quality; the reduction and optimisation of the environmental impact of agriculture and the enhancement of biodiversity.
- 4. Vibrant and competitive basic research.** Key areas: sequencing of genomes of European crops and major pathogens; developing effective platforms to study transcriptomics incorporating metabolomics and proteomics; developing systems biology to enable the prediction of novel traits and building human resources, infrastructure and networking capacities.
- 5. Consumer choice and governance.** Key areas: public and consumer involvement – regaining the trust of citizens in the application of plant research and biotechnology; ethics and food security; legal and financial environment.

**Meeting these challenges is an ambitious goal that will not be met without an underpinning EU-wide plant science research structure. ERA-CAPS can help to deliver the science and coordination required to make progress against these challenges.**

<sup>11</sup> <http://www.plantetp.org/>

<sup>12</sup> [http://www.plantetp.org/index.php?option=com\\_content&view=article&id=68&Itemid=158](http://www.plantetp.org/index.php?option=com_content&view=article&id=68&Itemid=158)

<sup>13</sup> [http://www.plantetp.org/index.php?option=com\\_content&view=article&id=71&Itemid=160](http://www.plantetp.org/index.php?option=com_content&view=article&id=71&Itemid=160)

<sup>14</sup> <http://www.bis.gov.uk/foresight/our-work/projects/current-projects/global-food-and-farming-futures>

### **1.1.4 Project Scope**

The research agenda outlined by the Plants For the Future ETP for the coming decades in plant science highlights the need for continued and increased coordination of research efforts in areas central to ERA-CAPS. These needs include; securing a healthy, high quality food supply (with reduced inputs); reduced environmental impacts and increased countryside biodiversity; an improved understanding of plant metabolism; improved plant yields; improved genetic diversity in crop plants; enhanced crop monitoring and the development of renewable materials and more efficient biofuels.

Bioscience working practices largely evolved in the pre-internet age. In contrast, data sharing and mass collaboration are now a reality resulting in an almost overwhelming quantity of data available at the touch of a button. A further major challenge for modern plant science research is now that of genetic, genomic and data resource management and infrastructure rationalisation. How to ensure access to, and awareness of, these resources, how to efficiently exchange data and maintain the long term sustainability and use of these infrastructures is of paramount importance. Likewise, the development of a common legal framework including intellectual property rights for the ERA in plant science is also a significant challenge. By developing data sharing standards, using common electronic communication tools and commissioning IPR experts to develop a legal framework for transnational research, ERA-CAPS hopes to enable the mechanisms necessary to maintain the established collaborations within Europe and beyond.

The purpose of an ERA-NET is to foster coordination and cooperation between programmes. This is not just about bringing together the best researchers, but also the policy-makers and funding agencies to establish a framework that will allow true cross-border collaboration, not only at the level of individual scientists but right up to major joint programming initiatives. To bring about Europe's main goals in plant genomics and biotechnology, a long-term research agenda must be implemented based on the priorities identified. Further transparency of the research and development effort at the regional and national level is therefore required to make the promotion of coherent transnational policy a reality. The goal of ERA-CAPS is to help bring about this coordination to enable the long-term sustainable collaboration required to meet these challenges.

The preceding ERA-PG programme achieved successful cooperation amongst the existing Partners and developed sustained collaborations and progress in the arena of plant genomics. However, transnational cooperation and resolute mutual goals in the plant sciences have still to be firmly embedded in national policies and processes. The success of ERA-PG demonstrated that the national programmes are committed to combined efforts and that such efforts are highly effective in addressing the challenges we face. However, there is a real need to consolidate and strengthen the initiated processes of identifying major research needs, to extend the partnership to include new member countries in the development of shared procedures and to enable the funding of European-level projects from national funds with the aim of developing self-sustaining collaborative activities. A final objective of ERA-CAPS will be to put in place a mechanism for the continued coordination of plant sciences research in Europe (and more widely) beyond the end of any funding from the European Commission.

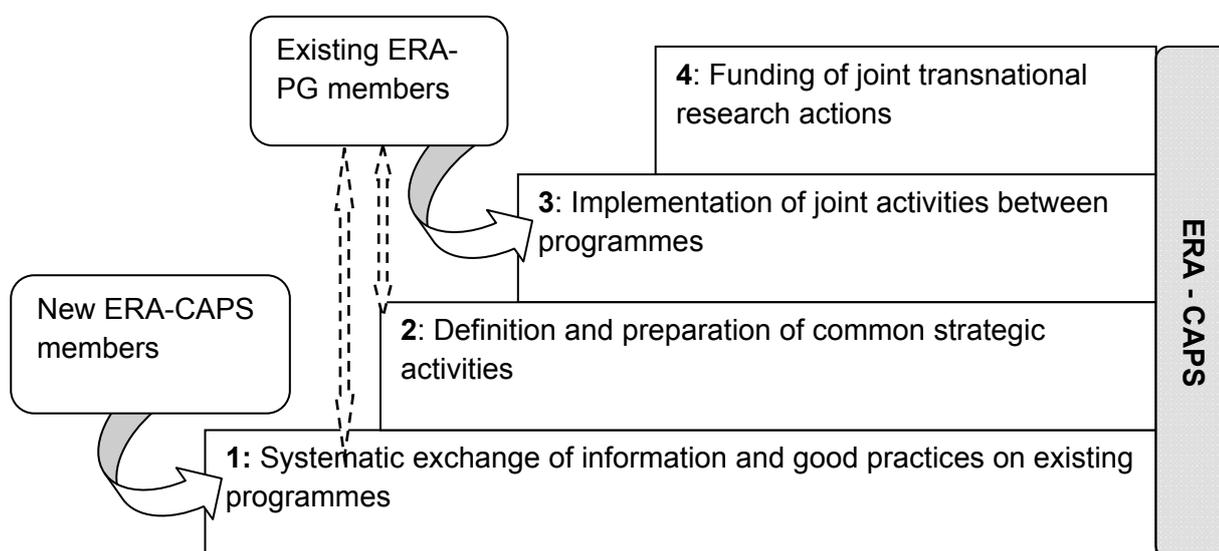
### **1.1.5 Approach of ERA CAPS (2012-2015)**

The proposed ERA-CAPS network represents a significant expansion of ERA-PG with 10 new countries signing up to the current partnership. Several of the new members are countries from the

2004 enlargement of the EU<sup>15</sup> (Estonia, Hungary, Latvia, Poland and Slovenia) and one is a potential EU candidate country (Serbia)<sup>16</sup>. Significantly, several non-EU countries who play an important role in global plant sciences have also signed up for ERA-CAPS (Canada, India, Japan, New Zealand and the USA). Considering the current economic climate in many countries this represents a resolute commitment and an important recognition of the need to persevere with the goals of the expanded network. The vast majority of the countries involved in ERA-PG have committed to further coordination activities under the auspices of ERA-CAPS with only Bulgaria, Finland, Sweden and Switzerland unable to commit to the new network at this stage. In most cases this has been due to organisational restructuring and/ or the current financial climate. These countries will be very welcome to rejoin the network should their circumstances change.

Initially ERA-CAPS will undertake a systematic exchange of information and best practices for the definition and preparation of joint activities. For many of the Partners these two stages have been addressed in ERA-PG (Fig. 4). However, one of the main goals of ERA-CAPS is to attract and involve new Partners to promote inclusive development of transnational research and to strengthen and broaden the network. As such, a review of these activities will be necessary to embed the new members into the ERA-CAPS network. Additionally, due to the changes in the funding landscape as a result of restructuring of national bodies, the financial climate and the development of new initiatives, it is timely to revisit and update the information gathered previously.

The final activities required of a successful ERA-NET are the implementation of joint activities and the funding of transnational research. ERA-PG made a very successful start in these areas and ERA-CAPS plans to continue and expand these activities; hopefully progressing towards the joint programming necessary to exploit the synergies and leverage funding between national programmes, speed up scientific progress and maximise the outputs necessary for a strong bio-economy.



**Figure 4. Integration of new members and ERA-PG members into ERA-CAPS**

<sup>15</sup> [http://ec.europa.eu/enlargement/5th\\_enlargement/index\\_en.htm](http://ec.europa.eu/enlargement/5th_enlargement/index_en.htm)

<sup>16</sup> [http://ec.europa.eu/enlargement/countries/index\\_en.htm](http://ec.europa.eu/enlargement/countries/index_en.htm)

Through transnational programmes ERA-CAPS plans to contribute to realising the aims identified in the strategic research agendas of the various strategy, foresight and focus groups examining the challenges facing plant science. The commitment of the current members to continue the work of ERA-PG, demonstrates the desire to maintain the cooperative activities in this research area. The willingness of many new member countries to sign up to ERA-CAPS makes explicit the need to enhance and expand the degree of cooperation.

#### **1.1.6 State of the art and expected progress**

The landscape of plant sciences has changed significantly since the inception of ERA-PG in 2004 and it has become an increasingly data-rich subject. Much of the technological progress has arisen from fast, cost-effective sequencing capabilities and advances in associated 'omic technologies during the past decade. In plant genome sequencing alone progress has been remarkable. From the two fully sequenced genomes available in 2004 (*Arabidopsis* [2002], Rice [2004]) there are now over 350 plant genomes for which there are concerted sequencing or genome mapping activities underway. The continued commitment of national research effort in this arena is well illustrated by recent investment in genome sequencing for key species such as Wheat (£1.7M UK initiative, €3.7M France initiative; 2009, £6.5M UK initiative 2011), Spruce (\$10M Swedish initiative; 2009), Tomato (\$7.5 M U.S.A initiative; 2009) and the recent publication of the Soybean (U.S.A, DoE JGI initiative); and *Brassica rapa* (BBSRC, BGI, CAAS, INRA, NSF initiative) sequences in 2010. Novel approaches such as systems biology (the study of an organism, as an integrated and interacting network of genes, proteins and biochemical reactions, rather than the analysis of individual components) and synthetic biology (the synthesis of novel complex, biologically based systems, which display functions that do not exist in nature) are also now key effectors in modern plant science.

Improvements in the rate and cost of sequencing will soon render whole genome sequencing common place. The future challenge facing plant science will be in the processing and analysis of the data generated, the integration of multi-disciplinary research teams to carry out this work and the effective translation of the knowledge gained into demonstrative applications. To facilitate the efficient use and interpretation of such data sets ERA-CAPS plans to support the development of a series of standards for research output, data sharing and access to further enable the use, re-use and re-purposing of results generated through transnational and national research programmes.

ERA-CAPS will involve members from 23 different countries. This brings together a vast wealth of resources and technological excellence that will enable national or regional programmes to address problems which they would not be able to tackle independently. The countries involved encompass an extensive range of geographical situations and climatic conditions, which in turn give rise to a wealth of genetic resources. The consortium encompasses several regions which are centres of origin for genetic diversity for crop and forest species; island territories with associated germplasm rarities and multiple continents encompassing many land races of modern crop species. In terms of tackling global problems of food security and sustainability this genetic wealth is augmented by the range of climatic conditions present within the territories of the ERA-CAPS consortia, enabling novel varieties and new methodologies to be trialled under a vast range of conditions. One of the roles of ERA-CAPS is to identify these resources, but a more important responsibility is to identify areas where transnational coordination would add value to the research effort.

The challenge for ERA-CAPS is to make the most of this wealth of genetic, genomic, scientific, geographic and climatic resources.

ERA-CAPS expects to make significant progress in developing a common agenda and harmonising working practise amongst the consortia members. This will involve dedicated work packages to integrate the new members of the expanded network and a significant effort to build solid coordination and communication mechanisms for the network. Two joint calls in fundamental plant science will be launched under the auspices of ERA-CAPS: through funding high quality collaborative transnational research in the plant sciences the network will maximise the utility of the wealth of resources available within the consortia. In doing so ERA-CAPS will significantly contribute to further shaping the ERA and addressing the social, environmental and economic challenges that we face. ERA-CAPS will also strive to engage other relevant networks to increase its impact and reach, reduce duplication of effort and add value to research in the plant sciences. A key long-term aim of ERA-CAPS is to set in place the mechanisms whereby the network will become self-sustaining; enabling research owners and managers to continue to coordinate their national programmes and undertake further transnational funding of plant science.

This suite of activities will enable the scientific community in Europe and beyond to reap the full benefits of successful ERA-PG projects by offering a means to continue ongoing fruitful collaborations and to make efficient use of the established genetic and infrastructure resources. There is now a greater emphasis in many European countries on enabling the translation of information gained from innovative fundamental research into social and economic benefits i.e. using the knowledge gained in a meaningful way to have tangible effects on current issues in food production. These new drivers require effective communication between all stakeholders; academic scientists, farmers, industry, social groups and governments at a transnational level. The challenge for the ERA-CAPS network is to capitalise on the successes of the previous programme, and to move forward to enable plant science to address these and future areas of need through integration at a European level and expansion into the global research area (GLOREA).

### **1.1.7 Overview of the project objectives**

The long term objective of ERA-CAPS is to promote sustainable collaboration in plant sciences through coordinating and funding excellent transnational research. In accordance with the strategic objectives described previously, ERA-CAPS will pursue six major interlinked objectives, each addressed by a work package (WP). Key to achieving the ambition of joint programming is the development of a common agenda and shared vision and a means of implementing it (WP1). To facilitate the expansion of the network and the involvement of new members in particular, we will undertake activities to assist the systematic exchange of information and best practices and the definition and preparation of joint activities (WP2). Furthermore, we propose a joint research programme incorporating a minimum of two joint calls (WP3) where we will actively encourage involvement of new member countries. Integral to maximising the impact of ERA-CAPS are external engagement and data management to promote and enable interaction between researchers and between other European and Global initiatives from the public and private sectors (WP4). It is essential that ERA-CAPS investigate mechanisms to enable the network to become self-sustaining (WP5). Effective coordination, communication and outreach is crucial to the impact of any ERA-NET, this function will be met by WP6. Finally, efficient programme management to enable the smooth running of the programme is contained within WP7. These work packages are fully described in section 1.3D.

To achieve these goals, an interlinked series of activities is required:

**Operational activities** planned for the next 3 years are:

- To establish a Management Board, High-Level Group and Scientific Advisory Board
- To enhance integration and efficiency by building on available experience and best practice
- To further develop joint operations and optimise processes initiated in ERA-PG
- To launch at least two joint calls
- To evaluate the impact of ERA-PG and ERA-CAPS supported projects
- To establish a mechanism for the long-term sustainability of the network

### **Policy activities**

- To encourage full commitment of the Partners
- To expand the network by including new Partners and Observers
- To identify opportunities to integrate and collaborate with other relevant organisations at the national, European, and international levels
- To promote the visibility of ERA-CAPS through external engagement (representing the scientific base) to policy makers and funders
- To participate actively in stakeholders meetings, such as ERA-NET wide events, workshops organised by DG Research of the European Commission, stakeholder meetings organised by ETPs and activities of a Platform of KBBE relevant ERA-NETs

### **Supportive activities**

- To establish the Programme Coordination Office to assist and support all Partners in the programme
- To renew the website and strengthen its presentation by developing a new logo and a new format for corporate communication
- To relaunch the extranet as a means for internal communication among all network Partners
- To disseminate information and results about ERA-CAPS to increase the profile of supported projects
- To promote the forthcoming programme
- To plan and organise ERA-CAPS forward looks and other workshops

#### **1.1.8 ERA-CAPS organisation**

The ERA-CAPS organisational structure will consist of a Programme Coordination Office (PCO) where a secretariat will be established with responsibility for overall coordination and networking activities; a High-Level Group (HLG) comprising senior level representatives from each Partner with overall responsibility for monitoring performance; a Management Board (MB) consisting of the programme managers responsible for the progress made in the work packages and a Scientific Advisory Body (SAB) consisting of academics to advise the HLG and MB about matters relating to scientific topic and content. A schematic of the organisation structure is given in Figure 6 (section 2.1).

## 1.2 CONTRIBUTION TO THE COORDINATION OF HIGH QUALITY RESEARCH

### 1.2.1 Cooperation and coordination with relevant European organisations and initiatives

Fostering the facilitation of high-quality research in the plant sciences through sustainable collaboration and coordination within the ERA is the overarching goal of ERA-CAPS. However, the ERA landscape is currently fragmented, both in terms of funding policies and research directives. This fragmentation is in some cases a necessity as the plant science research area is incredibly broad and is influenced by, and in turn influences, many different social, environmental and economic areas of the EU. ERA-CAPS recognises that a diversity of research and funding approaches and priorities must be considered. However, there is much value to be gained by harmonising procedures and practise within the European plant science community where possible. To facilitate this, ERA-CAPS plans to cooperate closely with other relevant organisations (Fig. 5). In particular, value will be added by developing stronger interactions with the following:\*

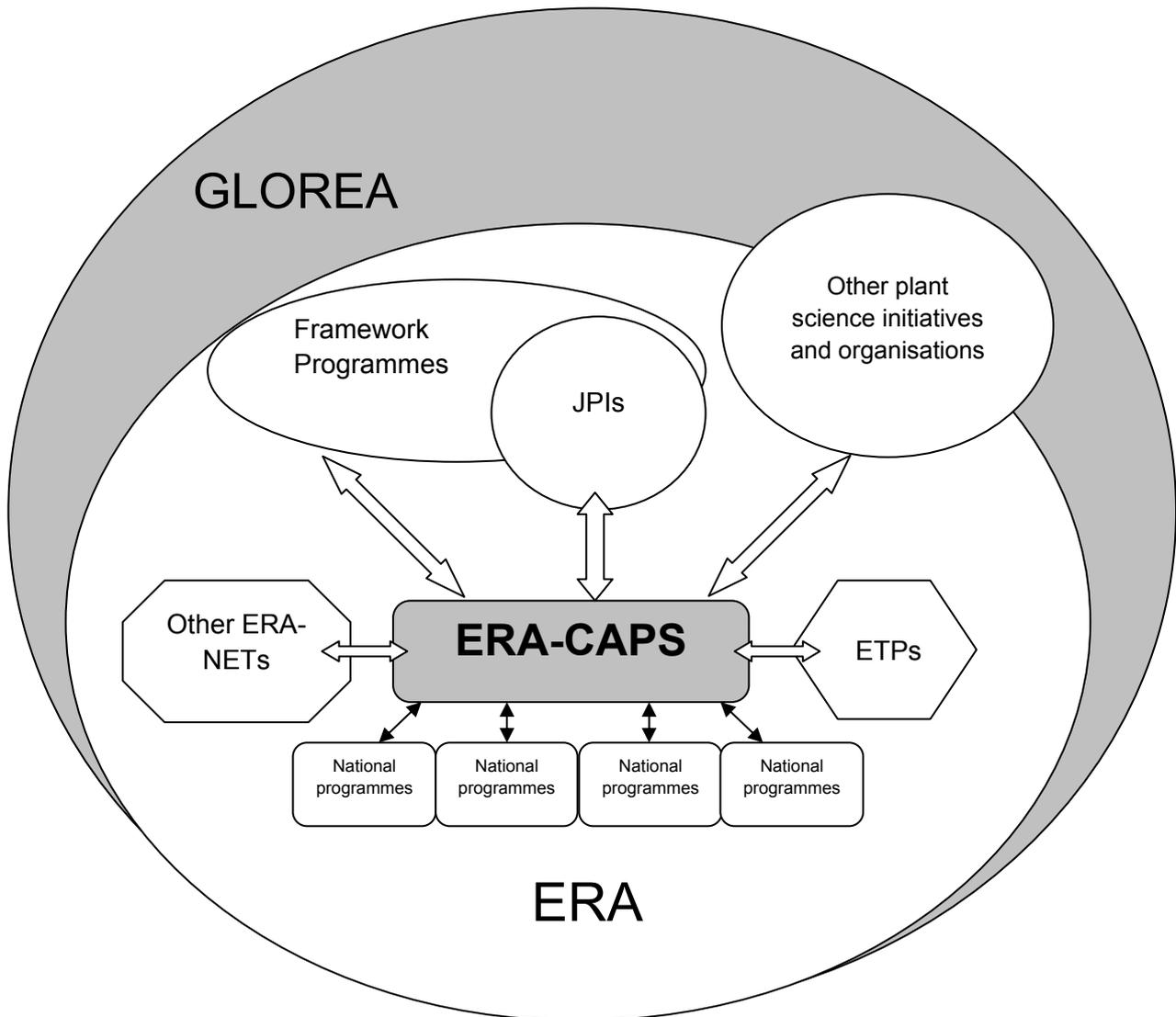
- FACCE-JPI<sup>17</sup>: The Joint Programming Initiative on Agriculture, Food Security and Climate Change comprises 20 countries with the aim of targeting joint research to achieve a shared vision: to secure a safe and sustainable food supply, whilst reducing the impact of agriculture on climate change. The intentions of ERA-CAPS fit very well under the broader vision of the FACCE-JPI and therefore it is anticipated that ERA-CAPS will help to implement some of their objectives.
- European Plant Science Organisation (EPSO): With reciprocal Observer status and formal attendance at each other's meetings, this interaction will provide unprecedented links between the funding agencies to scientists from more than 223 Research Institutes and Universities in 30 countries.
- European Technology Platform 'Plants for the Future': A stakeholder forum for the plant sector with members from industry, farmer organisations, and academia amongst others. This link strengthens the pipeline from fundamental research to practical application and take-up
- PLANT-KBBE aims to foster joint European research and development activities directed towards application-oriented objectives. Now launching their fifth joint call PLANT-KBBE has invested significant funds in public-private-partnerships (PPPs) and built multilateral alliances in this area. This initiative is very complementary to ERA-CAPS in fostering the translation of fundamental research results into products, services and processes.
- KBBE ERA-NET Platform: soon to be established to address synergies and gaps between the activities of the ERA-NETs in the Knowledge Based BioEconomy (KBBE) and to develop a common vision towards a strategic framework for transnational coordination initiatives.

Links between ERA-CAPS and the above European initiatives will be enhanced by the cross-representation of administrators and scientists who are active on the Boards and Steering Committees of these initiatives as well as in the formation of ERA-CAPS.

(\* A more complete list of European and Global initiatives with which ERA-CAPS will interact can be found in Section 3 Impact).

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<sup>17</sup> <http://www.faccejpi.com/>



**Figure 5. Positioning of ERA-CAPS in the Global and European contexts**

GLOREA (GLObal Research Area), ERA (European Research Area), JPI (Joint Programming Initiatives), ETPs (European Technology Platform)

### 1.2.2 The global dimension

It is not sufficient for ERA-CAPS to interact with European organisations alone in this increasingly internationalised research market place. We must ensure that ERA-CAPS is linked into appropriate global initiatives. The presence of many non-EU countries in the ERA-CAPS consortium (Canada, India, Israel, Japan, New Zealand, Norway, Serbia and the USA) will help facilitate these necessary links. We will consolidate the links formed through ERA-PG with the International Steering Committee for Plant Genomics (ISCPG) as the Central Coordinator (BBSRC) co-chairs ISCPG<sup>18</sup> with the NSF (USA). The ISCPG is an informal grouping of 16+ funding agencies from

<sup>18</sup> <http://www.iscpg.com/>

across the globe, each of which funds and/ or manages national plant genomics research programmes. Several of the non-EU countries involved in ISCPG will be Observers in ERA-CAPS.

In 2009 the Global Plant Council<sup>19</sup> was established by bringing together representatives from plant science societies around the world. Their mission is to increase awareness of the central role of plant science research in tackling the critical global issues of world hunger, energy, climate change and sustainability. Through a close working relationship with bodies such as EPSO (who were instrumental in the initial GPC coalition) and at an individual scientist level, we anticipate that ERA-CAPS will build a mutually constructive relationship with the GPC.

In addition we will promote the visibility of the consortium at a range of international meetings outside of Europe as appropriate, such as the annual Plant and Animal Genomics<sup>20</sup> meetings and the American Society of Plant Biology<sup>21</sup> meeting. Our efforts will not only be targeted to scientists, but importantly to policy makers and funding agencies from within and beyond Europe. The insight and contribution of the non-EU members in ERA-Caps will add significant value to this process.

### 1.2.3 Positioning of the network of ERA-CAPS for sustainable joint programming

Support from the European Commission (EC) was an essential driving force in bringing together the partners in the ERA-PG collaboration, and through high-impact joint calls ERA-PG has successfully established itself in the European funding arena. However, to develop a mature and sustainable partnership and to enlarge the network, further funding for a **follow-up coordination activity is crucial**. The primary objective of the 'Food, Agriculture and Fisheries, and Biotechnology' theme of FP7 is to build a European Knowledge Based Bio-Economy (KBBE) by bringing together science, industry and other stakeholders to exploit new and emerging research opportunities that address social, environmental and economic challenges. A continued and expanded ERA-NET aiming to build a sustainable, self-supporting collaboration between national organisations and to anchor joint programming between national programmes in the area of plant science, in Europe and beyond, would clearly support the attainment of this goal.

FP7 highly encourages Member States to support European competitiveness through strategic partnerships with non-EU countries, thereby facilitating access to research environments outside Europe and promoting synergies on a global scale. The enthusiasm of funding agencies in Canada, India, Israel, Japan, New Zealand, Norway, Serbia and the U.S.A to be involved in ERA-CAPS clearly demonstrates the strategic benefits the new network would bring.

Through surveying the research landscape, benchmarking procedures, exchanging best practices and organising discussion meetings of research programme owners and programme managers, ERA-CAPS will provide the framework for continued collaboration beyond the lifespan of the proposed activity.

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<sup>19</sup> <http://www.fespb.org/fespb/content/global-plant-council>

<sup>20</sup> <http://www.intl-pag.org/>

<sup>21</sup> [http://my.aspb.org/?page=Meetings\\_Annual](http://my.aspb.org/?page=Meetings_Annual)

## **1.3 QUALITY AND EFFECTIVENESS OF THE COORDINATION MECHANISMS, AND ASSOCIATED WORK PLAN**

### **1.3.1 Overall strategy of the Work Plan**

Read in conjunction with the summary of effort table (1.3E p52) and the graphical representation of the work plan (p53).

The overriding objective of ERA-CAPS is to gain maximum value from the investments made by national funding organisations in plant sciences. This proposal focuses on a number of complementary mechanisms for achieving this. They are:

- Transnational coordination and integration of national plant science programmes
- Joint funding of a transnational research programme
- Networking with other European and international (plant science) initiatives

The work plan of ERA-CAPS is divided into six Work Packages (WPs). WP1 is about developing a common agenda and shared vision for plant science research across Europe and extending to the non-European partners in the programme. Once mutual priorities and goals have been identified, a plan for implementation will be developed. WP2 is concerned with integrating new members into the programme (i.e. those that were not part of ERA-PG). This WP is closely linked to WP1 as all the information gained will feed into WP1. These tasks have been allocated a separate WP, to be led by one of the new members, as a greater amount of information will need to be gathered from these countries. It will also be important to identify what the aspirations and requirements will be for the new members.

The third WP is the development of a transnational research programme. This will include two joint calls and the ongoing management of projects funded through those calls, as well as the remaining live projects from the last ERA-PG call. The impact of the transnational research programme will be evaluated. The information gained from WP1 and WP2 will feed into the development of the calls in WP3.

WP4 is concerned with external engagement and data management. In order to avoid duplication of effort and to utilise and build on the work that has been done elsewhere we need to make sure that ERA-CAPS is well connected to other European and wider international networks and initiatives. In addition, ERA-CAPS will identify and encourage the use of best practise in data sharing and open access.

WP5 is dedicated to investigating and implementing methods to promote the self-sustainability and continuation of the network outside of the period funded by the EC. The long term aim is to create a durable network of research owners and managers committed to joint coordination of their national programmes for plant science research in consideration of both European and global interests.

WP6 covers the coordination, communication and dissemination elements of the programme. An important aspect is to ensure that communication both within the programme and into and out of the programme, is conducted in an efficient and effective manner. The core management aspects of the programme are set out in WP7; the Central Coordinator and Programme Coordination Office will take an overview of all the Work Programmes and oversee their smooth running. They will also be responsible for ensuring that the High-Level Group and Management Board are able to fulfil their duties. Finally, they will be responsible for the reporting and audit requirements of the European Commission.

Table 1.3A: Work package list

Work package number	Work package title	Type of Activity	Lead participant No	Lead participant short name	Person months / WP	Start month	End month
1	Developing a common agenda	COORD	1	BBSRC	30	1	36
2	Integrating new members	COORD	6	ETF	28	1	24
3	Funding transnational research	COORD	8	DFG	81	1	36
4	External engagement and data management	COORD	14	NWO	26	1	36
5	Developing a self-sustaining network	COORD	7	INRA	33	12	36
6	Coordination, communication and dissemination	COORD	3	F.R.S.-Fnrs	28	1	36
7	Management	MGT	1	BBSRC	20	1	36
<b>Total</b>					<b>246</b>		

### 1.3.2 Timing of Work Packages (WPs) and their components

Task	Month	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
<b>WP1</b>	<b>Developing a Common Agenda</b>												
1.1	National programmes content and strategy			D1.1									
1.2	Strategic workshop 1		SW1										
1.3	Existing transnational activities					D1.2							
1.4	Developing a shared vision and strategy					D1.2							
<b>WP2</b>	<b>Integrating New Members</b>												
2.1	Capacity survey			D2.1									
2.2	Requirements survey		D2.2	> call					> call				
2.3	Key facilities and personnel survey												
2.4	Dedicated session within strategic workshop 1		SW1										
<b>WP3</b>	<b>Transnational Research Programme</b>												
3.1	Information exchange on call procedures	D3.1											
3.2	The first ERA-CAPS Call			call			D3.2						
3.3	Updating IPR-related documents						D3.3						
3.4	Final ERA-PG Grant-holders' workshop and brokerage event			W1									
3.5	Evaluation of the ERA-PG research programme								D3.4				
3.6	The second ERA-CAPS Call								call			D3.5	
3.7	Evaluation of the ERA-CAPS calls												D3.6
<b>WP4</b>	<b>External Engagement and Data Management</b>												
4.1	Establish and enhance links with relevant national, European and global initiatives							D4.1					
4.2	Enhance ERA-CAPS visibility and facilitate information flow							D4.1					
4.3	Developing standards for research outputs			W1		SW2			D4.2				
4.4	Sharing and accessing data arising from ERA-CAPS Funding					SW2			D4.3				
4.5	Exploiting infrastructures			*			*		D4.4				

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Task	Month	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
<b>WP5</b>	<b>Developing a Self-sustaining Network</b>												
5.1	Building sustainable collaboration								D5.1				
5.2	Strategic workshop 2					SW2							
5.3	Integrating new ideas and requirements into a flexible call structure								D5.2				
5.4	Developing mechanisms to ensure self-sustainability												D5.3
<b>WP6</b>	<b>Coordination, Communication and Dissemination</b>												
6.1	Reporting Requirements		*		*		*		*		*		*
6.2	Organise ERA-CAPS Grant-holders workshops							D6.4	D6.5				D6.6
6.3	Extranet		D6.2				update			update			update
6.4	Database						D6.7			update			update
6.5	Website				D3.3								
6.6	Publications	D6.1											D6.8
<b>WP7</b>	<b>Management</b>												
7.1	Programme Coordination Office (PCO)												D7.1
7.2	Consortium Meetings		*		*		*		*		*		*
7.3	Reporting Requirements						D7.1 D7.3						D7.1 D7.3

*D = Deliverable; SW = Strategic Workshop; W = Grant holders workshop; \* = small meeting or workshop*

### 1.3.3 Detailed Work Plan

**Table 1.3B: List of deliverables**

<b>Deliverable</b>	<b>Deliverable description</b>	<b>WP</b>	<b>Nature<sup>2</sup></b>	<b>Dissemination level<sup>3</sup></b>	<b>Delivery date<sup>4</sup></b>
	<b>WP 1: Developing a Common Agenda</b>				
D1.1	Report documenting current position with respect to transnational collaborations, common goals and tentative roadmap.	1	R	PP	9
D1.2	Report focusing on developing a shared vision and strategy.	1	R	RE	15
	<b>WP 2: Integrating New Members</b>				
D2.1	Report of the meeting including common agenda and findings of surveys.	2	O	PP	6
D2.2	Produce a 'requirements' summary to inform decision making in WP3 prior to the launch of joint calls.	2	R	PP	6
D2.3	Feed data from the key facilities and personnel survey -into the online database being created as part of WP6.	2	O	PP	15
	<b>WP 3: Transnational Research Programme</b>				
D3.1	Summary of feedback from the new ERA-CAPS members to the 2 <sup>nd</sup> ERA-PG call documents.	3	R	PP	4
D3.2	Set of funded ERA-CAPS research projects (first call).	3	O	PU	18
D3.3	Updated legal and IPR-related documents for use by ERA-CAPS grant holders.	3	O	PU	18
D3.4	Evaluation report on impact/ European added value of ERA-PG.	3	R	RE	24
D3.5	Set of funded ERA-CAPS research projects (second call).	3	O	PU	33
D3.6	Report of evaluation of ERA-CAPS calls.	3	R	RE	36
	<b>WP 4: External Engagement and Data Management</b>				
D4.1	Increased visibility and integration of ERA-CAPS.	4	O	PU	21
D4.2	Standards for research outputs.	4	R	PU	24
D4.3	ERA-CAPS data-sharing policy.	4	R	PU	24
D4.4	Exploiting infrastructures.	4	R	PU	24
	<b>WP 5: Developing a Self-sustaining Network</b>				
D5.1	Position paper targeted to funding organisations and policy makers	5	R	PU	24

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	setting out guiding principles for future joint working.				
D5.2	Policy document for flexible call structure.	5	R	PP	24
D5.3	Commitment agreement signed.	5	R	PP	33
D5.4	Structure for continuance of ERA-CAPS established.	5	R	PU	36
	<b>WP 6: Coordination, Communication and Dissemination</b>				
D6.1	Press release about the launch of the new programme.	6	R	PU	1
D6.2	Extranet for internal consortium use.	6	O	PP	6
D6.3	Publicly accessible external website.	6	O	PU	12
D6.4	Joint HLG/ EPSO meeting	6	R	PU	21
D6.5	First ERA-CAPS grant-holders workshop	6	O	PU	24
D6.6	Second ERA-CAPS grant-holders workshop	6	O	PU	36
D6.7	Updated ERA-CAPS database.	6	O	RE	18
D6.8	A summary booklet of the programme as it nears completion.	6	R	PU	36
	<b>WP 7: Management</b>				
D7.1	Operation of the Programme Coordination Office	7	O	RE	36
D7.2	Activity reports for the EC	7	R	PP	36
D7.3	Financial reports for the EC	7	R	PP	36

<sup>2</sup> Please indicate the nature of the deliverable using one of the following codes: **R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

<sup>3</sup> Please indicate the dissemination level using one of the following codes: **PU** = Public, **PP** = Restricted to other programme participants (including the Commission Services), **RE** = Restricted to a group specified by the consortium (including the Commission Services), **CO** = Confidential, only for members of the consortium (including the Commission Services).

<sup>4</sup> Measured in months from the project start date (month 1).

**Table 1.3C: List of milestones**

Milestone	Milestone name	WP	Expected date <sup>1</sup>	Means of verification <sup>2</sup>
	<b>WP 1: Developing a Common Agenda</b>			
M1.1	Gather updated information for partners who provided information for the ERA-PG inventory.	1	3	Report
M1.2	First strategic workshop; Setting the scene.	1	6	Meeting
	<b>WP 2: Integrating New Members</b>			
M2.1	Gather information for new ERA-CAPS partners.	2	5	Report
M2.2	Organise and lead session within the first workshop organised under WP1 to allow new members to introduce their national programmes.	2	6	Meeting
	<b>WP 3: Transnational Research Programme</b>			
M3.1	Launch of the first ERA-CAPS call.	3	6	Publicity
M3.2	Launch of the second ERA-CAPS call.	3	24	Publicity
M3.3	Grant holders workshops for ERA-PG and brokerage event.	3	7	Meeting
	<b>WP 4: External Engagement and Data Management</b>			
M4.1	Joint plant sciences meeting	4	20	Meeting
M4.2	ERA-CAPS contact/ liaison points for different external networks.	4	12	Contact lists
M4.3	Gather data from partners about their data sharing requirements and/ or data sharing policies.	4	21	Report
	<b>WP 5: Developing a Self-sustaining Network</b>			
M5.1	Second strategic workshop: Building a sustainable network.	5	18	Meeting
M5.2	Mechanism for the continuance of ERA-CAPS established.	5	33	Report
	<b>WP 6: Coordination and Communication</b>			
M6.1	Establish a platform for hosting the extranet and website.	6	6	Provider agreed
M6.2	Produce a list of contacts who should receive information about the programme.	6	12	Contact list
M6.3	Collate information from tasks in WP1, WP2 and WP4 for the creation of the online database of country priorities, key scientists and other initiatives.	6	18	Database live
	<b>WP 7: Management</b>			
M7.1	Establishment of the Programme Coordination Office	7	1	Staff appointed
M7.2	Creation of Management Boards	7	3	Contact lists

<sup>5</sup> Measured in months from the project start date (month 1).

<sup>6</sup> Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype completed and running flawlessly; software released and validated by a user group; field survey complete and data quality validated

**Table 1.3D Work package descriptions****WP1. Developing a common agenda**

Work package number	<b>1</b>		Start date:					Month 1
Work package title	<b>Developing a Common Agenda</b>							
Activity Type	COORD							
Participant number	1	2	3	4	5	6	7	8
Participant short name	BBSRC	FWF	F.R.S.- Fnrs	NRC	DASTI	ETF	INRA	DFG
Person-months per participant:	7	1	2	1	1	3	1	1
Participant number	9	10	11	12	13	14	15	16
Participant short name	HAS- SEC	MOARD	MIUR	LZA	NWO	FRST	RCN	NCBIR
Person-months per participant:	1	1	1	1	3	1	1	1
Participant number	17	18	19					
Participant short name	FCT	MPN	MICINN					
Person-months per participant:	1	1	1					

**Objectives**

To develop a common agenda and shared vision for plant science research across the European Research Area.

**Description of work**

To determine mechanisms that will enable the implementation of key aspects of the shared vision. This requires consideration of how to effect decision-making at a national level, such that national programmes are developed synergistically, to create the added value from a suite of coherent activities across Europe and beyond. Consideration of both European and international activities should be embedded at an early stage of national programme design if we are to move towards the principles of joint programming in a meaningful way.

**Task 1.1 National programmes content and strategy**

(Task leader: BBSRC)

A task from ERA-PG was to establish a complete inventory of all the existing national programmes, ongoing projects and respective strategic (research and policy) priorities in the field of plant genomics. Much has changed since this task was completed in 2005; therefore it is timely to include a light-touch update of the information for those countries where information has previously been gathered as part of ERA-PG and to request further information concerning additional relevant plant science activities outside of the scope of ERA-PG.

In addition, it will be necessary to conduct a more comprehensive survey of relevant plant science activities in those countries new to the consortium (link with WP2 Task 2.1). This will establish the baseline of activity for those countries that were not previously involved with ERA-PG. It will be

important to have an indication of activity levels at the start of the programme, such that towards the end of the programme, the degree to which increased coordination and collaboration has impacted on national activities, can be evaluated.

The information gathered will comprise details about the national programmes such as strategic priorities, key science topics, perceived areas of strength (and weakness), levels of funding, types of funding model, other funding organisations/ countries involved, numbers of personnel involved (including equality metrics), public-private partnerships, key research institutions, infrastructure etc.

### ***Task 1.2 Strategic Workshop 1: Setting the Scene***

(Task leader: ETF assisted by BBSRC)

Early in the project, we will hold a strategic workshop on developing a common agenda. Using the information about the priorities of funding organisations within their national programmes we hope to identify commonalities, shared priorities, potential synergies and gaps across the countries. We will gather initial thoughts about possible routes to the implementation of the ERA in plant sciences. The workshop will contain sessions to introduce the partners to each other, to start discussing a common agenda, a more detailed introduction of the new members (link to WP2) and setting out the next steps. A report will be produced setting out the position at that time which will serve as a baseline indicator. This will be necessary for evaluating any increase in cooperation, and coordination of activities, between the partners later in the programme.

### ***Task 1.3 Existing transnational activities***

(Task leader: BBSRC; assisted by F.R.S.-Fnrs)

We will conduct a survey of funding organisations' existing transnational research programmes (not necessarily just in plant sciences), whether they be bilateral or multilateral, common pot, juste retour or other funding mechanism. Other relevant mapping work and surveys will be taken into account e.g. that undertaken by the ESF. Information will be gathered about the type of programme (bottom-up, managed-mode etc), what topics were covered and who the partners were. We will also determine how partnerships came about, if standard procedures or templates for agreement have been developed, how the partners reached agreement, what barriers did they have to overcome and what were the lessons learned. The results of the survey will be written up as a report that will provide background evidence and information to feed into Task 5.1 Building a Sustainable Collaboration.

All of the data collected in response to the activities above, will be compiled and used to populate a database, accessible via the ERA-CAPS website (see WP6 ). This will have a general information page for each country, listing the key points in relation to their national funding programmes, the programme owners, capacity and priorities. Behind this page will be more detailed information about particular resources available in that country, a 'who's who' of the leading scientists in the area and further information about the research currently being supported. The initial database will be a snapshot in time, however longer-term this should become a dynamic utility that will be updated accordingly. Responsibility for the long-term maintenance of the database will be an item for consideration at the second strategic workshop and in WP5.

### ***Task 1.4 Developing a shared vision and strategy***

(Task leader: NWO)

What would the European Research Area for Plant Science look like?

In order to develop a shared vision and a strategy for implementation, our common goals need to be identified. To ensure that all partners are working towards the same goal we need a mutual

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understanding of what we want to achieve and what is realistic. We should agree a timescale during which we would hope to see real progress. These questions can be discussed at a dedicated session during the first introductory workshop and be formalised in the form of a tentative roadmap.

As we work towards the ERA for plant sciences, we should not overlook the importance of positioning ourselves globally (as the next step will be towards the Global Research Area; GLOREA). The inclusion of non-EU partners in the consortium will facilitate this wider thinking. In addition to identifying which other countries the partners have previously worked with, we will also identify potential new partners and approach these according to the strategy defined under tasks 5.1 and 5.4.

### **Deliverables**

D1.1 Report documenting current position with respect to transnational collaborations, common goals and tentative roadmap.

D1.2 Report focusing on developing a shared vision and strategy.

### **Milestones**

M1.1 Gather updated information for partners who provided information for the ERA-PG inventory.

M1.2 First strategic workshop; Setting the scene.

**WP2. Integrating new members**

Work package number	<b>2</b>		Start date:					Month 1
Work package title	<b>Integrating new members</b>							
Activity Type	COORD							
Participant number	6	3	8	9	12	13	17	18
Participant short name	ETF	F.R.S.-Fnrs	DFG	HAS-SEC	LZA	FRST	NCBiR	MPN
Person-months per participant:	9	2	1	2	4	2	2	6
Participant number	O1	O2	O3	O4	O5	O6	O7	
Participant short name	EPSO	ANR	DBT	MIPAAF	JST	MAFF	NSF	
Person-months per participant:	0	0	0	0	0	0	0	

**Objectives**

To facilitate the integration of new members into ERA-CAPS and provide the infrastructure to continue and expand the collaboration beyond the timeframe of ERA-CAPS.

**Description of work**

At the start of ERA-PG scoping exercises were conducted to determine the status of national facilities, germplasm resources, funding structures, expenditures, priorities and strengths. A similar study will need to be undertaken to establish the current position of plant science research and funding in the new partner and Observer organisations. Observer countries will be invited to participate in these tasks as these are particularly important if they later choose to take part in joint calls as Affiliates. This exercise will clarify what the new members bring to the ERA-CAPS consortium and also what membership of the consortium can offer in return.

**Task 2.1 Capacity survey**

(Task leader: LZA; primarily assisted by MPN; also by F.R.S.-Fnrs, ETF, HAS-SEC, FRST, NCBiR, Observers)

The integration of additional member countries into ERA-CAPS will be of mutual benefit to members already established in ERA-PG and to the new members themselves. However, to make the most of the expansion of the network it is essential that ALL members have a clear understanding of what everyone (especially the new members) is bringing to the table. To facilitate this a capacity survey of the new members (including non-EU members) will be carried out to gather general information concerning:

- National programmes, strategic priorities, funding models, funding levels, key topics, and perceived areas of strength
- National facilities, germplasm resources and personnel resources
- Public-private partnerships,
- IPR issues,
- Pre-established links with other funding agencies and countries etc.

The information gathered here will directly feed into the updated survey of ERA-PG members in WP1 (task 1.1).

Early in the project, a strategic workshop on developing a common agenda will be held under WP1. It is anticipated that disseminating the findings of the capacity survey of new member countries will form a separate session within this workshop to focus attention on the opportunities to be gained by expanding the network (see task 2.4).

### ***Task 2.2 Requirements survey***

(Task leader: MPN; primarily assisted by DFG, also by F.R.S.-Fnrs, ETF, HAS-SEC, LZA, FRST, NCBiR, Observers)

Key to the successful integration of new members into ERA-CAPS is a clear understanding of what these countries hope to achieve through membership of the expanded network. To accomplish this, a survey of all new members will be carried out to establish their aims and objectives by joining ERA-CAPS. The results of this survey will inform WP3 (hence the involvement of WP3 leader, DFG), specifically task 3.2 and 3.6 (joint calls) and encourage participation in the joint calls and the development of a common agenda for ERA-CAPS (WP1).

### ***Task 2.3 Key facilities and personnel survey***

(Task leader: ETF; primarily assisted by MPN, also by F.R.S.-Fnrs, HAS-SEC, LZA, FRST, NCBiR, Observers)

One of the major obstacles to creating sustainable collaboration and coordination in plant science is enabling scientists to identify other complementary groups with complementary resources working in different countries. One solution to this is to create a European database for plant science. This is particularly pertinent to new members and external organisations seeking to initiate collaboration within the European scientific community. To enable this, a detailed survey will be undertaken to identify key plant science institutes, facilities and people and their areas of expertise in all of the ERA-CAPS member countries. The data generated in this survey will feed directly into the updating of the ERA-PG online database (Task 6.6) which will provide links to the key places, personnel and programmes identified in the survey. This will greatly facilitate transnational interaction and cooperation in plant science beyond the scope of ERA-CAPS.

### ***Task 2.4 Dedicated session within strategic workshop 1***

(Task leader: ETF)

A dedicated session will be organised as part of the first ERA-CAPS strategic workshop (Task 1.2) in which the new partners and Observers will be invited to present an overview of their national programmes and strategy for plant sciences. We will aim to present preliminary results from the surveys in tasks 2.1, 2.2 and 2.3 (above).

### **Deliverables**

D2.1 Report of the meeting including common agenda and findings of surveys for the new members (link to D1.1 and D 1.2).

D2.2 Produce a 'requirements' summary to inform decision making in WP3 prior to the launch of joint calls.

### **Milestones**

M2.1 Organise and lead session within the first strategic workshop organised under WP1 to allow new members to introduce their national programmes.

**WP3. Transnational research programme**

Work package number	<b>3</b>		Start date:					Month 1	
Work package title	<b>Transnational research programme</b>								
Activity Type	COORD								
Participant number	8	1	2	3	4	5	6	7	
Participant short name	DFG	BBSRC	FWF	F.R.S.- Fnrs	NRC	DASTI	ETF	INRA	
Person-months per participant:	32	2	2	2	2	2	4	5	
Participant number	9	10	11	12	13	14	15	16	
Participant short name	HAS. SEC	MOARD	MIUR	LZA	FRST	NWO	RCN	NCBIR	
Person-months per participant:	2	2	3	2	2	2	2	2	
Participant number	17	18	19						
Participant short name	FCT	MPN	MICINN						
Person-months per participant:	9	2	2						

**Objectives**

- Promote cutting-edge research in the plant sciences through funding of transnational collaborations of the best scientists, by launching two joint ERA-CAPS calls, and thereby preparing the ground for future joint calls of ERA-CAPS partners.
- Continue to develop the framework for joint calls (i.e. funding modalities, legal and IPR requirements, etc.).
- Evaluate the impact and added value of the two ERA-PG calls, and the response to the two ERA-CAPS calls.

**Description of work**

A long-term aspiration for the funding organisations is to develop harmonised procedures, based on best practices, for the joint funding of transnational activities. This is a considerable task and not one that could realistically be solved during the course of an ERA-NET programme, however it should be possible to make significant progress towards this goal. There have been many groupings over the years that have looked at this issue and ERA-CAPS intends to take the findings from these and apply them where appropriate. There are two related issues to be addressed: good practice models for joint peer review procedures and good practice models for joint funding of transnational research proposals. In particular the European Science Foundation Member Organisation Forum (ESF MO) on Peer Review was specifically convened with the first aim in mind. Key representatives involved in ERA-CAPS also attend this forum and are therefore ideally placed to disseminate the findings and recommendations made by it.

The consortium will also make use of the information provided by other ERA-NETs to the NET-WATCH portal, concerning tried and tested methods of best practice. In a similar vein, the coordinator is also a partner in the PLATFORM proposal that will bring together many of the

KBBE ERA-NETs for the explicit purpose of sharing best practice and learning from each other.

In addition, we intend to utilise and build on the successful methods utilised in ERA-PG. For the two joint calls in ERA-PG, the 'virtual common pot' method was successfully employed resulting in research funding totalling 55M€ for 41 research groups.

It should be recognised however, that to some degree viable joint funding models between national research funding organisations will always need to be tailored to the specific requirements of the partners involved, and will have to take into account the legal, financial and potential political constraints at a given moment in time. Therefore, any approach to a 'global' best practice model for joint funding will inevitably have its limitations. These considerations are the main thrust of task 5.3 'Integrating new ideas and requirements into a flexible call structure' in WP5 on Developing a self-sustaining network.

### **Task 3.1 Information exchange on call procedures**

(Task leader: ETF, assisted by DFG )

Send out all relevant call documents from the second ERA-PG call to the new ERA-CAPS members. Ask for written feedback as to whether any of the described procedures would clash with national regulations/ laws or might generate any other difficulty. Ask for suggestions as to how the procedures could be better adapted if necessary.

Draw up a list of points to work on (an action plan) in order to prepare the first call, taking into consideration all of the partners who are prepared to commit a budget to the first call.

The aim of this hands-on approach is two-fold: Firstly, a first call should be launched as early as possible after the start of ERA-CAPS in order to keep the momentum generated by ERA-PG. Secondly, experience from the early phase of ERA-PG suggests that working towards a 'real' target greatly facilitates the effectiveness of information exchange processes such as that proposed above.

### **Task 3.2 The first ERA-CAPS Call**

(Task leader: DFG)

(a) Prepare and negotiate a Memorandum of Understanding (MoU1) to set out the basic ideas and approaches for the first call. Define within the MoU the type of call, financing model, and decision making procedure on the final topics list to be put in the Call Notice. This MoU is to be signed by high-level officials from the contributing organisations (HLG members).

Topics: The call will primarily address fundamental plant science. It is complementary to the series of joint Plant-KBBE<sup>22</sup> calls already run by France, Germany, Spain, Portugal and Canada, which focus on public-private partnerships, and the 2011 call that includes France, Spain, Germany, Portugal and Brazil (FAPESP). Topics will encompass those that have been previously identified as scientific, environmental, societal or economic challenges, including part of the core topics of the FACCE-JPI<sup>23</sup>. However, for a sustainable, long-term knowledge base underpinning these topics/ goals, extending our general understanding of fundamental principles governing plant performance and plant adaptation is key. Therefore, as for ERA-PG, the call will be open for additional topics suggested by the applying scientists (see figure 3 for an example). Adherence to

<sup>22</sup> <http://www.plant-kbbe-submission.net/>

<sup>23</sup> <http://www.faccejpi.com/>

relevant community standards for data sharing and management will be encouraged for projects funded through ERA-CAPS calls.

Mobility: To promote interaction between scientists, grants funded through ERA-CAPS will include an allowance for exchange of scientists within ERA-CAPS project consortia. It is hoped that this will encourage further cross-country collaborative activities especially with the new member countries of ERA-CAPS.

Funding mechanism: With the diverse set of partners assembled in ERA-CAPS, it seems unlikely that a common pot mechanism could be set up within the available time frame for the first call. However, experience with the 'jointly administrated pot' model in ERA-PG was very positive. This model is based on national funding but employs a 'Moderating Panel' of funders following the grouping and ranking of proposals by a Review Panel/ Programme Board.

(b) Install a **Call Secretariat (CS)** and a team of national contacts (**National Call Coordinators - NCC**).

(c) Drafting call documents for 1st ERA-CAPS call (CS/ NCC):

- Prepare a comprehensive set of call documents (Call Notice, National Annexes, application form).
- Proposal Guidelines for the applicants, guidelines for the electronic submission system.
- Request HLG agreement for the Call Notice.
- Publish information about the call including all documents on the ERA-CAPS website.
- Adopt DFG's electronic submission system to the requirements of the ERA-CAPS calls

(d) Prepare the peer review of the research proposals (CS/ NCC):

- Finalise documents required for peer review (internal guidelines for the assessment procedure, guidelines for external reviewers, review form, code of conduct regarding conflict of interests).

(e) Oversee the peer review of the research proposals (CS/ NCC):

- Convene an assessment panel.
- Organise and oversee the external peer review.
- Send the comments from the external reviewers to the applicants for rebuttal.
- Organise the assessment panel meeting.
- Organise a 'Moderating Panel' of the participating funding organisations.

(f) Prepare national funding decisions (NCC/ CS):

- Communicate the assessment results to the applicants.
- Negotiate grant contracts where applicable/ make awards.

### ***Task 3.3 Updating legal and IPR-related documents***

(Task leader: INRA)

Stable cooperation is facilitated by contractual agreements. Within the framework of ERA-PG, a template for the Consortium Agreements (CA) for transnational research consortia has been provided, which was used widely by ERA-PG grant holders according to feedback requested after the start of the projects. Especially in cases where companies are participating in the projects, the availability of such a template document proved invaluable not only for the participating scientists but also for the funding organisations. It provided a means to ensure that the collaborations are

based on rules that conform with the legal framework they have to operate in.

The legal requirements of new research consortia involving e.g. new partner countries will likely differ slightly from what was needed by the ERA-PG consortia. Accordingly, an update of the template Consortium Agreement will be developed, as well as an update of the template Material Transfer Agreement should the latter be needed. One or two small meetings of IPR experts will be convened to discuss these issues. Continuous support to the CS, NCC and HLG with respect to legal/ IPR issues will be provided under the remit of this task.

#### **Task 3.4 Final ERA-PG grant holders workshop and brokerage event**

(Task leaders: DFG)

This grant holders workshop/ brokerage event will be the closing event of the ERA-PG research programme and will feed into the *ex post* evaluation. At the same time, the workshop will provide an opportunity to advertise the first ERA-CAPS joint call to a broad audience by being held in the margins of a conference and for scientists from new ERA-CAPS member countries to meet potential partners with whom they want to form ERA-CAPS research consortia.

In order to ensure high-level attendance, proper timing of the event is crucial. For the proposed event to be attractive, we plan to link it to the EPSO/ FESPB conference in Freiburg/ Germany, 29 July – 3 August, 2012.

#### **Task 3.5 Evaluation of the ERA-PG research programme**

(Task leader: FCT)

To ensure that maximum value is being derived from the funding invested in the research programme, we will evaluate various aspects of the programme such as the efficiency and appropriateness of the procedures, and the usefulness of the networking events. We have already surveyed applicants to the first two ERA-PG calls to ascertain their views about the procedures employed. However, there is still much to learn about coordinating these relatively new transnational initiatives. Hence, we propose further surveys of the existing ERA-PG grant holders after finishing (1<sup>st</sup> call) or during the end phase of their projects (2<sup>nd</sup> call), followed by a final impact assessment of the overall research programme. This impact assessment will include outputs such as publications and patents as well as the benefits to researchers within and beyond the projects.

*Evaluation metrics might include:*

- The quality and quantity of publications in international journals, especially joint publications of ERA-PG partner laboratories, as well as patents, and their impacts.
- The impact on the education of young researchers in the plant science field, e.g. visits/ research stays in the laboratories of collaborating partners, and their long-term integration into plant laboratories.
- The development of genetic and genomic infrastructure and resources, bioinformatics resources, their accessibility, their potential and competitiveness.
- Transfer of skills between established researchers.
- The utilisation of results from ERA-PG projects by different companies in member states.

For this activity, external help will be sought if required in case expertise available within the

network is insufficient. The selection procedure for any external partner will be agreed by the HLG and funds will be set aside in case of this eventuality. Advice would be available from e.g. IFQ<sup>24</sup> (Institut für Forschungsinformation und Qualitätssicherung/ Institute for Research Information and Quality Assurance), Bonn, Germany, and BBSRC's Evaluation and Policy Unit<sup>25</sup>. The knowledge gained from these exercises will inform the running of ERA-CAPS and any follow-up programme and ultimately feed into the sustainability exercise (see WP5).

### **Task 3.6 The second ERA-CAPS Call**

(Task leader: DFG)

(a) Integrate results from WPs 1, 2, 4, and 5 with regard to mutual interest and common requirements concerning call topics and procedures. With the second call, the time schedule will leave more room for it to be tailored to fit specific priorities of the different ERA-CAPS partners. Prepare and negotiate a Memorandum of Understanding (MoU) to set out the basic ideas and approaches for the second call. Define within the MoU the type of call, financing model, and decision making procedure on the topics list to be put in the Call Notice. Consideration will also be given to outputs available at the time from tasks 4.3 and 4.4 regarding data management and task 5.3 on flexible call structures. This MoU is to be signed by high-level officials from the contributing organisations (HLG members).

(b) Update call documents for 2nd ERA-CAPS call (CS/ NCC):

- Prepare the Call Notice for the second call and update application related documents.
- Request HLG agreement for the Call Notice.
- Publish information about the call including all documents on the ERA-CAPS website.

(c) Prepare and oversee the peer review of the research proposals (CS/ NCC):

- Update documents required for peer review.
- Convene an assessment panel.
- Organise and oversee the external peer review.
- Send the comments from the external reviewers to the applicants for rebuttal.
- Organise the assessment panel meeting.
- Organise a 'Moderating Panel' of the participating funding organisations.

(d) Prepare national funding decisions (NCC/ CS):

- Communicate the assessment results to the applicants.
- Negotiate grant contracts where applicable/ make awards.

### **Task 3.7 Evaluation of the ERA-CAPS calls**

(Task leader: FCT assisted by MIUR)

This task is dedicated to the evaluation and impact of the transnational research projects funded in ERA-CAPS, and to the evaluation of the joint calls at the end of the respective funding period. We can build on the experience from ERA-PG for this task, e.g. on the questionnaires used for the surveys there. We will survey the applicants to both ERA-CAPS calls to ascertain their views about the procedures employed. The first survey will be performed after the first ERA-CAPS grant holders' workshop, which will allow us to differentiate between successful and unsuccessful applicants, and to evaluate the different call implementation steps. The results of this evaluation will be used in WP3 to improve the second joint call. A second survey targeting the applicants of the second ERA-CAPS call as well as proper *ex post* evaluation of the projects and the

<sup>24</sup> <http://www.forschungsinfo.de/>

<sup>25</sup> <http://www.bbsrc.ac.uk/organisation/policies/reviews/funded-science/funded-science-index.aspx>

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programme as a whole require a schedule reaching beyond the 36 months funding of the current ERA-CAPS network. The results of this evaluation will be used in WP3 to improve the future joint calls, and ultimately in WP5, in designing processes for a self-sustained network.

### **Deliverables**

D3.1 Summary of feedback from the new ERA-CAPS members to the ERA-PG second call documents.

D3.2 Set of funded ERA-CAPS research projects (first call).

D3.3 Updated legal and IPR-related documents for use by ERA-CAPS grant holders.

D3.4 Evaluation report on impact/ European added value of ERA-PG.

D3.5 Set of funded ERA-CAPS research projects (second call).

D3.6 Report of evaluation of ERA-CAPS calls.

### **Milestones**

M3.1 Launch of the first ERA-CAPS call.

M3.2 Launch of the second ERA-CAPS call.

M3.3 Grant holders workshops for ERA-PG and brokerage event.

**WP4. External engagement and data management**

Work package number	4	Start date or starting event:						Month 1
Work package title	<b>External engagement and data management</b>							
Activity Type	COORD							
Participant number	4	1	3	7	8	11	15	17
Participant short name	NWO	BBSRC	F.R.S.-Fnrs	INRA	DFG	LZA	RCN	FCT
Person-months per participant:	8	2	2	2	2	5	2	3

**Objectives**

To maximise the efficiency, effect and impact of ERA-CAPS.

**Description of work**

To optimise the benefits arising from the pooled resources and collaborations generated through ERA-CAPS and to avoid duplication, we must identify complementarities between wider programmes, share common practises and avoid unnecessary duplication of effort. We propose a series of activities focusing on the external engagement of the network with other initiatives and groups at both the European and global level, to ensure that we are coordinating our efforts with the correct groups and initiatives, and that ERA-CAPS has visibility to the other key actors in this area.

Moreover, by bringing together a significant number of funders, who between them support a substantial proportion of the plant science research funded in Europe, we hope to make progress towards identifying and adopting common principles of data sharing and open access. Currently there is a significant canon of policy on the sharing of data arising from research funders, ministries and agencies across the ERA and internationally. The aim of ERA-CAPS is not to replicate such policies; rather, it seeks to consolidate and identify best practise from these policies and, where possible, develop a set of guidelines for use by the ERA-CAPS grant holders and the plant science community.

**External Engagement: Networking the Networks*****Task 4.1 Establish and enhance links with relevant national, European and global initiatives***

(Task leader: LZA; assisted by F.R.S.-Fnrs & INRA)

We will monitor the activities of related programmes, networks and groupings at the national, European and international level and identify those that ERA-CAPS should be working with. Including, but not limited to: national (GARNet, Genoplante, CBSG, GABI), European (EPSO, ETP Plants for the future, FACCE-JPI, SCAR, PLANT-KBBE, new KBBE ERA-NET platform) and internationally (Global Plant Council, ISCPG, CGIAR). Further details about these initiatives can be found in section 3.1 under impact.

We will strengthen and deepen working relationships established during ERA-PG, and where new initiatives are identified, we will approach them with a view to developing new partnerships. We have already agreed reciprocal Observer status with EPSO and will attend each other's

committee meetings. Furthermore, we have been in dialogue with the ETP Plants for the Future about holding a joint event during the course of the network. This could serve as a brokerage event by introducing the ERA-CAPS community to the downstream users of their research such as industry and the farming associations (Task 6.3).

In addition, links between ERA-CAPS and other initiatives will be enhanced by the cross-representation of administrators and scientists who are active on the Boards and Steering Committees of these initiatives as well as in the formation of ERA-CAPS. For example, the FACCE-JPI is co-chaired by INRA and BBSRC, therefore with INRA as a key partner in this network (Leader of WP5) and BBSRC as the Central Coordinator, we can ensure a high degree of communication between the two. The information gathered, and notes of meetings attended will be added to the ERA-CAPS website and extranet (WP6) and updated regularly (not less than twice a year).

#### **Task 4.2 Enhance ERA-CAPS visibility and facilitate information flow**

(Task leader: LZA; assisted by F.R.S.-Fnrs and NWO)

Beyond the information exchange and joint working outlined above, we will endeavour to enhance the visibility of ERA-CAPS and exchange information and best practise e.g. through NET-WATCH and within that using the ERA-LEARN tool<sup>26</sup>. The communications tools outlined in WP6 (newsletter, website etc) will also be employed to facilitate information flow, as many of these will be specifically targeted to external audiences. In addition, intelligence about scientific topics, successful mechanisms and target countries, should be fed through the appropriate channels into discussions shaping calls within FP7 and FP8.

### **Data Management**

#### **Task 4.3 Developing Standards for Research Outputs**

(Task leader: NWO)

To maximise the use, re-use, re-purposing and sharing of the outputs from projects funded through ERA-CAPS, a set of community-led standards will be developed and agreed upon through a series of workshops. These standards will build upon existing best practices within the bioscience research community, for example: the Bermuda<sup>27</sup>, Fort Lauderdale<sup>28</sup> and Toronto<sup>29</sup> agreements for genomics outputs; the work of the Genomic Standards Consortium<sup>30</sup>; the Amsterdam agreement for proteomics<sup>31</sup> and those developed as part of the “Minimal Information for Biological and Biomedical Investigations” projects e.g. MIAME/ Plant<sup>32</sup>

Whilst these standards are not specifically related to plant sciences, they can provide the underpinning framework upon which ERA-CAPS can build standards applicable for molecular plant science research. They will focus primarily on data standards, metadata requirements and technical standards (e.g. agreed file formats).

The development of community standards could take the form of a three stage process. Firstly, a satellite workshop of an international plant sciences conference (EPSO/ FESPB meeting in July

<sup>26</sup> <http://netwatch.jrc.ec.europa.eu/nw/index.cfm/static/about.html>

<sup>27</sup> [www.ornl.gov/sci/techresources/Human\\_Genome/research/bermuda.shtml](http://www.ornl.gov/sci/techresources/Human_Genome/research/bermuda.shtml)

<sup>28</sup> [www.genome.gov/pages/research/wellcomereport0303.pdf](http://www.genome.gov/pages/research/wellcomereport0303.pdf)

<sup>29</sup> Birney, Hudson *et al* Pre-publication data sharing. *Nature* 461 pp. 168-170 (2009)

<sup>30</sup> [www.gensc.org/gc\\_wiki/index.php/Main\\_Page](http://www.gensc.org/gc_wiki/index.php/Main_Page)

<sup>31</sup> Rodriguez *et al*. Recommendations from the 2008 International Summit on Proteomics Data Release and Sharing Policy: The Amsterdam Principles *J. Proteome Res.* 8, 3689–3692 (2009).

<sup>32</sup> <http://mibbi.org/index.php/Projects/MIAME-Plant>

2012, Freiburg), where relevant national, EU and international activities on the development of standards will be used as the basis for exploring the standards requirements of the plant science community. These initial discussions would be developed further by a small virtual working group comprising leading plant sciences researchers, advised by technical experts such as database curators (EBI, MIBBI *inter alia*) and facilitated by the ERA-CAPS task leader. A follow up activity would be a small intensive workshop to help them develop their ideas into a series of recommendations for standards in plant sciences. This working group may, as part of its role, seek wider community input through an online consultation with the research community and will also seek to engage publishers and editors from scientific journals.

The final stage will be to present these recommendations in two ways: (1) at a relevant international plant sciences conference, where final feedback and agreement from the wider research community will be sought; and (2) the final recommendations will be published as a policy/ opinion article in a high impact journal for the widest dissemination of the standards.

Researchers funded through ERA-CAPS joint calls (Tasks 3.2 and 3.6) will be asked to provide a data sharing and management plan that takes into account any outputs agreed above (at the time of proposal preparation), and the quality of this plan will be taken into account during the review process.

#### **Task 4.4 Sharing and Accessing Data Arising from ERA-CAPS Funding**

(Task Leader: FCT assisted by BBSRC, DFG and NWO)

In 2007, the Organisation for Economic Cooperation and Development published 'Principles and Guidelines for Access to Research Data from Public Funding'<sup>33</sup> which highlights the following overarching principles:

- Publicly-funded research data are a public good, produced in the public interest.
- Publicly-funded research data should be openly available to the maximum extent possible.

The report concluded that widespread data sharing, in particular using "Open Access" repositories, will enable researchers, empower citizens and convey tremendous scientific, economic, and social benefits. Currently there is no EU-wide policy but there would be a number of benefits to building upon these principles as part of ERA-CAPS, and incorporating such principles into the conditions of grants awarded through ERA-CAPS mechanisms. Firstly, the sharing of raw data and associated metadata facilitates the re-use, re-integration and re-purposing of these data, for the development of new knowledge and research directions. Additionally, the sharing of data is a cost-effective way of ensuring that maximum impact is realised from ERA-CAPS funding.

The development of a data sharing policy for ERA-CAPS will be undertaken by the task leader in collaboration with all the partners. The task leader will coordinate the gathering of national and international data policies, such as those published by BBSRC<sup>34</sup>, NSF<sup>35</sup> and for Public Health<sup>36</sup>, and consolidate the key messages into a draft policy. This will be discussed during a meeting of all the partners, where feedback will be provided to the task leader. This could take place as part of the second strategic workshop (Task 5.2). A final version of the data sharing policy will be drafted and formally adopted by the partners *via* email circulation or at a later meeting such as the

<sup>33</sup> [www.oecd.org/dataoecd/9/61/38500813.pdf](http://www.oecd.org/dataoecd/9/61/38500813.pdf)

<sup>34</sup> [www.bbsrc.ac.uk/web/FILES/Policies/data-sharing-policy.pdf](http://www.bbsrc.ac.uk/web/FILES/Policies/data-sharing-policy.pdf)

<sup>35</sup> [www.nsf.gov/bfa/dias/policy/dmp.jsp](http://www.nsf.gov/bfa/dias/policy/dmp.jsp)

<sup>36</sup> [www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Data-sharing/Public-health-and-epidemiology/WTDV030689.htm](http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Data-sharing/Public-health-and-epidemiology/WTDV030689.htm)

first ERA-CAPS grantees workshop (Task 6.3). This task will be completed in time to feed into the second ERA-CAPS call for proposals (Task 3.6).

The adopted data sharing policy will be published on the ERA-CAPS website and will also be incorporated into the calls for proposals developed under Work Package 3. All grant holders will be expected to pay due regard to this policy which will be complementary to, and feed into, the development of standards undertaken in Task 4.3. Finally, the ERA-CAPS data sharing policy could be presented as a white paper to the plant science community.

#### **Task 4.5 Exploiting Infrastructures**

(Task Leader: RCN assisted by INRA)

It is not the intention of ERA-CAPS to develop and support new infrastructures and resources for the plant sciences community but rather to support the linking and integration of research data produced in the framework of ERA-CAPS projects into existing infrastructures. According to the 2011 *Nucleic Acids Research Database* issue, there are over 100 plant-specific databases available (not including general biology databases such as Genbank)<sup>37</sup>. Furthermore, extensive database infrastructure is provided by the European Bioinformatics Institute (EBI)<sup>38</sup>, an outstation of the European Molecular Biology Laboratory in Hinxton, UK, and the development of new infrastructures such as the European Life Science Infrastructure for Biological Information (ELIXIR)<sup>39</sup>. This negates the need for additional large-scale bespoke infrastructures for plant sciences within Europe. Through ERA-CAPS, there is a valuable opportunity to harmonise the concepts for data analysis, data integration and data transfer into existing infrastructures.

ELIXIR will offer an opportunity for the plant sciences community to work with other disciplines and database providers and develop the resources offered through ELIXIR. Where these requirements are outside the core developments, ERA-CAPS partners will engage with ELIXIR and EBI management to explore opportunities for engagement and partnership. Also of value and important to link with will be the ESF Member Organisation Forum on Research Infrastructures<sup>40</sup>, which is concerned with infrastructures of national and European importance (not at the same scale as ESFRI), and ERA- Instruments that gathers together the funders of life science research infrastructures. Many of the ERA-CAPS partners are already actively involved in the above and this will help to promote good interactions.

#### **Deliverables**

D4.1 Increased visibility and integration of ERA-CAPS.

D4.2 Standards for research outputs.

D4.3 ERA-CAPS data sharing policy.

D4.4 Exploiting infrastructures.

#### **Milestones**

M4.1 Joint plant sciences meeting with EPSO/ FESPB or similar.

M4.2 Identify ERA-CAPS representatives to be contact/ liaison points for external networks.

M4.3 Gather information from partners about their data sharing requirements and any data sharing policies they have.

<sup>37</sup> Galperin & Cochrane The 2011 *Nucleic Acids Research Database* Issue and the online Molecular Biology Database Collection. *Nucleic Acids Research* **29**; **D1-6** (doi: 10/1093/nar/gkq1243)

<sup>38</sup> [www.ebi.ac.uk](http://www.ebi.ac.uk)

<sup>39</sup> [www.elixir-europe.org](http://www.elixir-europe.org)

<sup>40</sup> [www.esf.org/activities/mo-fora/research-infrastructures.html](http://www.esf.org/activities/mo-fora/research-infrastructures.html)

**WP5. Developing a self-sustaining network**

Work package number	<b>5</b>		Start date:					Month 1	
Work package title	<b>Developing a self-sustaining network</b>								
Activity Type	COORD								
Participant number	7	1	2	3	4	5	6	8	
Participant short name	INRA	BBSRC	FWF	F.R.S.-Fnrs	NRC	DASTI	ETF	DFG	
Person-months per participant:	10	3	1	2	1	3	1	1	
Participant number	9	10	11	12	13	14	15	16	
Participant short name	HAS. SEC	MOARD	MIUR	LZA	FRST	NWO	RCN	NCBIR	
Person-months per participant:	1	1	1	1	1	1	1	1	
Participant number	17	18	19						
Participant short name	FCT	MPN	MICINN						
Person-months per participant:	1	1	1						

**Objectives**

To provide a basis by which ERA-CAPS can become a durable self-sustaining network.

**Description of work****Task 5.1 Building a Sustainable Collaboration**

(Task leader: INRA; assisted by F.R.S.-Fnrs)

To build a long-term transnational collaboration that is sustainable beyond the end of the period of support from the European Commission, it will be necessary to deepen the cooperation between national research programmes towards mutual opening and joint use of resources. To affect decision making at a national level, real transnational bottom-up thinking will be necessary. Taking this one step further, towards the principles of joint programming, will require the partners to demonstrate a real willingness to work together from first principles when planning their national programmes.

To make progress towards this goal, it will be necessary to:

- Identify common topics of interest that will benefit from a multilateral approach. The information provided through WP1 and WP2 will form the basis for this. Additional landscaping and vision documents (e.g. EU 2020 Vision for Plant Science<sup>41</sup>, Plants for the Future Strategic Research Agenda<sup>42</sup>, FACCE-JPI<sup>43</sup> Scientific Research Agenda *inter alia*) will also provide valuable sources of information about future directions and priorities for plant science research.
- Consider how ERA-CAPS could help implement the recommendations within the other

<sup>41</sup> [http://www.arabidopsis.org/portals/masc/2020\\_European\\_Vision.pdf](http://www.arabidopsis.org/portals/masc/2020_European_Vision.pdf)

<sup>42</sup> [http://www.plantetp.org/index.php?option=com\\_content&view=article&id=71&Itemid=160](http://www.plantetp.org/index.php?option=com_content&view=article&id=71&Itemid=160)

<sup>43</sup> <http://www.faccejpi.com/FACCE-JPI-Home/FACCE-JPI-News/Scientific-Research-Agenda>

foresight documents; considering what mechanisms would be the most suitable; what procedures have worked in other examples (link to task 1.3); what instruments have been/ can be used; what is the best way to facilitate these mechanisms; and what are the main barriers (and drivers)?

- Foster good working relationships between the funding organisations, such that for each organisation the relevant contacts are known and in the database, and that there is a clear understanding of each other's business requirements and processes.
- Develop a strategy for engaging with any non-partner countries identified in task 1.4.

### ***Task 5.2 Strategic Workshop 2: Building a Sustainable Network***

(Task leader: INRA)

Approximately 18 months into the project, we will hold a workshop with the aim of generating concrete actions to ensure the sustainability of the network. Attendees at the workshop should include the high-level representatives from each organisation to ensure 'buy-in' from each partner. One output of the workshop will be a position paper that will be targeted towards funding organisations and policy makers (not limited to those involved in ERA-CAPS), that will set out guiding principles to assist future joint working.

A further output would be ideas for further joint calls between the partners taking account of the information gathered through the survey and foresight activities of ERA-CAPS. A further call would necessitate collaborative activities beyond the end of the programme and entail the partners working as a self-supporting consortium beyond the scope of ERA-CAPS funding. This requires consideration of how to affect decision-making at a national level, such that national programmes are developed synergistically, to create the added value from a suite of coherent activities across Europe and beyond. Consideration of both European and international activities will need to be embedded at an early stage of national programme design if we are to move towards the principles of joint programming in a meaningful way.

### ***Task 5.3 Integrating new ideas and requirements into a flexible call structure***

(Task leader: BBSRC)

In a large and diverse network and in a rapidly changing scientific and funding landscape, it cannot be expected that every country will be able to provide upfront commitments and reserved budgets to participate in annual joint calls. To facilitate maximum participation, we will investigate flexible funding options for future calls (variable geometry), whereby national funding organisations can choose to participate in sub-calls or alternate calls that are complementary and add value to their national programmes. These could be targeted towards fundamental, strategic, or applied research and the participation of industry could either be encouraged or be a prerequisite.

It is also essential to make international collaboration a primary consideration in the strategic development of the national programmes. For this to be successful, we will investigate different mechanisms for joint funding of research, and how these can be integrated into funding agency systems that satisfy national requirements and regulations.

ERA-PG successfully administered two joint calls through the use of a 'virtual' common pot, whereby each partner funded the scientists from their own country who were involved in the selected projects. A longer-term goal would be to take steps towards a true-common pot, which would necessitate an investigation of the barriers that exist to cross-border funding. In the medium-term, other advanced funding models, such as a mixed-mode pot, could be explored.

This caters for countries that can and cannot fund cross-border with a mix of 'national pots' and a 'mutual pot'.

This scoping exercise will feed into WP3 during the course of ERA-CAPS but it is essential that we establish these mechanisms if we are to build in the flexibility for committed yet variable participation in future calls beyond the scope of EC funding.

#### ***Task 5.4 Developing mechanisms to ensure self-sustainability***

(Task leader: DASTI)

This task aims to define and implement a model for the continuation of ERA-CAPS in a durable and self-sustainable manner after the ERA-NET and without EU funding. The work will consolidate and build on the experience of ERA-CAPS outputs and establish a "light-touch" independent network. Experience from other self-sustainable networks as the skep-network<sup>44</sup>, SNOWMAN<sup>45</sup> and the KBBE Collaborative Working Groups (CWG's) will also be studied.

To transform ERA- CAPS into a self-sustainable network there will be a need for a common agenda and shared vision for plant science (Tasks 1.2, 1.4, 5.1 and 5.2). There will be a need for an agreed plan of work going forwards and there will probably be a need for a secretariat to support the long-term Network and help to implement joint activities (e.g. joint calls, maintaining the common strategic research agenda, maintaining the database, explore and develop linkages to the JPI and other EU and international initiatives). We will endeavour to establish a mechanism whereby ERA-CAPS will be maintained and some form of contract or agreement of commitment to future joint-calls and synergistic funding can be signed by those members wishing to partake in further coordinated activities in plant science. This would be greatly facilitated by a financial commitment to support a core secretariat/ dedicated staff to coordinate the network.

#### **Deliverables**

D5.1 Position paper targeted to funding organisations and policy makers setting out guiding principles for future joint working.

D5.2 Policy document for flexible call structure.

D5.3 Commitment agreement for future joint working.

#### **Milestones**

M5.1 Second strategic workshop: Building a sustainable network.

M5.2 Mechanism for continuance of ERA-CAPS established.

<sup>44</sup> <http://www.skep-network.eu/>

<sup>45</sup> <http://www.snowman-era.net/>

**WP6. Coordination, communication and dissemination**

Work package number	<b>6</b>	Start date: Month 1					
Work package title	<b>Coordination, communication and dissemination</b>						
Activity Type	COORD						
Participant number	3	1	5	11	17		
Participant short name	F.R.S.-Fnrs	BBSRC	DASTI	MIUR	FCT		
Person-months per participant:	10	6	4	3	3		

**Objectives**

To establish an efficient management structure and Programme Coordination Office to enable the smooth-running of the programme, ensuring information flow into and out of the consortium and to other stakeholders to maximise the impact of the ERA-CAPS network.

**Description of work****Coordination and Internal Communication**

(See WP7 for the general management of the programme)

**Task 6.1 Reporting Requirements**

(Task leader: BBSRC)

Throughout the course of the programme, the following reports will be produced:

- A six-monthly progress update will be prepared in time for presentation at each of the biannual Management Board meetings (six in total)
- An annual progress report for the High-Level Group (3 in total)

**Task 6.2 Organise ERA-PG/ ERA-CAPS Grant holders workshops**

(Task leaders: BBSRC assisted by MIUR and FCT)

MIUR will organise the first ERA-CAPS grant holders' workshop in Italy in the third quarter of 2013. This meeting will be a kick-off workshop for the ERA-CAPS projects funded in the framework of the first call, and provide an opportunity to gather feedback on the call procedure and ERA-CAPS in general. In preparing the workshop, we can draw on the experience from the ERA-PG status seminars in Tenerife (2007) and Lisbon (2009) and the final ERA-PG status seminar to be held in Germany (2012) (task 3.4).

BBSRC will organise a HLG meeting to coincide with the EPSO conference in Greece<sup>46</sup> in 2013 to further our links with EPSO and gain added interaction with the plant science community.

FCT will organise a final ERA-CAPS grant holders' meeting held in months 33-36. This will include reports from the 1<sup>st</sup> ERA-CAPS joint call and introductory presentations from grant holders funded through the 2<sup>nd</sup> ERA-CAPS joint call. Members of relevant ETPs<sup>47</sup>, particularly Plants for the Future, will also be invited for the meeting to serve as a brokerage event introducing ERA-CAPS grant holders to those defining downstream translational research priorities. It is also

<sup>46</sup> <http://www.epsoweb.org/>

<sup>47</sup> <http://www.plantetp.org/>

intended that this meeting will serve as a forum for continuation of the network.

### **Task 6.3 Extranet**

(Task leader: F.R.S.-Fnrs)

An Extranet will be launched, following the format of the one created for ERA-PG. From the publicly accessible website (Task 6.6), there will be a Member's Log-in facility that will allow access to a secure site containing all the internal documents for the programme. Initial information will comprise copies of the programme's Description of Work, a task list, and contacts for each partner. As the programme develops, the extranet will be regularly updated with information arising from the tasks as they progress. The extranet will also be used as a means of sharing information about upcoming meetings, agendas and papers for those meetings and the minutes.

There will also be sections that will contain other relevant information, such as reports from other groups, copies of presentations, information about open meetings, workshops and conferences.

### **Task 6.4 Database**

(Task leader: DASTI)

Tasks within WP1 and WP2 involve the collection of data from member organisations about the relevant science base in their country. The data will be compiled and used to populate a database, accessible via the secure Member's only section of the ERA-CAPS website (see WP6 task 6.5). The database developed in response to the ERA-PG survey will be used as the starting point for those members who were partners in that programme. Information gathered under task 1.1 will be used to update the existing data, and new data collected under task 2.1 will be added for the new member countries. Building on DASTI's experience of database creation for other ERA-NETs the database will, as a supplement to the information collected in the above mentioned tasks, be provided with an Online Information Submission System. This will enable any organisation/individual, who considers themselves to be a stakeholder in ERA-CAPS to submit information directly to the database. Thereby providing a more flexible and efficient information flow into the database, and introducing an element of self-sustainability to the database.

The database will consist of a general information page for each country, listing the key points in relation to their national funding programmes, the programme owners, capacity and priorities. Behind this page will be more detailed information about particular resources available in that country, a 'who's who' of the leading scientists and/ or key institutions, and further information about the research currently being supported. The initial database will be a snapshot in time. However, longer-term this should become a dynamic utility that will be updated accordingly and link to relevant national/ funding agency databases of research supported. The partners will have to consider mechanisms for the long-term maintenance and sustainability of the database – whether this continues as a stand-alone exercise beyond the scope of ERA-CAPS or whether it feeds into another platform carrying out a similar function.

## **External communication and dissemination**

### **Task 6.5 Website**

(Task leader: F.R.S.-Fnrs)

A publicly accessible website will be created, again along the lines of the one used for ERA-PG, as this proved to be a very successful model ([www.erapg.org](http://www.erapg.org)). This will contain sections about the partners, details of the work plan and work packages, the research programme, meetings, networking activities, publications, useful links and contact points. Relevant data will be migrated from the ERA-PG website and the ERA-CAPS website will be regularly updated and expanded as

required. The website content will be enhanced through the use of new media outlets (already extensively used within the ERA-CAPS target scientific community), including RSS and Twitter feeds to keep interested parties up to date, and networking mechanisms including LinkedIn to maintain strong lines of communication even after the lifetime of ERA-CAPS.

The development of the website will be subcontracted to an expert company. Quotes have already been obtained for the development and ongoing maintenance of the website, along with staff training.

### **Task 6.6 Publications**

(Task leader: F.R.S.-Fnrs)

Publications will be geared towards internal and external audiences. Internally, short interim activity reports will be produced to coincide with the six-monthly meetings of the Management Board (Task 6.4). These will be predominantly operational in tone. Of more general interest to the programme partners and scientists will be the six-monthly newsletter which will be distributed electronically. The newsletter will contain some items from the six-monthly progress reports, and will be for a more general readership. Accordingly it will not be a restricted document and will be available to the wider scientific community.

To help present a corporate and professional image, a logo, standardised slide set and branding will be created, which can be used by the partners when disseminating e.g. research results from projects funded through the programme. We will aim to give a presentation about the programme to the wider scientific community, e.g. at international meetings such as PlantGEMS, once a year. We will also keep other funding agencies and policy makers aware of the programme's activities by dissemination through routes such as the International Steering Committee for Plant Genomics (ISCPG)<sup>48</sup>. (All partners)

Press releases will be prepared shortly after the start of the programme, to inform the community about this new enterprise, and also after funding decisions are made for the joint calls. The press release will be disseminated through the ERA-CAPS website, a mailing list of network contacts and through other relevant websites, such as the AlphaGalileo<sup>49</sup> and Eurekalert!<sup>50</sup> online news services.

Towards the end of the programme, a summary booklet will be produced, highlighting the key activities of the programme, the original objectives and progress against them, notable successes, and the way forward. The booklet will be disseminated among relevant stakeholders and policy makers with the aim of increasing the visibility of ERA-CAPS and promoting the network. Further dissemination will be achieved through the publication of articles and news items in relevant sources e.g. EPSO News, national information streams etc. (All partners, with assistance from the PCO). Information about ERA-CAPS activities will also be distributed electronically through subscriber mailing lists and will be supplemented by press releases and corporate broadcasts on new media outlets such as webcasts and funding agency YouTube channels linked to the websites for ERA-CAPS and participating agencies.

### **Allocation of Resources**

All partners will have a role in coordination, communication and dissemination, largely through the research that they will be funding as they would normally do, and their involvement in workshops

<sup>48</sup> <http://www.iscpg.com/>

<sup>49</sup> <http://www.alphagalileo.org/>

<sup>50</sup> <http://www.eurekalert.org/>

and meetings. However due to the limited funds available, only specific additional resource has been allocated to those partners leading on tasks. These five partners will work on the input received from all members of the consortium. For the workshops and HLG meeting (6.2), all partners have been allocated funds elsewhere in the programme to enable their participation, e.g. each partner representative has a T&S allocation to cover attendance, additionally it will be a condition of the grants that researchers attend these events and funds will be provided in their research grants for this purpose.

For the communication tasks (6.3-6.6), each partner will be expected to provide information to the task leader, but this will be done as part of their normal business. The task leaders will have to expend additional time and resource on e.g. creating the database (6.4) or preparing publications (6.6), hence the extra person months requested for these activities. If needed working groups could be set up with participants from various national funding agencies to steer large tasks such as the website and database in order to enhance the participation of several agencies in WP6.

#### **Deliverables**

- D6.1 Press release about the launch of the new programme.
- D6.2 Extranet for internal consortium use.
- D6.3 Publicly accessible external website.
- D6.4 Joint HLG/ EPSO meeting
- D6.5 First ERA-CAPS grant-holders workshop
- D6.6 Second ERA-CAPS grant-holders workshop
- D6.7 Updated ERA-CAPS database.
- D6.8 A summary booklet of the programme as it nears completion.

#### **Milestones**

- M6.1 Establish a platform for hosting the extranet and website.
- M6.2 Produce a list of contacts who should receive information about the programme.
- M6.3 Collate information from tasks in WP1, WP2 and WP4 for the creation of the online database of country priorities, key scientists and other initiatives.

**WP7. Management**

Work package number	7	Start date: Month 1						
Work package title	<b>Management</b>							
Activity Type	MGT							
Participant number	1							
Participant short name	BBSRC							
Person-months per participant:	18							

**Objectives**

To establish an efficient management structure and Programme Coordination Office to enable the smooth-running of the programme and ensure timely completion of the milestones, deliverables and reporting requirements.

**Description of work****Management and Coordination*****Task 7.1 Programme Coordination Office (PCO)***

(Task leader: BBSRC)

A Programme Coordination Office (PCO) will be set up at the Central Coordinator's location (BBSRC, UK) to ensure the efficient day-to-day running of the programme and establish a central point of contact for all partners. The office will be responsible for the oversight and coordination of all activities within the programme. This will be done in conjunction with the Work Package and Task Leaders. Longer-term, the PCO will be responsible for keeping track of progress against the milestones, completion of deliverables, integration of the Work Packages and overall direction of the programme.

***Task 7.2 Consortium Meetings***

(Task leader: BBSRC)

The Programme Coordination Office will be responsible for the arrangement of all Management Board, High-Level Group and (when required) Scientific Advisory Body meetings (section 2.1 Management Structure contains further information) as well as the provision of general administrative support for the consortium. In addition the office will be responsible for the organisation of networking and follow-up activities (unless specifically allocated to other partners).

***Task 7.3 Reporting Requirements***

(Task leader: BBSRC)

Throughout the course of the programme, a number of different reports will be produced for the European Commission:

- Activity Reports for the European Commission will be produced after reporting period one (months 1-18) and two (months 19-36)
- Financial Management Reports for the European Commission after reporting periods one and two
- Delivery Reports will be submitted to the EC for each deliverable once complete

**Deliverables**

- D7.1 Operation of the Programme Coordination Office
- D7.2 Activity Reports for the European Commission.
- D7.3 Financial Reports for the European Commission.

**Milestones**

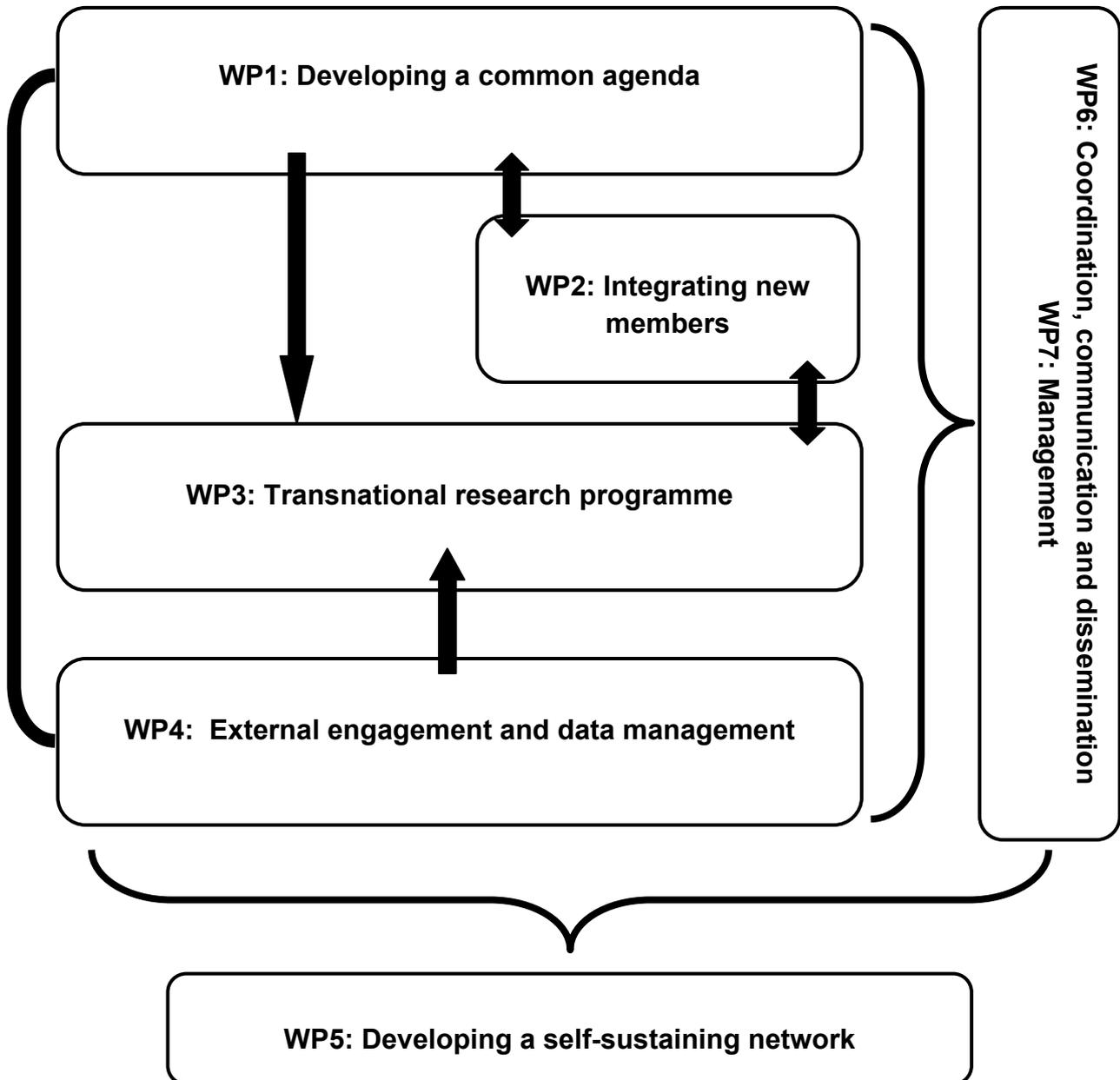
- M7.1 Establishment of the Programme Coordination Office.
- M7.2 Installation of the Management Board, High-Level Group and Scientific Advisory Body.

**Table 1.3E Summary effort table**

Number of person months assigned to each partner per work package.

	Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total
1	BBSRC (UK)	7		2	2	3	6	20	40
2	FWF (AT)	1		2		1			4
3	F.R.S.-Fnrs (BE)	2	2	2	2	2	10		20
4	NRC (CA)	1		2		1			4
5	DASTI (DK)	1		2		3	6		12
6	ETF (EE)	3	9	4		1			17
7	INRA (FR)	1		5	2	10			18
8	DFG (DE)	1	1	32	2	1			37
9	HAS-SEC (HU)	1	2	2		1			6
10	MOARD (IL)	1		2		1			4
11	MIUR (IT)	1		3		1	3		8
12	LZA (LV)	1	4	2	5	1			13
13	NWO (NL)	3		2	8	1			14
14	FRST (NZ)	1	2	2		1			6
15	RCN (NO)	1		2	2	1			6
16	NCBiR (PL)	1	2	2		1			6
17	FCT (PT)	1		9	3	1	3		17
18	MPN (RS)	1	6	2		1			10
19	MICINN (ES)	1		2		1			4
	<b>TOTAL</b>	<b>30</b>	<b>28</b>	<b>81</b>	<b>26</b>	<b>33</b>	<b>28</b>	<b>20</b>	<b>246</b>

1.3.4 Graphical representation of work package components



### **1.3.5 Significant risks and associated contingency plans**

No major risks are foreseen; however it would be foolhardy to assume that no problems will be encountered. Therefore it is sensible to consider the risks that might occur, however unlikely, so that should a problem arise there is an agreed protocol in place to address it.

#### **Inadequate Governance**

The overall governance of the programme will be critical to its success. A robust governance structure should ensure that the project is kept on track and any problems are identified early. To this end the management has two tiers; the High-Level Group who can ensure that the project is moving in the right direction and the key aims and objectives are on schedule; and the Management Board who will keep a closer eye on the progress against milestones and deliverables. The combination of these two levels of governance should ensure that all aspects of the programme are overseen and any decisions taken are done so with the agreement of the majority of partners.

#### **Lack of engagement of all Partners**

Many of the partners have worked together before, notably in ERA-PG. The commitment and willingness of these partners to fully engage in ERA-PG was one of the great strengths of that programme and is a major factor in the decision to try and continue with this new ERA-NET. Significant effort will be dedicated to ensuring the proper integration of the new partners into the programme; WP2 is designed specifically for this purpose and other tasks throughout the programme aim to further embed and include the new partners. All partners will have a representative on the High-Level Group and the Management Board, therefore all will have the opportunity to make their wishes known and to contribute to decision-making.

Essential to ensuring a high and sustained level of commitment to the programme, will be open communication, systematic information exchange and transparent decision-making. Through dialogue, the requirements and restrictions of partners will be ascertained, meaning that all activities should have a majority consensus supporting them.

From time to time, certain partners may not be able to engage fully in the activities. For any joint calls, a variable geometry approach will be taken which means that the individual circumstances of partners (e.g. financial constraints) should not affect progress of the WP as a whole. We will ensure that all activities have the engagement of sufficient partners to ensure that the critical mass required to generate the added value from working transnationally is achieved.

If a partner persistently fails to engage, the Programme Coordination Office will liaise with them to see if there is a particular problem, and assist where possible. If required this can be discussed by the Management Board and/ or High-Level Group to consider what action would be most appropriate.

#### **Interdependency of Work Packages**

Some work packages will be interdependent in that the success of each will be necessary for the other (e.g. WP1 and WP2); others are reliant on information being provided from work conducted under other work packages (e.g. WP3 requiring input from WP1 and WP2). To ensure that there are no knock on effects from problems arising in a WP, there will be close monitoring of progress to assist early identification of issues. Should an issue arise, where necessary additional resources or help from another partner may be redirected to that task. This will be facilitated by the Management Board being prepared to be responsive and take a flexible approach.

In addition, we will ensure that all partners fully understand how their tasks fit into the overall picture and the effects on the overall programme of not delivering against their allocated tasks.

### **Differing Priorities and National and Political Pressures**

It should be recognised that there will be occasions when a particular topic is not a priority for all partners. Steps will be taken to ensure that the wishes of as many partners as possible are accommodated and that the same partners do not have their interests sidelined too often. However, there are many very important and pressing issues that plant sciences can help to offer a solution to, which are common to all countries involved, such that there should be ample opportunity for identifying mutual goals. Tasks in WP1 and 2 aim to identify common priorities and strategic alignments, therefore each partner will have ample opportunity to make their preferences known.

### **Financial Issues**

All partners recognise that finances are very tight in the current climate and it is likely that individual organisations will only contribute to those activities that align with their own national priorities. This was the reasoning behind organising the Work Packages in such a way that direct financial contributions are only required for the transnational research programme in WP3. Partners can fully participate in all of the other WPs without having to make financial commitments. Also, the ethos of WP1 is to make sure that the funds that each partner has available, will go further by leveraging the funding from other organisations with whom shared interests are identified.

By avoiding a reliance on financial commitments for the majority of the WPs, this should also insulate the programme from the effects of an unstable economy and exchange rate fluctuations.

## 2. IMPLEMENTATION

### 2.1 MANAGEMENT STRUCTURE AND PROCEDURES

ERA-CAPS will have a clearly defined management structure that will facilitate the smooth-running of the programme and ensure that the overarching objectives (and deliverables along the way) of the programme are met. Drawing on the experience gained from the ERA-PG programme, an effective model for management is to have a two-tiered structure, supported by a central office. There will also be an advisory body whose expert subject knowledge can inform management decisions.

At all levels of administration and management ERA-CAPS will be dedicated to promoting equal opportunities. Many of the partners have formally implemented national strategies to ensure gender balance and reduce various other forms of discrimination. ERA-CAPS will adopt and promote these policies to augment fair working arrangements throughout all levels of the network activity.

#### Programme Coordination Office

The Programme Coordination Office (PCO) will establish a Secretariat at the coordinators location (BBSRC, UK) having the following responsibilities:

- To be the central point of contact for the network
- Overall coordination and follow up of networking activities with the work package and task leaders;
- Follow up of all cross work programme and horizontal issues;
- Preparation and follow up of the High-Level Group and Management Board meetings;
- Liaising with the Scientific Advisory Body;
- Provision of day-to-day administrative support to the consortium management;
- Reporting and audit requirements of the European Commission.

#### High-Level Group

A High-Level Group (HLG) will be installed comprising high level representatives from each consortium partner (equivalent to Director level). The representative from the Consortium Lead Partner (BBSRC) will chair the annual meeting of the HLG. The HLG will have overall responsibility for taking strategic decisions which will impact on the programme, for monitoring the work performed, and reviewing the overarching objectives and progress made against them. Decisions relating to consortium and contract management will also be within the remit of the HLG. Where necessary, the HLG will have responsibility for discussing corrective action and possible reallocation of tasks and/ or funds. Where important decisions such as these need to be made decisions will be reached by majority voting.

The HLG, will have final approval of certain high-impact documents and the final lists of projects to be funded through any joint calls. In addition, along with the Management Board, the HLG will also have a general responsibility for the dissemination of information and promotion of the programme.

Where a decision is required from the HLG and the timeframe within which it is required does not allow for it to be on the agenda of the annual meeting, decisions will be made by correspondence. If appropriate, teleconferencing will also be used as a means of communication.

## **Management Board**

Individual Work Package leaders and the owners of specific tasks within work packages are responsible for undertaking and delivering the agreed work programme of ERA-CAPS. To oversee this programme a Management Board (MB) consisting of the programme managers from each partner will meet twice a year (once in conjunction with the HLG). They will be responsible for monitoring progress against individual deliverables and milestones within the work packages and ensuring that the interdependencies of tasks between work packages do not give rise to problems. Should any potential issues be detected the MB, in conjunction with the PCO, will discuss and implement solutions. Where there is a risk of a high likelihood and/ or high impact of a problem occurring, the matter will be elevated to the HLG for consideration. Decisions will be made by majority voting throughout.

The MB will be responsible for making decisions that are more operational in nature as well as implementing the strategic decisions taken by the HLG. They will give approval for the majority of documents for publication and approaches to be employed for networking activities.

The Management Board will be chaired by the Central Coordinator.

## **General rules for the HLG and MB**

- Meetings of the HLG and MB will be rotated around locations within the partner countries.
- Decision Making – Decisions will be taken, as far as possible, by consensus. In the absence of a consensus, a vote will be taken of the members present (or if forewarned by proxy for absent members). Each partner will have one vote. In all cases a simple majority will be sufficient.
- Quorum – meetings will be considered quorate if the majority of members are present.
- Meeting attendees:
  - Representatives of the secretariat will attend all meetings.
  - Observers will be invited to attend most meetings at the discretion of the HLG and/ or MB, but they will not have a vote.
  - A representative of the European Commission may attend meetings on request.
  - External experts may be invited to attend meetings according to business needs.
- Conflict of Interests - All members and invited guests must inform the secretariat of any possible Conflict of Interests relating to business on the agenda or the wider activities of the network.

## **Scientific Advisory Body**

Each partner country will have the opportunity to put forward a representative from their plant science community to be a member of the Scientific Advisory Body. Eminent scientists from other countries, including those outside of Europe, may also be invited to participate in the SAB. The members of the SAB shall serve in their individual capacity as experts and not representing a particular organisation. The SAB will be called upon to advise the HLG and MB about matters relating to scientific topic or content. They will not have regular scheduled meetings, but a meeting will be convened if deemed necessary. The members will also be invited to attend other activities, e.g. strategic workshops or grant-holders meetings, as appropriate. The SAB will also assess the progress and results of the funded projects by reviewing mid-term and final reports. It will not be necessary to have a representative from every partner country; in practise, there would be a core of eight to twelve senior scientists who are knowledgeable about, and supportive of, the

programme's aims and objectives. The HLG will take the decision as to which senior scientists will form the 'core' of the SAB; this can be rotated as necessary.

### **Call Secretariat/ National Call Coordinators**

To facilitate the delivery of the Transnational Research Programme within Work Package 3 (led by DFG, Germany), some additional management structures will be created. Past experience of the successful joint calls held under ERA-PG, has shown that the establishment of a Call Secretariat (CS) at the location of the WP leader and a team of national contacts (National Call Coordinators - NCC) provides an efficient framework for the delivery of joint calls. Therefore this model will be utilised again for this programme. The National Call Coordinators will be staff at the funding organisations who deal directly with the assessment and funding of grants. They are usually different people from those who sit on the Management Board.

### **Guiding Principles for ERA-CAPS Management**

To achieve effective, economical and efficient management of the programme, all levels of management will endeavour to adhere to the following guiding principles:

- Be committed to the overarching objectives of the programme
- Be open and transparent
- Be flexible and responsive
- Avoid duplication of activity
- Ensure adequate coverage (no gaps)
- Avoid unnecessary bureaucracy – employ a light touch when possible
- Work in a positive and constructive manner
- Promote equal opportunities

### **Participation of Individuals**

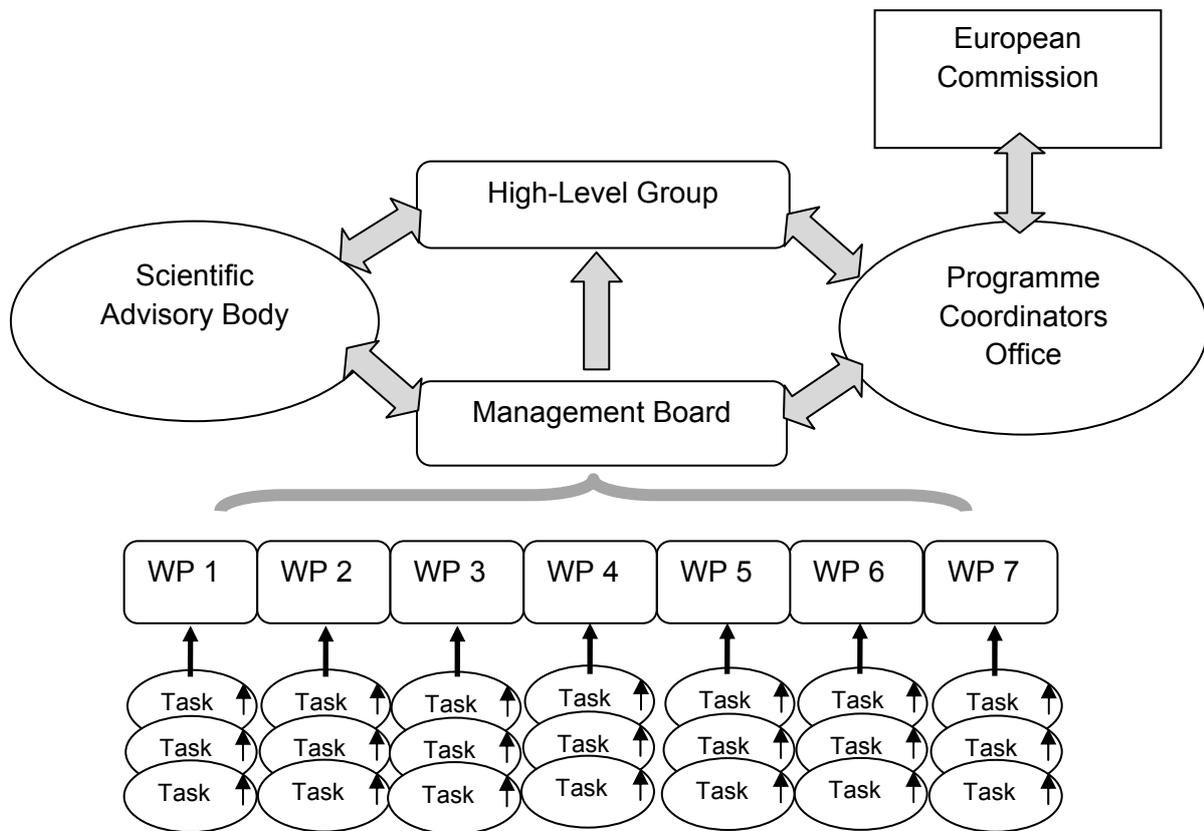
The representatives of each partner organisation will have a responsibility to accurately reflect the position of their organisation, to provide information about their national and international activities, and to oversee tasks for which their organisation has been given responsibility. Members are expected to attend the majority of meetings to which they are invited, and provide written input as required if they are unable to attend. If a member is unable to attend a meeting, an appropriate representative may attend in their place and the Programme Coordination Office should be informed. If member(s) from a particular organisation consistently miss meetings and do not contribute to the overall management of the programme, their membership of the programme will be reviewed.

### **Observers**

Organisations who were unable to commit to being a full partner at the time of writing but who have an interest in the content of this programme, are offered Observer status. This will allow them access to the information gathered during the programme, and to the extranet. Representatives from organisations with Observer status will also be invited to attend meetings at the discretion of the Programme Coordination Office (on the advice of the HLG and MB). The main differences between Observers and full partners are that Observers will not have any voting rights and will not receive funds for staff resource ('person months'). The PCO may choose to provide them with travel and subsistence costs for attendance at meetings and workshops. In exceptional cases, if an Observer organisation is conducting work on behalf of the programme, the HLG may decide to allocate a small amount of funds to them for a specific piece of work.

## ERA CAPS

Should the circumstances or priorities of a funding agency Observer change, if the HLG agrees, they can be invited to join the programme as a full partner.



**Figure 6. ERA-CAPS management structure**

## 2.2 INDIVIDUAL PARTICIPANTS

### Partner 1. UNITED KINGDOM: Biotechnology and Biological Sciences Research Council (BBSRC)

**Leader:** WP1 & WP7. **Tasks assigned:** 1.1, 1.2, 1.3, 4.4, 5.3, 6.1, 6.2, 7.1, 7.2, 7.3 & active role in WP3.

The Biotechnology and Biological Sciences Research Council (BBSRC, [www.bbsrc.ac.uk](http://www.bbsrc.ac.uk)) is one of seven Research Councils that work together as Research Councils UK (RCUK). BBSRC is funded from the Government's Department for Business, Innovation and Skills (BIS) and the budget for the financial year 2010/ 2011 is £470M. It supports a total of around 1600 scientists and 2000 research students in universities and institutes in the UK.

BBSRC's mission is to promote and support high-quality basic, strategic and applied research and postgraduate training relating to the understanding and exploitation of biological systems. To advance knowledge and technology and provide trained scientists and engineers, which meet the needs of users and beneficiaries (including the agriculture, bioprocessing, chemical, food, healthcare, pharmaceutical and other biotechnological related industries), thereby contributing to the economic competitiveness of the United Kingdom and the quality of life.

BBSRC provides competitive research funding to universities and academic institutions in the UK, but also supports a number of specialist research institutes and centres. The institutes conduct long-term, mission-oriented research using specialist facilities and have strong interactions with industry, Government departments and other end-users of their research. The institutes provide a strategic research capacity in plant and microbial sciences (the John Innes Centre), sustainable agriculture and land use (Rothamsted Research and IBERS), animal health and welfare, and biomedical and food sciences. The specialist centres include the BBSRC Sustainable Bioenergy Centre (BSBEC), The Genome Analysis Centre (TGAC), and a number of systems biology and structural biology centres that are based in universities.

**Support for Plant Sciences.** BBSRC is the principal funder of plant science research in the UK. This research is supported through a variety of mechanisms: Strategic programme grants to the institutes; Responsive-mode grants to universities and institutes; Directed initiatives such as the joint calls with the UK's Department for International Development (DfID) on sustainable agricultural and crop research, and contributions to international programmes such as ERA-NETs and EUROCORES. Two of BBSRC's top priorities are research underpinning Food Security (includes increased crop yields, harvesting natural diversity, and reducing the impacts of pests and diseases) and Bioenergy (includes second and third generation biofuels).

#### Key Persons Involved

**Professor Janet Allen MD, MRCP, FRSE** Janet joined the BBSRC in October 2008 as Director of Research. She is responsible for overall science strategy and delivery, and works with other funding agencies to identify shared interests and the possibility of collaborative funding opportunities. Janet initially trained in medicine and has studied at Harvard Medical School, U.S.A, and worked at the University of Cambridge, the University of Glasgow and held senior management posts in the pharmaceutical industry. Before joining BBSRC Janet was Director of the UCD Conway Institute of Biomolecular and Biomedical Research in Ireland.

**Dr Rowan M<sup>c</sup>Kibbin**, Deputy Head, International Relations Unit. Rowan has a degree in genetics and plant science, a PhD in molecular plant biology and spent several years as a researcher. Positions in BBSRC's Head Office have been Programme Manager for Agri-Food, Senior Programme Manager for Plant and Microbial Sciences, then Deputy Head, International.

## **Partner 2. AUSTRIA: Austrian Science Fund (FWF; Fonds zur Förderung der wissenschaftlichen Forschung)**

### **Tasks assigned: active role WP1, WP3 & WP5.**

The FWF was founded by the Austrian government in 1968 as an independent and autonomous fund for the support and the promotion of basic research. The FWF is equally committed to all fields of science and the humanities and in all its activities is guided solely by the standards of the international scientific community. The FWF's corporate policy is to strengthen science and the humanities in Austria by funding high-quality scientific research, by supporting education and training through research and by fostering knowledge transfer and a science-friendly culture by means of an exchange between science and other areas of society. The aims of the FWF are the continued improvement of science in Austria and an increase of its international competitiveness, an enhancement of the qualifications of young scientists and a strengthening of the awareness that science represents a significant aspect of our culture.

The FWF, apart from the strategy and service departments, is organised in three operating departments: Humanities and Social Sciences, Biology and Medicine, and Natural and Technical Sciences. Funding follows to a large extent the bottom-up approach, applications are evaluated by international peer review of all proposals. The funding decision is taken by the FWF Board (5 times per year). All decision making bodies of the FWF are comprised almost exclusively of full professors at Austrian universities; representatives from the government have Observer status. With a staff of around 80 employees, the FWF processed close to 2.000 applications during 2010, with a final approval rate of 35% across all programs. In 2010, the FWF's total budget amounting to 165 million EUR was provided to a wide extent by the government. 40% of the total financial support granted went to the life sciences (including medicine) and 40% to the natural sciences, followed by the humanities and social sciences with 20%. Of this about 50% is spent on individual research grants and 20% for Research Networks.

Since 1974 the FWF has been a member of the ESF (European Science Foundation). To promote transnational research cooperation the FWF has signed agreements (the D-A-CH Agreements) with the German DFG and the Swiss SNF. In recent years, the FWF substantially expanded its activities in the field of bilateral research cooperation (joint calls with a number of partner countries). Finally, the FWF participates in about 20 different ERA-NETs.

As FWF favours the bottom-up approach, there is no thematic allocation of funds, but normally all topics concerning ERA-CAPs are funded within our broad funding portfolio.

<http://www.fwf.ac.at/en/projects/index.html> Through FWF's international funding activities 12-19 Mio Euro per year is dedicated for all different kinds of international and transnational projects and approximately 10-20 Mio Euro per year are allocated to projects in the research area of ERA-CAPs through the different funding programmes of FWF (awards, projects). FWF was a partner in ERA-PG and funded 2 projects with a combined estimated value €720.000.

### **Key Persons Involved**

Bettina Reitner is a trained aquatic microbial ecologist, who worked some years as Post Doc at the University. Here at the FWF she is responsible for projects dealing with general biology, agriculture or ecology. She is also familiar with Eurocores (e.g. EuroClimate, EuroDiversity) and ERA-Net (EuroPolar), where she has been a member of Steering Committees and Management Boards.

**Partner 3. BELGIUM: Fonds National de la Recherche Scientifique (F.R.S.-Fnrs)****Leader:** WP6. **Tasks assigned:** 1.3, 4.1, 4.2, 5.1, 6.3, 6.5, 6.6 active role in WP2 and WP3.**Brief description of the legal entity**

The Fund for Scientific Research (F.R.S.-Fnrs) is a research funding agency that promotes and supports basic scientific research in the French-speaking community of Belgium. Founded in 1928, it mainly receives public subsidies, currently from the French-speaking Community of Belgium, the Walloon Region and the Federal Government of Belgium. The Fund supports individual researchers on the basis of the criterion of excellence by offering temporary or permanent positions; funding to research teams; grants and credits for international collaboration and scientific prizes. F.R.S.-Fnrs fosters research in all scientific fields, following a bottom-up approach of investigator-driven research. Further, the Fund supports researchers in an ever growing context of internationalisation through facilitating their mobility, allowing for collaborative transnational projects and supporting a high level international working environment.

Since October 2008, Dr. Ir. Véronique Halloin is the Secretary-General of F.R.S.-Fnrs

**Activities relevant to Molecular Plant Sciences**

As described above, F.R.S.-Fnrs maintains a bottom-up strategy, which entails that researchers from all scientific domains are eligible to apply for funding. In 2009, the overall funding was of 155 M€. Public funding reaches 93% of this total. The financial support is mainly distributed between fellowships (mandates and research projects).

Molecular Plant Sciences fall under the division of life sciences, exact and natural sciences and are supported through grants for collaborative research projects and support to individual researchers in the field. The division's project budget accounts for about 11 % of the fund's annual collaborative research budget of 45M€. In 2009, over 30 new projects were funded in the field of exact, natural and life sciences accounting for a total of 5.1M€, among which are projects in molecular plant sciences. Support to individual researchers of the division reaches 15% of the fund's annual mandates budget of 97M€. Molecular plant sciences are in open competition with other scientific domains in the division and are also supported through grants for small and large equipment and mobility schemes.

The French-speaking research community in Belgium has shown a vivid interest in the theme of molecular plant sciences with research teams and academics involved at several universities and publications alike.

To date, F.R.S.-Fnrs has participated in several ERA-Net Coordination Actions at various stages: drafting of new proposals, participation to joint calls, implementation of specific tasks, organisation of network activities and workshops and other related tasks.

**Key Persons Involved**

The staff involved will be Mrs. Freia Van Hee, policy officer at the Unit of International and European Affairs as well Mr. Jean-François Chevalier, IT Technician. Support will also be provided by the Evaluation and Strategic foresight Department at F.R.S.-Fnrs.

Additional expertise will be provided by Dr. Claire Remacle, who is a Professor at the Institute of Botany and Director of the Genetics of Microorganisms research group of the Life Science Department at Université de Liège and is as such involved in molecular plant science research. She is currently the Coordinator of an FP7 supported Marie Curie Action also coordinates an FP7-KBBE research project: As a scientific advisor; she will contribute to defining the scientific content of several tasks.

**Partner 4. CANADA: National Research Centre (NRC)****Tasks assigned: active role WP1, WP3 & WP5.**

The National Research Council (NRC) is the Government of Canada's premier organization for research and development. NRC is an agency of the Government of Canada, reporting to Parliament through the Minister of Industry. NRC employs close to 4,000 people across Canada, providing substantial resources to help Canada become one of the world's top five R&D performers by 2010. NRC comprises more than 20 institutes and national programs, spanning a wide variety of disciplines and offering a broad array of services. Located in every province of Canada, NRC plays a major role in stimulating community-based innovation.

**Activities relevant to Molecular Plant Sciences**

The Plant Biotechnology Institute (NRC-PBI) is the NRC's institute dedicated to commodity and specialty crop plant biotechnology research. The Institute is located in Saskatoon, Saskatchewan, one of North America's leading ag-biotech clusters, and home to 30% of Canada's biotechnology-related research and development activities. NRC-PBI's expertise in molecular biology, plant biochemistry, and structural biology complement those of its partners in the community to make novel scientific discoveries and develop new plant-derived products to bring value to the Canadian economy. PBI researchers are focused on two main streams: the development of crops with increased yield, stress tolerance, and nutrient efficiency to improve the agriculture sector's productivity, and the development of high-value bioactives and bioproducts and platforms for their production. NRC-PBI is involved in the current ERA-PG Research Program and an existing participant in international plant functional genomics programs.

Through combined systems biology approaches, PBI researchers identify novel genes and markers to assist breeders in the development of new varieties of oilseeds with higher yield and stress tolerance, reduced input requirements, and modified oil profiles. These improvements will not only be used to increase the value to farmers, but also to address environmental, human health and energy sustainability. The Institute is also focused on using plants and their cellular machinery to produce high-value compounds for a variety of applications. Researchers at the Institute are elucidating biochemical pathways and developing novel plant and alternative production systems to produce compounds with applications in the pharmaceutical, nutraceutical, industrial, and energy sectors. NRC-PBI's mandate is to develop and employ state-of-the-art technology platforms that enhance the competitiveness of Canadian firms and the academic research community. PBI's expertise in DNA technologies, mass spectrometry, hormone profiling, bioinformatics, and plant and cell technologies are exploited by industry and research partners, providing vital support to the Canadian R&D infrastructure and international crop genomics initiatives.

**Key Persons Involved**

**Dr. Suzanne Abrams**, Research Director, Plant Biotechnology Institute. Sue has a PhD in synthetic organic chemistry and has worked for thirty years at the NRC-PBI in phytochemical research, particularly on the plant hormone abscisic acid. Since 2008 she has been responsible for direction of The Institute's research programs and technology laboratories.

**Dr. Faouzi Bekkaoui**, Associate Director Research, Plant Biotechnology Institute. Faouzi has a PhD in Plant Physiology and extensive academic and industrial experience in plant genomics research. He has managed a number of plant functional genomics research programs, joining the NRC in 2006 as Oilseed Crops Genomics Program Manager. He is responsible for The Institute's genomics activities.

**Partner 5. DENMARK: Forsknings- og Innovationsstyrelsen (DASTI)****Tasks assigned: 5.4, active role WP1 & WP3.****Brief description:**

Forsknings- og Innovationsstyrelsen (the Ministry of Science, Technology and Innovation, Danish Agency for Science, Technology and Innovation, DASTI), performs tasks relating to research and innovation policy and provides secretariat services to and supervises the scientific research councils which allocate funds for independent research, for strategic research and for innovation and which advise the political system. A key challenge for the Agency lies in translating the high political prioritisation of research and innovation into growth, prosperity and cultural development in Denmark. DASTI will cooperate with the Danish Ministry of Food, Agriculture and Fisheries, the Danish Ministry of the Environment, and the Danish Environmental Protection Agency.

Relevant experience: DASTI coordinates the ERA-NET on research within ICT and robotics in agriculture and related environmental issues (ICT-AGRI). DASTI is an active contributor to several other KBBE ERA-NETS, notably EUPHRESKO and EMIDA. DASTI has from January 2011, taken over the responsibility for the KBBE area from the Ministry of Food Agriculture and Fisheries. DASTI was a partner in ERA-PG.

Address: 40 Bredgade, Copenhagen, Denmark, 1260. [www.fi.dk](http://www.fi.dk) Or [www.dasti.dk](http://www.dasti.dk)

**Key Persons Involved**

Niels Gøtke M.Sc. is from 1 January 2011 head of Division in the Ministry of Science, Technology and Innovation, Danish Agency for Science, Technology and Innovation (DASTI). From 2003 until 2010 Niels Gøtke was in charge of research and innovation policies within the Ministry of Food, Agriculture and Fisheries, Danish Food Industry Agency (DFIA). Niels Gøtke is the Danish representative in the SCAR Committee and in the KBBE-NET Plenary group. Niels Gøtke is member of Governing Board of the JPI Agriculture, Food Security and Climate Change. Niels Gøtke has experience in the coordination and management of ERA-Nets. Niels Gøtke is the coordinator of the FP7 ERA-NET ICT-AGRI. He is the Danish representative in the Governing Boards of following ERA-nets: EUPHRESKO, EMIDA, RURAGRI and MariFish. Niels Gøtke has a M.Sc. in Economics.

Dennis Jensen M.Sc. is head of Section in the Ministry of Science, Technology and Innovation, Danish Agency for Science, Technology and Innovation (DASTI). He has a good experience of project management from working in the Danish Ministry for Fisheries, Danish Institute for Fisheries Research and in the Danish Food Industry Agency. Over the years Dennis Jensen has been involved in planning of expeditions to the high arctic, and has arranged workshops and seminars with regard to fisheries, management and the environment. Dennis Jensen also has published articles and reports on the marine biology of the high arctic and fisheries biology and is running the secretariat for the MariFish ERA-Net Call for Proposals. He has a M.Sc. in Biology from University of Copenhagen.

Per Hasselholm Mogensen M.Sc. holds a M.Sc. in Biology from University of Copenhagen. He has good experience with project management and the ERA-NET programme from his time working as head of Section in the Danish Ministry for Food, Agriculture and Fisheries, Danish Food Industry Agency. He has been involved with arranging conferences and workshops and has good experience with the management of ERA-net budgets. Per Hasselholm Mogensen is currently working with the management and coordination of the ERA-Net ICT-AGRI within DASTI.

**Partner 6. ESTONIA: Sihtasutus Eesti Teadusfond (ETF)****Leader: WP2. Tasks assigned: 1.2, 2.3, 2.4, 3.1 & active role in WP3.****General description:**

The Estonian Science Foundation (website: <http://www.etf.ee>), established in July 1990 by the Estonian Government, is an expert research funding organisation. Its main goal is to support the most promising research initiatives in all fields of basic and applied research including humanities and social sciences. ETF uses state budget appropriations to award peer-reviewed research grants on a competitive basis to individuals and to research groups. The foundation is a private body fulfilling public functions, responsible to the Ministry of Education and Research. One significant priority of ETF is supporting young scientists and creating favourable conditions for their subsequent research work. ETF is funding the projects of young researchers in the framework of a separate programme My First Grant. Since 2005, ETF has arranged the funding of post-doctoral research grants which consists of the post doctorate remuneration and a specific sum for research expenses. ETF also represents the Estonian scientific community on an international level. The Estonian Science Foundation is a member of the **European Science Foundation (ESF)**. In 2010, Estonian researchers were participant in eighteen ESF scientific programmes in different fields of research. ETF has also joined several EUROCORES initiatives. Since 2004, ETF is a member of the **EUROHORCS**.

Within the Framework Programs (FP) ETF has been a partner in eleven ERA-NET projects and is fulfilling rather demanding tasks in some of them. We have also made funding commitments in most joint calls in these ERA-NETs and funding Estonian research teams successful in other ERA-NET joint calls were Estonian was represented by an organisation which was not a funding agency.

On local context we are funding promising investigator groups working on fields related to plant biology and genomics reaching approximately € 0,6M annually.

**Key Persons Involved**

MERILI ROOGER, holds a MSc from the Tallinn University of Technology, Estonia. She is currently working as a chief specialist for the Expert Commission for Environment and Biosciences. Her duties of work are mostly administrative and coordinative. She is also a representative of ETF on international level on fields of environmental and biological sciences.

MEELIS SIRENDI, PhD, was the executive Board Member of the ETF 2002-2010 and currently working in ETF as counsellor. Since 1999 he has been involved in the EC Framework programmes as a PC member in food related thematic programs. In ETF, he is responsible person for ERA-NETs and other international issues.

ERKKI TRUVE, Professor of plant molecular biology; Vice-rector, Tallinn University of Technology. He is also member of the expert commission of Environmental and Biosciences at ETF.

**Partner 7. FRANCE: Institut National de la Recherche Agronomique (INRA)****Leader: WP5. Tasks assigned: 3.3, 4.1, 4.2, 5.1, 5.2, active role WP1 & WP3.**

INRA, Institut National de la Recherche Agronomique (National Institute for Agricultural Research) is a major actor of agricultural research in Europe (the first in terms of scientific publications on plant and animal science and on agricultural sciences). INRA is placed under the aegis of both the Ministry of Higher Education and Research and the Ministry of Agriculture and Fisheries. Its activity is defined through a quadrennial contract with these two ministries. The research conducted at INRA concerns agriculture, food, nutrition and food safety, environment and land management, with particular emphasis on sustainable development. INRA covers the whole field of agricultural research including environmental research, rural areas and rural development, food and nutrition and employs 10 200 people (among them 1,800 researchers and 1,600 doctoral students), in 14 scientific divisions. Its budget is around 700 millions €. INRA has a large and long experience of cooperation at the European and international level: it is involved in many European research projects and networks (more than 140) and is coordinating more than 40 out of them. It is also involved in coordination of national programmes (such as plant genomics). It runs strategic cooperation with other agricultural research organisations around the world and especially in Europe and with Brazil, China and India.

INRA has been involved as a partner or coordinator in the following ERA-NETs: ERA-PG: (plant genomics), EUPHRESKO (Coordination of European Phytosanitary Research), WOODWISDOM (Networking and Integration of National Programmes in the Area of Wood Material Science and Engineering) and EMIDA (Coordination of European Research on Emerging and Major Infectious Diseases of Livestock), CORE ORGANIC, FORSOCIETY. Moreover, the French Institute of Biodiversity, a joint research unit of INRA, is coordinator of BiodivERsA (Biodiversity research). INRA currently coordinates ARIMNET and RURAGRI and participates in WoodWisdom II, CORE ORGANIC II and EUPHRESKO II. It also is co-coordinator, on behalf of the Ministry of Research and Education, of the joint programming initiative "Agriculture, food security and climate change". INRA will represent France, on behalf of the French Ministries of Research and Education and of Agriculture and Fisheries.

**Key Persons Involved**

Hélène Lucas: since 2005, Hélène Lucas is the Head of the Genetics and Plant Breeding Division of INRA. Her activities include the development of a research strategy and the management of 1000 permanent staff working in 20 research units and 16 experimental units over the French territory. Initially trained as an Agricultural Engineer, she has an MsC in Plant Pathology and a PhD in plant cytogenetics. She trained in plant molecular biology during a post-doc at the Plant Breeding Institute in Cambridge, UK. Hélène Lucas is or has been involved in a number of scientific committees, and was elected on the EPSO Board (2003-2008).

Pierre Chilès: since 2004, Pierre Chilès is lawyer at the Unit of Contracts and Intellectual Property of INRA. He was involved as WP leader in the ERA-PG activities regarding the legal framework in which he drafted, with the help of the members of the IPR workgroup, the model of Consortium Agreement and Material Transfer Agreement of ERA-PG. He also participated in the SSA Epipagri for which he drafted a report on the collective management of public Intellectual Property. He has a Magistère and Master 2 in Information and Communication Technologies law and is currently performing a PhD in research law. He is guest lecturer on plant variety protection law at the Master 2 of research law and innovation valorisation of Poitiers' University.

## Partner 8. GERMANY: Deutsche Forschungsgemeinschaft (DFG)

**Leader:** WP3. **Tasks assigned:** 2.2, 3.2, 3.4, 3.6, 4.4, active role WP1, WP3 & WP5.

The DFG is the central public funding organisation responsible for promoting research in Germany. The DFG serves all branches of science and the humanities. Its activities focus on funding research projects by scientists working at universities or research institutes. Its legal status is that of an association under private law. DFG membership is made up of German universities, non-university research institutions, scientific associations as well as the Academies of Science and Humanities. The DFG receives its funding from the federal (*Bund*) and state (*Länder*) authorities. The DFG promotes scientific excellence by funding the best research projects, following a bottom-up approach of investigator-driven research. The vast majority of funds is directed towards unsolicited research proposals, which are selected on a peer review basis. In addition, the DFG advises parliaments and public authorities on questions relating to science and research.

In all its programmes, the DFG actively promotes collaboration between researchers in Germany and colleagues abroad. Special emphasis is given to strengthening European cooperation. The DFG promotes the careers of young scientists by appropriate programmes.

### Activities relevant to Molecular Plant Sciences

The DFG funded the Arabidopsis Functional Genomics Network (AFGN) with an annual budget of ca. 2M EUR. AFGN, the largest initiative within the DFG's plant genomics programme portfolio, started in 2001 and finished in 2010. It was tightly linked with the "Arabidopsis 2010 Project" of the National Science Foundation (U.S.A).

DFG also participated in the two calls of ERA-PG, providing funds of 10M EUR in total. National coordinated research programmes in the area of molecular plant science/ plant functional genomics, each established for a 6- year period, include for example the Priority Programmes SPP 1149 "Plant Heterosis" (2003 – 2009), SPP1212 "Plant-Micro: Microbial Reprogramming of Plant Cell Development" (2007-2013), SPP 1529 "Adaptomics - Evolutionary plant solutions to ecological challenges: Molecular mechanisms underlying adaptive traits in the Brassicaceae" (2011-2017, annual budget 2.2M EUR), SPP 1530 "Flowering time control: from natural variation to crop improvement" (2011-2017, annual budget 1.9M EUR). The current annual budget for the unsolicited proposals in molecular plant science, agricultural and forestry research is about 40M EUR.

### Key Persons Involved

Dr. Catherine Kistner (DFG), DFG Programme Officer in the Scientific Affairs Dept., Life Sciences Division 2, responsible for Molecular Plant Science, i.e. research proposals and coordinated programmes in plant physiology, biochemistry and biophysics, molecular plant-microbe interactions, joint calls in plant genomics (e.g. ERA-PG, AFGN, ESF EUROCORES "EuroEEFG"). She represents the DFG in the ESF Member Forum on Peer Review.

Dr. Kistner is a biochemist. She joined the DFG in 2002, after her postdoc time at the Sainsbury Laboratory in Norwich, UK. Research experience: plant molecular biology and biochemistry, abiotic stress, molecular plant pathology, plant symbioses.

Task 4.4 (Sharing and Accessing Data Arising from ERA-CAPS Funding) will be supported by Dr. Katja Hartig, DFG Programme Officer in the Life Sciences Division 2 (plant developmental biology and genetics; forestry), who is responsible within DFG for data management and corresponding infrastructures in the life sciences.

**Partner 9. HUNGARY: Hungarian Academy of Sciences (HAS)****Tasks assigned: active role WP1, WP2, WP3 & WP5.**

The Hungarian Academy of Sciences represents primarily the basic sciences in the country. HAS possesses a unique position in coordination of research and development activities because it represents the scientific community and at the same time it operates 40 research institutes through the budget guaranteed by the Hungarian Parliament. Among those there are several organizations specialized for plant research. The Institute of Ecology and Botany (Vácrátót) deals with the plant ecosystems. The Agricultural Research Institute (Martonvásár) has several projects in plant molecular biology, genetic mapping of stress responsible genes to support cereal breeding. Institute of Plant Protection Institute (Budapest) is responsible for research activities for characterizing the molecular basis of plant-pathogen interaction. In the Biological Research Center (Szeged) there is a specialized academic institute for Plant Biology. This Institute pioneered the isolation of set of plant-genes involved in cell division, stress responses and photosynthetic plant functions. In addition to the academic institutional system there are plant breeding institutes, organizations that are also involved in the use of molecular markers and of genomic approaches, productions of transgenic plants, and development of phenotyping technologies. The main universities in Hungary are also involved in plant molecular biology research and significant numbers of PhD students are participating in various topics of plant sciences. Hungarian plant science programmes cover topics including; drought tolerance in cereals; protection against oxidative stress; cell cycle; siRNA and gene function; molecular basis of plant pathogen interactions and photosynthesis.

**Support for Plant Sciences**

The Hungarian Academy of Sciences provides for its research institutes financial support from governmental budget that could cover 50% of the functional costs in these research units. There is no separate grant agency specialized for plant sciences in Hungary. The academic institutes and university departments can apply for grants in the field of basic science (OTKA). For more applied projects the grant system is managed by a governmental agency presently being restructured.

**Key Persons Involved**

**Dudits Dénes** research professor with position in the Institute of Plant Biology, Biological Research Center of Szeged. He is member of EMBO and he represents Hungary in EPSO. He was visiting professor at Medical School of Harvard University and presently responsible for courses in the field of plant cell cycle and biotechnology at Szeged University. Previously he was the Director General of the Biological Research Center. Presently he is the Vice-President of HAS responsible for life sciences.

**Dr. Éva Hegedűs**

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**Partner 10. ISRAEL: Ministry Of Agriculture and Rural Development (MOARD)****Tasks assigned: active role WP1, WP3 & WP5.**

Agricultural research in Israel is carried out by the public and the private sectors and is primarily funded by the public sector (85%), of which the Ministry of Agriculture and Rural Development (MOARD; [www.moag.gov.il](http://www.moag.gov.il)) provides the major share (approximately € 50 millions in 2009, the major part of it associated with plant science research). Other sources of funding include national, bi-national and international funds. The farming sector funds research through the production and marketing boards, and the Farmers Organization. The private sector funds the other 15% of the agricultural research, which is carried out mainly by manufacturers of agriculturally related products (e.g. fertilizers, seeds, irrigation equipment, pesticides etc.) and is partially supported by the Office of the Chief Scientist (OCS) of the Ministry of Industry and Trade.

MOARD Chief Scientist's major goals are to identify agricultural problems in which knowledge gaps exist, to determine research goals aimed to bridge such gaps, to fund such research activity and to monitor research performance.

Financial support is given for research programs within ministry units as well as to universities and other research centres.

**The major subjects** that are currently supported and controlled by MOARD Chief Scientist are:

- Agricultural biotechnology and its regulation
- Animal and Aquaculture production
- Coping with foreseen agricultural threats arising from possible future climate changes
- Economical, marketing and rural development policy
- Food safety and quality
- Horticulture and ornamental molecular and conventional breeding and production of new varieties for exportation
- Irrigation and water management (potable; brackish; recycled; desalinated)
- Marketing driven R&D for new agricultural products
- Organic farming
- Pest management aimed at reducing the use of pesticides and herbicides
- Post harvest improvement of shelf-life and surface transportation of exported fresh agricultural products
- Reducing man-power needs by improved and innovative technologies
- Sustainable agriculture

**Key Persons Involved**

**Dr. Yuval Eshdat**, Chief Scientist of MOARD [in ERA-PG: NSC, national coordinator, call coordinator]

**Dr. Orit Shmueli**, MOARD, assistant of the Chief Scientist [in ERA-PG national contact person]

**Dr Avihai Perl**, Principal Scientist, The Agricultural Research Organization, The Volcani Center, Bet-Dagan Israel [Scientific representative, plant molecular breeding]

**Partner 11. ITALY: Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR)**

**Tasks assigned: 3.7, 6.2, active role WP1, WP3 & WP5.**

**Brief description of MIUR and relevant activities:**

Ministero dell'Istruzione, dell'Università e della Ricerca, Ministry of Education, University and Research (MIUR) is the Ministry that supports and coordinates most of the research in Italy, basic and applied. All State Universities and a number of large research organizations, such as the National Council for Research (CNR) are supported by, and under the control of MIUR. MIUR also supports research of other organizations, through the launch of open national and international research programmes. Consequently, the range and variety of research activities in MIUR-supported/ controlled laboratories is quite vast, and will definitely include those that could be foreseen by the ERA-Net in Plant Molecular Sciences. MIUR participated in the ERA-Net on Plant Genomics, contributing 3 million Euros to support 6 transnational projects.

**Key Persons Involved**

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**Partner 12. LATVIA: The Latvian Academy of Sciences (LZA)****Tasks assigned: 2.1, 4.1, 4.2, active role WP1, WP2, WP3 & WP5.**

The Latvian Academy of Sciences (Latvijas Zinatnu Akademija - LZA) is Latvia's national academy of sciences dedicated to the promotion of science and high-quality research, the study and development of the history, culture, language of Latvian people and the state, Latvia's natural resources and environment. The Latvian Academy of Sciences (hereinafter – LAS) takes an active part in the development of science policy for Latvia and consultation with the government in matters of science. The LAS has responsibility for publishing scientific literature, organization of scientific conferences/ seminars, popularization of scientific achievements, maintenance of international contacts of Latvian scientists, protection and maintenance of research ethics, discussion principles and traditions.

The LAS is an autonomous legal entity; and executes its obligations and task-work assigned by the Ministry of Education and Science (MoES) on the basis of an agreement with the Ministry, thus being partly funded by the Ministry.

The LAS is involved in the designing of Latvia's science strategy, and evaluation and monitoring of state research programs and projects. Under the supervision of the MoES the LAS is involved in the management of some state research programs according to the research priorities approved by the Government for each four years. MoES has delegated the LAS, since 2008, to implement the ERA-net projects of FP7 in Latvia. The LAS is the partner in the following ERA-net projects: Matera+, SmartGrids, Ruragri, ICT-Agri, Wood-WidomNet-2, EuroNanoMed, Priomedchild. Apart from this, the LAS represent the national government also in COST, EUREKA, European Joint Initiatives, Eurostars and BONUS programs.

Studies in plant science are carried out in the framework of the National Research Programme "Sustainable use of local resources (underground, forests, food and transport): new materials and technologies" (2010-2013). In addition, several grants (competitive) are conducted in plant Sciences including: 1. Vascular plant flora and vegetation in Latvia; 2. Identification and functional characterization of molecular mechanisms of hypersensitive response and disease resistance in barley (*Hordeum vulgare* L.); 3. Biological diversity at genetic, species, ecosystem and landscape levels; 4. Adaptive changes of genetic polymorphism of cultivated plants under selection and environment influence; 5. Biological plant protection, maintenance of biological diversity and plant mineral nutrition under conditions of global change.

**Key Persons Involved**

Anita Draveniece holds a Ph.D and MSc. in geography from the University of Latvia. She is working for international research collaboration at the LAS, which includes cooperation with learned societies, scientific unions and associations and representation of science of Latvia in international scientific organizations. She has been working as a program officer for bilateral scientific collaboration programs in the frames of bilateral inter-academy agreements. Over the recent six years she has been involved in analysis and reporting on issues dealing with R&D system and policy in Latvia and over the same period is leading the group of international relations of the LAS. Over the last decade she has been involved as a coordinator in execution of one international project and several national research grants. Dr. A. Draveniece is an expert of the Latvian Council of Science.

**Partner 13. NEW ZEALAND: Foundation for Research Science and Technology (FRST)**

**Tasks assigned: active role WP1, WP2, WP3 & WP5.**

The Foundation for Research, Science & Technology is the main science funding agency for new Zealand. It invests approximately €250 million a year in science and technology research on behalf of the New Zealand Government. The investments cover a range of areas that support New Zealand's economy, environment and society.

A key area is research into solving the productivity, sustainability, product quality and market access challenges that face New Zealand's bio-economy. From forage development for the pastoral livestock production to quality-enhanced fruit, vegetable and forestry varieties, plant molecular science is an important component of this research and covers a range of activities including genetics, genomics and use of this information in biological systems.

**Key Persons Involved**

**Dr Prue Williams**

Chief Science Advisor

Dr Prue Williams (BAgrSci(hons), PhD) is the Chief Science Advisor to the Foundation for Research, Science & Technology. She has a twenty year career in research followed by six years of research management experience. Her current role is to provide advice on science quality, international linkages and research capability that is used in funding decisions. Dr Williams has been involved with EU Framework 6 and 7 Programmes since 2003 as an evaluator and expert. She was part of a New Zealand consortium that participated in a very successful FP6 Specific Support action project (Food FRENZ) that brought together researchers from Europe and New Zealand to develop collaborative links on animal welfare, sustainable production, food safety and personalised foods.

**Suzanne Bertrand**, Director International Linkages, Ministry of Research, Science & Technology

**Karla Falloon**, Science Counsellor, Ministry of Research, Science & Technology

**Partner 14. THE NETHERLANDS: Nederlandse Organisatie Voor Wetenschappelijk Onderzoek (NWO)**

**Leader: WP4. Tasks assigned: 1.4, 4.2, 4.3, 4.4, active role in WP3 & WP5.**

NWO, the Netherlands Organisation for Scientific Research, promotes (the quality of) basic research at Dutch universities and research institutes. A key element in this endeavour is delivered through Open Competitions, with the best proposals in such a round receive funding. NWO is mainly funded through the national government (~600 M€ annually). Its predecessor was established by an Act of Parliament 60 years ago. The organisation comprises eight research divisions, among which is the division for Earth and Life Sciences. NWO is an active participant in several international activities like being a member of the European Science Foundation and EUROHORCS.

Plant Science fits very well within the Dutch research strategy and in 2011 the Netherlands' government has declared Horticulture and Agrofood as an economic priority area. On the one hand, through Open Competitions over all scientific disciplines, NWO provides basic funding for innovative applications. Applications in the field of plant sciences prove to be very competitive and successful in this respect. Complementing the Open Competitions, are the thematically focussed initiatives. The Netherlands Genomics Initiative (NGI) for instance, supports plant genomics, performed at the Centre for BioSystems Genomics (CBSG) by 4 M€ a year. Other initiatives, like its Systems Biology programme CSBR may result in major plant science initiatives, as well. Traditionally, the Netherlands are very much involved in plant breeding. As a consequence Dutch research are interested in a wide range of plant biotechnology research. Another consequence is the private sector being strongly involved in research, for instance within CBSG and the Technological Top Institute for Green Genetics (TTI-GG). All these activities rely heavily on sharing and exchanging facilities with partner countries, mostly within Europe.

The NWO division Earth and Life Science and the TTI Green Genetics implement a joint fundamental plant science research programme. The Dutch Graduate School 'Experimental Plant Sciences' also is financed by NWO, resulting in PhD students receiving a state of the art education. In total NWO and NGI provide an estimated 6 million Euros per annum to fund plant science initiatives that, in competition with other proposals, showed most scientific promise.

NWO has been involved in approximately 20 ERANETS in FP6 and participated in about 10 transnational calls, in 4 of these NWO ran the secretariat and organised the peer review procedure for the common call. NWO participates annually in 3-4 calls of the transnational ESF EUROCORES scheme.

**Key Persons Involved**

**Dr. Frans Martens** is director of the division for Earth and Life and also responsible for the NWO-theme 'Systems Biology'. He is a member of the ESFRI road map working group for Environment. He is also involved in several ERA-nets within the life sciences.

**Dr. Theo Saat** is senior programme manager at the Division Earth and Life Sciences for a.o. plant sciences, He is manager for the national programmes "Centres for Systems Biology research" and "Ecological Risks of Genetically modified Organisms (ERGO)". He also participates in management committees of several ESF Eurocores in the biological field.

**Partner 15. NORWAY: Norges forskningsråd, Research Council of Norway (RCN).****Tasks assigned: 4.5, active role WP1, WP3 & WP5.**

RCN has an annual budget of more than 600 million EUR and plays a central role in Norwegian research. The mandate of RCN is to promote and support basic and applied research in all areas of science, technology, medicine and the humanities. Important goals include raising the general level of the understanding of research in society as a whole and supporting innovation in all sectors and branches of industry.

The Research Council of Norway is a strategic body which identifies areas of special effort, allocates research funds and evaluates the resulting research. RCN is the principal research policy adviser to the government, and it acts as a meeting-place and network-builder for Norwegian research.

RCN is organized in four research divisions, one division for administrative affairs and one international unit organised directly under the Director General.

RCN carries the national responsibility for the management of EU framework programmes for research and technological development. The broad thematic and horizontal approach of the framework programme is reflected by the way EU-R&D-management is organised in the Research Council: departments being responsible for national R&D-programmes also host contact points for the respective activity in the framework programme. In addition to providing information and guidance to Norwegian stakeholders from industry, academia and authorities on European collaborative research, the Research Council also plays a role as an entry point for researchers and students from other countries.

Plant molecular science has been funded by two major national activities. Firstly, our national strategic program on functional genomics (FUGE) for the past 10 years, and, secondly, by our open arena for basic research. We are currently working out a new strategic research program, and expect plant biotechnology to be part of this program. Although the part of the program dedicated to plant biotechnology is still uncertain, we believe that we and our researchers will benefit from participation in ERA-CAPS. RCN also supports relevant research through independent programs such as The Food Program, Nature-based Industry, and Clean Energy for the Future.

**Key Persons Involved**

The person in charge for the ERA-NET ERA-CAPS is Senior adviser Dr. Monica Bergem. She holds a MS in plant sciences and PhD in molecular genetics. She is currently the program coordinator of our national strategic program on functional genomics<sup>51</sup>.

The high level group representative will be Dr. Kristin Danielsen, director of the dept. of the Knowledge-based Bio-economy at RCN. She holds a PhD in animal nutrition and is administrative responsible for several national research programs related to the knowledge-based bio-economy (food and non-food) and biotechnology.

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**Partner 16. POLAND: Narodowe Centrum Badan I Rozwoju (NCBiR)**

**Tasks assigned: active role WP1, WP2, WP3 & WP5.**

NCBiR is a Polish government-funded agency that operates since July 1, 2007 under the law of June 15, 2007 on the National Centre for Research and Development (Journal of Laws no. 115, Item 789 of 2007). The main task of the NCBiR is to manage and implement strategic scientific research and development programmes. The tasks of the NCBiR include support for commercialization and other forms of transferring the scientific research results to the economy, ensuring solid conditions for scientists development, particularly the participation of young scientists in research programmes and implementation of international scientists mobility programmes. In addition, the NCBiR implements the tasks commissioned by the Minister of Science and Higher Education. In 2007 it was granted ERA-NET and EUREKA projects and asked to supervise contracted research projects. NCBiR is presently involved in over 20 various ERA-NET projects. Total budget in 2008: 115 M€.

**Key Persons Involved**

Person responsible for ERA CAPS project in NCBiR is Piotr Skurzyński. In NCBiR he is a project coordinator of various research projects in a field of natural sciences. He received M.Sc. in biology at the University of Gdansk and was granted a fellowship at the University of the West of Scotland. He received diplomas in postgraduate studies in European Studies at the Department of Law at the University of Gdansk, at the Centre for European Regional and Local Studies at the University of Warsaw and at the Kozminski University, and in Social Sciences at the Collegium Civitas in Warsaw.

**Partner 17. PORTUGAL: Fundacao Para A Ciencia E A Tecnologia (FCT)**

**Tasks assigned: 3.5, 3.7, 4.4, 6.2, active role WP1, WP3 & WP5.**

**Organisation**

Fundação para a Ciência e Tecnologia (FCT) is the Portugal's main funding agency for research and it is responsible for following the bilateral and multilateral international agreements in science and technology. FCT is a public autonomous institute under the aegis of the Ministry of Science, Technology and Higher Education. FCT covers all fields of science, from natural sciences to humanities, normally in a responsive mode, aiming at capability enhancement and research excellence.

FCT's mission consists in continuously promoting the advancement of scientific and technological knowledge in Portugal, exploring opportunities that become available in any scientific or technological domain to attain the highest international standards in the creation of knowledge, and to stimulate their diffusion and contribution to improve education, health, environment, and the quality of life and well being of the general public. This mission is mainly accomplished through the financing subsequent to the evaluation of the merit of proposals presented by institutions, research teams or individuals in public open calls, and also through cooperation agreements and other forms of support in partnership with universities and other public or private institutions.

FCT's budget for 2009 is around 660 million €. Funding is structured around the following schemes: promotion of training and career development (fellowships, scholarships, mainly for PhD, Post-doc and PhD in industry), support of centres of excellence (associated laboratories) and research centres (institutional funding), support to infrastructures, promotion and development of scientific activity (research projects) and for diffusion of scientific culture.

FCT's research programme supports competitive research activities that for evaluation and management purposes are sub-grouped in thematic areas. Research on Molecular Plant Sciences is considered under the "Agronomy and Forestry" and "Biological Sciences and Biothechnology" sub-programmes. Moreover in 2009 a call was launched for the "Isolation and Characterization of the *Quercus suber* ESTs", this call is the first step of an initiative aiming to producing the *Quercus Suber* DNA chip. FCT also provides the institutional framework for the Research Councils. The Research Council for Natural Sciences and Environment will be in the future the main responsible for setting up priorities and propose specific research programs in Biodiversity research. FCT has experience in coordinated actions at national level (join calls with other Ministries) and at the European level; FCT participates in several ERA-Nets coordinated actions.

**Key Persons Involved**

The key persons to be involved in ERA-CAPs on behalf of FCT is Catarina Resende who is responsible for the project management of the Bio-cluster of ERA-NETs at Fundação para a Ciência e a Tecnologia (FCT). She has a MSc. in Biology, and studied at the University of Lisbon. She got her Ph.D. in Microbiology from the University of Lisbon. Dr. Resende performed postdoctoral studies at the University of Amsterdam, The Netherlands (Marie Curie fellowship), and at EMBL, Heidelberg (FCT fellowship). Since 2006 she is manager of Science and Technology at Fundação para a Ciência e a Tecnologia (FCT). In regard to data sharing and access FCT will count on the support of the Knowledge Society Agency (UMIC), a sister agency within the Ministry of Science, Technology and Higher Education of Portugal which is responsible for e-Science, including that related to data repositories.

**Partner 18. SERBIA: Ministarstvo Prosvete I Nauka (MPN)****Tasks assigned: 2.1, 2.2, 2.3, active role WP1, WP3 & WP5.****Brief description of the organisation:**

The Ministry of Education and Science is responsible for the implementation of the National Research Programs. The Department for Technological Development of the Ministry conducts activities related to: monitoring in relation to technology and technology solutions, technology programs and projects, industrial research, innovation programs, knowledge transfer and technology with innovation and regional development, cooperation between science and economy, innovation centres (science parks, technology parks, scientific and technological parks, incubators of technology companies, centres for technology transfer and business innovation centres), involvement in making the certificate for the application of technology and technological solutions and work related with the normative regulations. Technological Research projects are financed from the budget which is annually adopted and planned for 4 years. The planned budget for 2011 for the Technological Programs is around 2.500.000.000 RSD, of which around 1.000.000.000 RSD will be for Plant sciences projects. A second national program is the Basic Sciences program with a budget of 4.100.000.000 RSD which will devote around 168.000.000 RSD for research projects in the field of Plant Sciences.

**Previous experience:**

The Department for International Cooperation and European Integration, within the Ministry, administers activities linked to RTD activities on EU and international levels and manage the FP7 NCP network. The Ministry is one of the project partners in WBC-INCO.NET, with the main objective to coordinate Research Policies in the Western Balkan Countries.

The Ministry participate(d) in 8 FP6 SSA projects and 12 FP7 projects, and supported activities in several other FP7 projects as advisor or data provider.

**Key Persons Involved**

SURNAME, First Name: NEDOVIĆ, Viktor. Born in Serbia, in 1964, PhD in Biotechnology. He is a professor at Faculty of Agriculture, University of Belgrade. His present position is assistant minister in the Ministry of Science and Technological Development. He is responsible for conducting the Ministry's policy in terms of international cooperation in science and technology. His portfolio comprises the country's association to the Framework Programme 7, support for the inclusion of research institution in the FP7 projects, international bilateral and multilateral cooperation, EU integration process, CARDS/ IPA funds in RTD, EUREKA, COST and other EU programs in Science and Technology, NATO Science for Peace and Security Programme, nuclear safety, country cooperation with IAEA etc.

SURNAME, First Name: DUKIĆ Željka. Born in Croatia, in 1974. She graduated in Biology (MSc) at the University of Belgrade. Ms Dukić is adviser in the Ministry of Science and Technological Development. She is mainly responsible for coordination of the program of EU in the field of Health, Food, Agriculture and Biotechnology and INCO. She is involved in European cooperation in the field of scientific and technical research (COST) and bilateral scientific program with several European countries.

**Partner 19. SPAIN: Ministry of Science and Innovation (MICINN)****Tasks assigned: active role WP1, WP3 & WP5.**

The Ministry of Science and Innovation (MICINN) is a research and development funding agency acting under the Spanish Government. The ministry was established in April 2008, and assumed almost all the R&D political responsibilities that had formerly been divided among other ministries (mainly Education and Science, Health, and Industry). MICINN issues non-thematically oriented, bottom-up calls, and thus there is no specific programme on Plant Sciences in Spain. The general policy and strategy is defined, every four years, in the ***National Plan for Research, Development and Innovation***. The General Directorate for Research manages yearly calls for proposals within the ***National Programme of Fundamental Research***. Projects in Plant Science are mainly funded within the areas of Agrifood and Biotechnology. The annual budget for research proposals in this field has been around 12 M€ (9 M€ for national and 3 M€ for international programmes) in the last years. This budget does not include the salaries of the researchers, which are paid by the hosting institutions, or fellowships, which are covered by separate training and mobility programmes. The Directorate General for International Cooperation manages the ***National Programme of R&D Internationalization***, which includes funding transnational calls within the ERA-NET scheme. MICINN has participated and/ or participates in ERA-PG and in other ERA-NETs in the field of life sciences, like ERASysBio, ERA-IB and PathoGenoMics. In the last two cases, MICINN has led the work packages related to implementing transnational joint calls

**Key Persons Involved****Dr. Rosa Rodríguez Bernabé**

Degree in Biology (1975) and PhD in Immunology (1979) from Universidad Complutense de Madrid. She was research scientist at the Basel Institute for Immunology (1989-91). In her career as research programme manager, she achieved the head of the Life Sciences and Agrifood Technical Department in 1994. In 2008 she became deputy Director General for International Programmes. Returned to the Technical Department in 2011, she is responsible for scientific management and coordination of the National Programme of Fundamental Research in the Fundamental Biology, Biomedicine, Biotechnology, and Agrifood areas.

**Prof Victoriano Valpuesta**

Professor at the Department of Biochemistry and Molecular Biology of the University of Málaga where he achieved the tenure as full Professor in 1990. Main research interest has been evolving along years moving from enzymology of nitrogen metabolism to molecular studies on stress and developmental processes in plants. His most recent research addresses the use of functional genomics tools in the on-going research on plant development. Focus of his research is in both basic and applied field. As result of his research activity, he has published more than 70 papers in international peer-reviewed journals and has been Major Professor of 25 PhD Thesis. At present he has an appointment as scientific manager in the Spanish National Programme of Fundamental Research, Biotechnology area, plant-based projects.

## 2.3 CONSORTIUM AS A WHOLE

ERA-CAPS will bring together funding organisations from 24 different countries in the first instance. The majority of the countries represented are European, but importantly for gaining a wider perspective, several non-European countries are also involved. Many of the partners have collaborated with each other before in a variety of different transnational programmes or bilateral agreements. The most notable of the prior collaborations was through ERA-PG; 13 of the ERA-PG partners are involved in ERA-CAPS as either full partners or Observers. As ERA-PG was a very successful ERA-NET that delivered two joint calls totalling €55 million of partner contributions, we have every confidence that similar success can be achieved in ERA-CAPS. The willingness of ERA-PG partners to continue with and build on their successful collaboration was a significant driver in developing this proposal.

It must be recognised that the European and global research landscape is changing; countries that were not previously visible, or at the forefront of plant science research, are developing and expanding their science bases. Hence a key difference between the proposed ERA-CAPS network and ERA-PG is that ERA-CAPS will significantly extend its membership to include several new countries, particularly from Central and Eastern Europe (Estonia, Hungary, Latvia, Poland, Slovenia, Serbia, and Turkey). This is very important if the network is to be representative of the majority of Europe. Many of these countries have excellent scientists and unique resources which would be of great value to transnational programmes. Likewise ERA-CAPS has extended its global membership to now include India, Japan, New Zealand and the USA. An important facet of this programme is to identify the assets brought into the network by the inclusion of the new member countries and funding organisations. In return, partnerships with countries already active in large-scale transnational programmes should bring benefits to the new members. We will work to cultivate relationships between the new members and the pre-existing partners from ERA-PG to the mutual benefit of all concerned.

The long-standing partners that are well-versed in large international collaborations will bring a wealth of appropriate experience to the consortium which will be balanced by fresh views and possible new approaches from the new members gained through their previous experiences of cross-border working. These considerations have informed our decisions concerning which members should lead on the various work packages and key tasks therein.

### 2.3.1 Allocation of tasks

The overall allocation of tasks within the various work packages is outlined in Table 2.3A. BBSRC (UK) will take the lead for Work Package 1: Developing a Common Agenda. This WP largely sets the scene for the rest of the programme and (with WP5) will be critical for ensuring the long-term sustainability of the network beyond the timeline of this programme. The three main tasks within this WP will be shared between BBSRC, ETF (EE) and NWO (NL) with assistance from F.R.S.-Fnrs (BE); all organisations that have substantial international collaborations, are well versed in setting strategic agendas and with large (UK and NL) and active national plant science programmes. Moreover, they are all organisations that have the capacity and experience to organise the strategic workshops contained within the WP using in-house resources.

The second work package 'Integrating new members' will be lead by ETF (EE) who are active in many European programmes including ERA-NETs (FP6 and FP7) and ESF EUROCORES<sup>52</sup>.

<sup>52</sup> <http://www.esf.org/activities/eurocores.html>

**Table 2.3A Allocation of tasks within work packages**

		<b>Task leader</b>	<b>Assisted by</b>
<b>WP1</b>	<b>Developing a common agenda</b>	<b>BBSRC</b>	
Task 1.1	National programmes content and strategy	BBSRC	
Task 1.2	Strategic workshop 1	ETF	BBSRC
Task 1.3	Existing transnational activities	BBSRC	F.R.S.-Fnrs
Task 1.4	Developing a shared vision and strategy	NWO	
<b>WP2</b>	<b>Integrating new members</b>	<b>ETF</b>	
Task 2.1	Capacity survey	LZA (MPN)	ETF, FRST, F.R.S.-Fnrs HAS-SEC, LZA, NCBiR, MPN, Observers.
Task 2.2	Key facilities and personnel survey	MPN (DFG)	
Task 2.3	Requirements survey	ETF (MPN)	
Task 2.4	Dedicated session within strategic workshop 1	ETF	
<b>WP3</b>	<b>Funding transnational research</b>	<b>DFG</b>	
Task 3.1	Information exchange on call procedures	ETF	DFG
Task 3.2	The first ERA-CAPS Call	DFG	
Task 3.3	Updating IPR-related documents	INRA	
Task 3.4	Final ERA-PG Status Seminar and brokerage event	DFG	
Task 3.5	Evaluation of the ERA-PG research programme	FCT	
Task 3.6	The second ERA-CAPS Call	DFG	
Task 3.7	Evaluation of the ERA-CAPS calls	FCT	MIUR
<b>WP4</b>	<b>External engagement and data management</b>	<b>NWO</b>	
Task 4.1	Establish and enhance links with relevant national, European and global initiatives	LZA	F.R.S.-Fnrs & INRA
Task 4.2	Enhance ERA-CAPS visibility and facilitate information flow	LZA	F.R.S.-Fnrs NWO
Task 4.3	Developing standards for research outputs	NWO	
Task 4.4	Sharing and accessing data arising from ERA-CAPS funding	FCT	BBSRC, DFG & NWO
Task 4.5	Exploiting infrastructures	RCN	INRA
<b>WP5</b>	<b>Developing a self-sustaining network</b>	<b>INRA</b>	
Task 5.1	Building sustainable collaboration	INRA	F.R.S.-Fnrs
Task 5.2	Strategic workshop 2	INRA	
Task 5.3	Integrating new ideas and requirements into a flexible call structure	BBSRC	
Task 5.4	Developing mechanisms to ensure self-sustainability	DASTI	
<b>WP6</b>	<b>Coordination, communication and dissemination</b>	<b>F.R.S.-Fnrs</b>	
Task 6.1	Reporting requirements	BBSRC	
Task 6.2	Organise ERA-PG Status Seminar/ ERA-CAPS Grant-holders workshops	BBSRC	MIUR, FCT
Task 6.3	Extranet	F.R.S.-Fnrs	
Task 6.4	Database	DASTI	
Task 6.5	Website	F.R.S.-Fnrs	
Task 6.6	Publications	F.R.S.-Fnrs	
<b>WP7</b>	<b>Management</b>	<b>BBSRC</b>	
Task 7.1	Programme Coordination Office (PCO)	BBSRC	
Task 7.2	Consortium Meetings	BBSRC	
Task 7.3	Reporting requirements	BBSRC	

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All the remaining new partner countries (FRST, F.R.S.-Fnrs, HAS-SEC, LZA, NCBIr, and MPN) and new Observers (EPSO, DBT, MIPAAF, JST, MAFF and NSF) will be actively involved throughout all of WP2.

Work Package 3 (Transnational Research Programme) will be lead by DFG (DE). DFG have a wealth of experience in all aspects of running calls for proposals and peer-review as their main business is to promote scientific excellence by selecting and supporting investigator-driven research. Their current annual budget for the Individual Grants scheme (i.e. excluding Priority programmes) is 26M€ in molecular plant science, plus 14M€ for agricultural and forestry research. DFG also actively promotes international collaboration between its researchers and colleagues from other countries with special emphasis being given to strengthening European cooperation. As a large organisation with substantial resources at its disposal, DFG will establish the Call Secretariat for the first ERA-CAPS call.

Other task leaders in WP3 are INRA (FR) and FCT (PT). INRA will lead on updating IPR-related documents and can draw on their experience of leading related tasks in ERA-PG (Development of financial and legal frameworks). FCT will lead on the evaluation and impact assessment for the ERA-PG and ERA-CAPS research programmes within WP3 as they lead similar tasks in other ERA-NETs.

NWO will lead Work Package 4 and task 4.3: External Engagement and Data Management. The Netherlands hosted the Central Coordinator of ERA-PG and as a result has an enviable knowledge of the other initiatives and networks that operate in the same arena as ERA-CAPS. During the lifetime of ERA-PG they established and maintained good links with other European initiatives, such as EPSO and ETP Plants for the Future, which will provide ERA-CAPS with a solid base from which to implement closer relationships. Other task leaders in WP4 are LZA (LV), F.R.S.-Fnrs (BE), INRA (FR), FCT (PT) and RCN (NO).

The Latvian Academy of Sciences (LZA) will lead on the networking tasks under External Engagement. LZA have gained considerable experience in ERA-NETs and have been active partners in nine projects within the ERA-NET and ERA-NET+ schemes since 2008. In one of these (ICT-Agri) they have an active role in the work package on "Establishing and maintaining a framework for long term network and collaboration". They will draw on the experience gained in this task to perform their tasks in ERA-CAPS.

LZA will be assisted in these tasks by F.R.S.-Fnrs and INRA. The staff from these agencies have experience of leading tasks in other ERA-NETs and as well as having abundance wide range of contacts, have expertise in international working, evaluation and strategic planning. In addition, F.R.S.-Fnrs are located in Brussels making them well placed to make contact with many of the other European funding initiatives that ERA-CAPS hopes to work alongside. INRA's links with other major initiatives, such as the FACCE-JPI, will help to facilitate the information flow into and out of ERA-CAPS.

FCT will lead task 4.4 which is concerned with the access and sharing of data in the plant science community. They will also draw on the expertise of staff in Portugal's Knowledge Society Agency (UMIC), under the Ministry of Science, Technology and Higher Education, as they have been involved in cross-Europe meetings organised by the EC and are at the forefront of discussions about promoting and facilitating open access of research data. BBSRC and DFG will assist with this task; both agencies have experience in this area which will be greatly assisted by the close

links that BBSRC has with EBI-EMBL<sup>53</sup> at Hinxton, Cambridge, the ELIXIR<sup>54</sup> project and BBSRC's own Genome Analysis Centre (TGAC)<sup>55</sup>. Moreover, BBSRC funds the coordinator of MASC<sup>56</sup> (the Multinational Arabidopsis Steering Committee) and GARNet<sup>57</sup> (the Genomics of Arabidopsis Research Network), providing a direct link to these. BBSRC has been active in the data sharing policy area since the launch of its own policy in 2006/07. BBSRC were also active in the steering group of the workshop which produced the Toronto principles in pre-publication data release. DFG is dedicated to the strategies and tasks laid out in the 'EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for actions'<sup>58</sup>. Within this framework, DFG has taken the lead on the task aiming at the establishment of a "world-class research infrastructure" for Europe. Experience and contacts originating from this activity will benefit the work performed in task 4.5. DFG also actively promotes 'Open access to the output of publicly funded research and permanent access to primary quality-assured research data', another vision of the above-mentioned Roadmap, by a dedicated working group that will feed into task 4.4.

RCN will lead task 4.5 which is concerned with exploiting infrastructures. Norway has an active interest in the coordination of infrastructures for life sciences, and RCN manages the national instrument on large and medium scale research infrastructure in Norway. Part of this general program has been a systematical building of biotechnological research infrastructure platforms for bioinformatics, proteomics, structural biology and molecular imaging. At the moment particular focus has also been on e-infrastructure with the establishment of NELS – Norwegian E-infrastructure for Life and a proposal to host a node of the ELIXIR network on bioinformatics. INRA will also assist RCN in this task. INRA has developed an expertise in the field of data storage and management and is involved in several national and European initiatives in the field of bioinformatics.

WP5 is concerned with the development of a self-sustaining network for ERA-CAPS continuation beyond the time-frame of the current EC funding. This is to be lead by INRA, with assistance from F.R.S.-Frns, BBSRC and DASTI (DK). INRA's position as coChair of the Agriculture, Food Security and Climate Change Joint Programming Initiative (FACCE-JPI) and as manager of its secretariat, makes it ideally placed to identify routes to the long-term future of the network. The involvement of INRA in numerous European and international collaborations will ensure its capacity to develop a shared foresight vision for Plant Science in Europe. BBSRC are active partners in many ERA-NETS (including ERA-PG) and ESF EUROCORES, as well as other large international funding programmes, and therefore are well placed to lead task 5.3 'integrating new ideas and requirements into a flexible call structure'. Likewise DASTI have significant involvement in multiple ERA-NETS (including ERA-PG) and other European initiatives making them well placed to explore ideas for developing mechanisms to ensure the self-sustainability of the network under task 5.4.

Work Package 6 on Coordination, communication and dissemination, will be led by F.R.S.-Frns. They are leading on tasks 6.3 and 6.5 (extranet and website) with staff who benefit from extensive experience of communication activities. These include a Senior Researcher who worked for the European Commission, DG Research, as a Communication and Policy officer and who also designed the architecture of the new Frns website, as well as writing and editing the funding and

<sup>53</sup> <http://www.ebi.ac.uk/>

<sup>54</sup> <http://www.elixir-europe.org/page.php>

<sup>55</sup> <http://www.tgac.bbsrc.ac.uk/>

<sup>56</sup> [http://www.arabidopsis.org/portals/masc/MASC\\_Info.jsp](http://www.arabidopsis.org/portals/masc/MASC_Info.jsp)

<sup>57</sup> <http://www.garnetcommunity.org.uk/>

<sup>58</sup> EUROHORCs-ESF Science Policy Briefing 33, available at <http://www.esf.org/publications/science-policy-briefings.html>

policy sections. Also a Policy Officer who has experience in drafting press releases, leaflets, website contents and newsletters of scientific content in the framework of transnational projects supported by the European Commission and by the United Nations, and an ICT Technician who is currently the administrator of the CMS and who has designed websites, such as the EURAXESS portal for the French-speaking Community of Belgium<sup>59</sup>. MIUR (IT) and FCT will host the grant holder's workshops under task 6.2. Both organisations have the expertise, resource and experience of hosting European meetings and conferences. FCT organised an excellent conference for the final ERA-PG grant-holders meeting.

DASTI will lead on task 6.4, the ERA-CAPS database. DASTI are well placed to lead on this task, having developed the ICT-AGRI Meta Knowledge Base - (a web based tool for mapping and analysing research and development activities) and have the necessary skills and personnel to manage this resource.

As the Central Coordinator, BBSRC will take the lead for Work Package 7: Management. BBSRC has considerable experience of managing large international work programmes, both within Europe and more widely. BBSRC is an active partner and Work Package leader for several ERA-NETs and is co-chair (with INRA) of the Joint Programming Initiative on Agriculture, Food Security and Climate Change. BBSRC has the capacity and resource to establish the Programme Coordination Office and draw on other support services within BBSRC as required.

### Third Country Partners

We are very pleased that several non-EU 'associated third countries' are partners in the consortium (Israel, Norway and Serbia). Likewise we are very pleased that two non-associated third countries (Canada and New Zealand) are partners in ERA-CAPS. This expanded membership will provide a valuable insight into the wider global landscape of plant science research. These countries have very strong relevant research bases, both in academic institutions and specialist centres. Therefore, their involvement provides an excellent opportunity for European scientists to collaborate with other expert researchers, as well benefiting the funding organisation representatives through gaining insight into the policy priorities and strategies employed by these organisations.

Scientists from Israel traditionally have strong links with the US but also with many European partners. The many close collaborations existing between scientists from EU countries and from Israel were clearly visible in the joint calls of ERA-PG in which Israel also participated. Having access to the very high quality basic research in Israel is of interest to many European plant scientists. One area of intensive collaboration is plant resistance to abiotic and biotic stresses. In addition, Israel is geographically close to Europe which facilitates the exchange of staff and materials.

Norway was an active partner in ERA-PG and funded projects in the first joint call. The Research Council of Norway has a large program on Biotechnology and Functional Genomics (FUGE) that has been running for 10 years with an annual budget of 18M€. A new program will succeed this one next year and plant biotechnology will be an important part of the new program. RCN also supports independent projects in plant sciences.

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<sup>59</sup> <http://www.euraxess-cfwb.be>

Serbia's participation in the network is through the Ministry of Education and Science. In 2011 they have increased the number of researchers they fund to do agricultural science by 30%. The budget for 2011 for Technological Programs is around 2.500.000.000 RSD of which around 1.000.000.000 RSD (10M€) is for plant sciences projects. In addition the Basic Sciences national program has a budget of 4.100.000.000 RSD of which around 168.000.000 RSD (17M€) will be for research projects in the field of plant sciences.

Canada was involved in the previous ERA-NET in plant sciences, ERA-PG, and participated in the second ERA-PG joint call, building on a strong overlap in research interests, e.g. long-standing collaborations in Brassica and wheat research. It is also a partner in the Plant-KBBE calls. Plant science in both Canada and Europe will strongly benefit from the continued interaction.

Current fields of scientific collaboration between Europe and New Zealand include plant biotechnology and physiology, such as photosynthetic hydrogen production and biofuel production in algae, and plant-microbe interactions. New Zealand also places strong emphasis on productivity and sustainability, from forage development to quality-enhanced fruit, vegetable and forestry varieties.

### Observers

Finally, there is the opportunity for organisations who are not able to be ERA-CAPS Partners, to have Observer status. These organisations fall into four categories; 1) Countries outside of the European Union (Brazil, India, Japan, the USA); 2) Organisations from a country that is already represented, i.e. a second organisation from the same country where their remit is different but still relevant (ANR, Fr; MIPAAF, It); 3) Organisations from EU members that are unable to commit to being ERA-CAPS Partners at the present time (due to e.g. internal financial pressures or restructuring of their science funding, Slovenia); and 4) An organisation that is not a funding agency but represents a large sector of the plant sciences community e.g. EPSO. Observers will be invited to attend meetings, can contribute to the surveys and foresight exercises, attend workshops and participate in other networking activities. However, Observers will not have a vote and will not be able to receive funds for staff effort. Where the Central Coordinator considers it appropriate they may be reimbursed for travel and subsistence costs.

The Department of Biotechnology (DBT) of India, an International Cooperation Partner Country, has requested Observer status. Likewise we are pleased that the European Plant Science Organisation (EPSO) has requested formalised observer status in ERA-CAPS. The other ERA-CAPS Observers represent the Agence Nationale de la Recherche (ANR) from France, the Japan Science and Technology Agency (JST), the Ministry of Agriculture, Forestry and Food (MAFF) from Slovenia and the National Science Foundation (NSF) of the USA

India is increasing its investment in plant sciences research significantly through funding from the Department of Biotechnology (DBT) and the Indian Council for Agricultural Research (ICAR). Particular priorities are disease resistance and stress tolerance, as well as a focus on the supporting technologies such as a rapidly developing genomics capability backed up by access to extensive sources of germplasm. India is quickly becoming a significant player in international plant science research as recent joint initiatives with many European countries and the Bill and Melinda Gates Foundation testify.

Japan has a strong research base in many aspects of plant science, including secondary plant metabolism, metabolomics, plant-microbe interactions, parasitic plants, plant hormone research and plant development, and photosynthesis research, e.g. on model algae. European scientists

can profit from the highly developed research infrastructure as well as the complementary expertise of Japanese colleagues.

Links between Europe and the US have been strong in all fields of plant science for many years. Many of the high profile European plant researchers have spent part of their scientific career in the US and maintain intensive collaborations with their colleagues at former host institutions and beyond. There have been a number of bilateral calls from European funding organisations and the NSF in the field. Information flow between the funders of plant science in Europe and the US will be strongly facilitated by having NSF participating as an observer in ERA-CAPS.

The Agence National de la Recherche were the French partners in ERA-PG and provided substantial funding for 14 projects through the second joint call (ANR had not been established at the time of the first call). ANR fund a number of large plant science programmes including genomics and biotechnology, as well as the French contribution to the PLANT KBBE consortium. In addition, in the frame of a national stimulus initiative, the French government funded two nine-year public private programmes on Wheat and Maize (18 M€) in 2011, and another call for proposals open to plant biotechnologies will be issued in July 2011. ANR will work closely with INRA who have taken the lead for France in ERA-CAPS.

The Italian Ministry of Agricultural, Food and Forestry Policies (MIPAAF) is responsible for the Italian national research programmes in all areas of agriculture and forestry. Through its "Research and experimentation" office (COSVIR IV), it promotes and funds national research programmes and projects on all aspects of a specific production chain (cereals, fruits, vegetables, industrial crops, etc.) and/or horizontal issues (plant genetics, plant nutrition, plant pathology, biodiversity, soil-water-energy management product transformation technologies, etc). Funding relevant to the ERA-CAPS programme has amounted to ~43M€ over the last three years, including several multi-million Euro projects on genome analysis and functional genomics of fruits, olives, grapes and wheat.

The COSVIR IV office has significant experience of coordinated actions at a European level, such as participating in the SCAR Committee and its working groups, and in several ERA-Nets. More recently the office has been involved in the FACCE-JPI (Food security, agriculture and climate change) and the JPI Healthy Diet for and Healthy Life (JPI HDHL). MIPAAF will work in conjunction with MIUR to support Italian researchers involved in the programme.

Slovenia will be represented by The National Institute of Biology, Department of Biotechnology and Systems Biology (formerly the Department of Plant Physiology and Biotechnology). The research they support is concentrated on three topics; 'omics, microorganisms and genetically modified organisms.

EPSO is an independent academic organisation that represents more than 223 research institutes, departments and universities from 30 countries in Europe and beyond. EPSO's mission is to improve the impact and visibility of plant science in Europe. ERA-PG had good links with EPSO but in ERA-CAPS we will formalise and deepen those links with official reciprocal Observer status and by working closely together on joint meetings and workshops.

Again we are very pleased that these organisations will be represented as they will provide a much wider global perspective and bring considerable expertise in plant science research and

coordination to the table. Observers will be able to participate in joint calls as 'Affiliate' members if they commit to funding scientists from their own country involved in any successful proposals.

### Future Expansion of the Network

The structure of the consortium and particularly the inclusion of Observers, allows for the expansion of the network. It is anticipated that some countries that were unable to join the network at this time e.g. those with Observer status, may wish to become Partners at a later stage. Several have asked to be kept informed about the progress of the network. The way in which the programme has been structured, with an emphasis on the inclusion of new members, and a variable geometry approach for joint calls, lends itself very well to the inclusion of additional members.

Collectively, the ERA-CAPS members have contacts to research funding agencies in many other EU and non-EU countries. Some of whom we have already been in dialogue with, for example, Bulgaria was a member of ERA-PG but currently does not have the resources required (financial or staff) to participate in ERA-CAPS. Similarly TUBITAK (Turkey) would like to participate but are currently undergoing restructuring. An open invitation has been extended to them to participate if their circumstances change. Essentially the same situation applies to the respective funding organisation in the Czech Republic (GACR). Due to the high quality plant science being performed there, and traditionally strong scientific links between Czech scientists and colleagues from neighbouring countries, the current ERA-CAPS consortium is very interested in having GACR as a partner. We will continue to communicate recent developments within ERA-CAPS to our Czech partners, hoping they might be able to join the network at a later time point, or to participate in joint calls without formally being a member of ERA-CAPS.

ERA-CAPS will be also in contact with partners in Romania (Ministry of Education and Research / Executive Agency for Higher Education, Research, Development and Innovation Funding, UEFISCDI) and Slovakia (Slovak Research and Development Agency) to explore options for future cooperation. A good opportunity for strengthening links with Greece will be in connection with the planned joint activities in 2013, when the EPSO meeting will be held in Greece (see WP6, task 6.2).

Where appropriate the consortium will utilise the various communication strategies to ensure that researchers and funding organisations from countries not involved in the programme, are aware of the activities of the ERA-NET, and the fact that we will be open for dialogue with any interested parties. If necessary, an active strategy could also be implemented to expand the network. This strategy could include: inviting representatives of the above mentioned member countries to the ERA-CAPS events to present their respective programmes in molecular plant sciences and relevant funding activities, and to explore possible synergies of these programmes and the ERA-CAPS programme. A list of relevant contact persons could be created and updated regularly.

In addition, before the launch of each call, relevant funding agencies that are not already part of ERA-CAPS could be contacted systematically to be invited to participate in the call. A clause could be included in the call text enabling researchers to join ERA-CAPS project consortia at the application stage, provided the researchers secure their own funding. For example, the second ERA-PG call was open to consortia consisting of a minimum of three different countries, two of which must be ERA-PG partners. Researchers from countries that were not ERA-PG partners were able to participate in consortia, but had to provide evidence of funding support. Taking this open approach proved to a very positive experience and we are keen to maintain this way of working.

The opening of the ERA-CAPS calls to these countries could have a significant mobilising effect on the scientific community in the first instance, and possibly on the national funding agencies in that these will be lobbied by their respective scientific communities.

### **2.3.2 Allocation of resources**

ERA-CAPS has requested a total of 1,989,659€ (inclusive of 7% overheads) from the EC to support the network. A breakdown of the allocation of this resource, which includes costs for staff resource, travel and subsistence, meetings, workshops and small subcontracts, is given over the following pages. The overall budget requested per Partner is detailed in table 2.3B.

**Table 2.3B Budget per Partner (in €)**

	<b>Partner</b>	<b>Monthly rate</b>	<b>Personnel costs</b>	<b>Other direct costs</b>	<b>Total Direct costs</b>	<b>Indirect costs (7%)</b>	<b>Total direct &amp; indirect</b>	<b>Sub-contract</b>	<b>Requested EC contribution</b>
1	BBSRC (UK)	7000	280000	*257000	537000	37590	574590	5000	579590
2	FWF (AT)	6000	24000	12000	36000	2520	38520	0	38520
3	F.R.S.-Fnrs (BE)	5900	118000	12000	130000	9100	139100	37000	176100
4	NRC (CA)	0	0	15000	15000	1050	16050	0	16050
5	DASTI (DK)	6711	80532	12000	92532	6477	99009	20000	119009
6	ETF (EE)	3200	54400	12000	66400	4648	71048	0	71048
7	INRA (FR)	4920	88560	17000	105560	7389	112949	0	112949
8	DFG (DE)	6000	222000	52000	274000	19180	293180	0	293180
9	HAS-SEC (HU)	2500	15000	12000	27000	1890	28890	0	28890
10	MOARD (IL)	5000	20000	15000	35000	2450	37450	0	37450
11	MIUR (IT)	6000	48,000	12000	60000	4200	64200	0	64200
12	LZA (LV)	4800	62400	12000	74400	5208	79608	0	79608
13	NWO (NL)	7297	102158	12000	114158	7991	122149	0	122149
14	FRST (NZ)	0	0	15000	15000	1050	16050	0	16050
15	RCN (NO)	7000	42000	12000	54000	3780	57780	0	57780
16	NCBiR (PL)	3500	21000	12000	33000	2310	35310	0	35310
17	FCT (PT)	3500	59500	12000	71500	5005	76505	0	76505
18	MPN (RS)	1700	17000	12000	29000	2030	31030	0	31030
19	MICINN (ES)	5000	20000	12000	32000	2240	34240	0	34240
	<b>Total</b>	<b>91028</b>	<b>1274550</b>	<b>527000</b>	<b>1801550</b>	<b>126109</b>	<b>1927659</b>	<b>62000</b>	<b>† 1989659</b>

† Management activities at BBSRC account for only 9.1% of the total budget requested.

\* The Central Coordinator at BBSRC will retain and administer other direct costs excluding a travel and subsistence (T&S) budget for each Partner (see table 2.3C)

Each Partner has been assigned a budget on the basis of the number of person months their involvement in specific tasks requires. Some general principles have been applied for the allocation of person months:

- For work packages where every Partner needs to make a contribution, all have been allocated a minimum of one person month (WP1, 3 and 5).
- Work Package leaders have been allocated extra person months to take account of the additional administration required.
- For WP2, all new members have been allocated extra person months as all will assist with the whole work package.
- Any Partner organising a workshop has been allocated an extra two person months.
- The allocation of person months for other tasks is in accordance with the amount of work involved and duration of the task.

As Coordinator BBSRC has requested 537,000€ direct costs (not including 7% indirect costs), of which 280,000€ is for personnel and 257,000€ is for other direct costs. The other direct costs will be allocated to the partners as detailed in Tables 2.3B and 2.3C. BBSRC will administer these funds but will not retain them for its own use.

The personnel costs for BBSRC include provision for a full-time Programme Manager for three years to manage the Programme Coordination Office and oversee the day-to-day running of the programme. If required BBSRC has the capacity to invest additional resources to ensure the successful management and delivery of the ERA-CAPS programme. Indeed this has been anticipated and as outlined in Section 2.4 'Resources to be committed', BBSRC has the in-house resource to provide additional support to the Coordinator and Programme Manager, and this will be provided in kind.

The 257,000€ other direct costs requested by BBSRC (not including the T&S allocation paid direct to each partner), includes 110,000€ for six workshops, 40,000€ T&S for invited speakers and Observers to attend meetings and workshops, 10,000€ for Management Board/ HLG meetings, 20,000€ for Scientific Advisory Body meetings, and 50,000€ Secretariat costs. 62,000€ are also requested for the three subcontracts outlined in section 2.3.3. Again this will be administered by, but not retained by BBSRC. A detailed breakdown of these figures is given in the next section.

### **Other Costs**

The other costs relevant to ERA-CAPS for which funds are requested are detailed in Table 2.3C. These costs include travel and subsistence (T&S), workshops, management, SAB and panel meetings, plus additional secretariat costs. Unless otherwise indicated these costs will be administered by the Central Coordinator.

**Table 2.3C Other costs (in €)**

	Budget	Occurrences	Total
Partners T&S	12-15,000	19	237,000 <sup>1</sup>
Observers/ speakers T&S	40,000	1	40,000
Workshops	10-25,000	6	110,000
Other meetings	5,000	4	20,000 <sup>2</sup>
Management meetings	1,000	10	10,000
Panel meetings	20,000	2	40,000 <sup>3</sup>
SAB meetings	10,000	2	20,000
Secretariat costs	50,000	1	50,000
<b>sub total</b>			527,000
Indirect costs (7%)			36,890
<b>Total</b>			563,890

<sup>1</sup> Direct to each Partner

<sup>2</sup> 5,000€ direct to INRA

<sup>3</sup> Direct to DFG

### **Justification of resources requested for other costs**

#### Travel and Subsistence

There will be two Management Board meetings per year and one High-Level Group meeting per year. This makes a total of nine during the course of the three years and allows for a tenth if required. In addition, there will be six workshops; two strategic workshops in WP1 and 5, a workshop for the remaining ERA-PG grant-holders and to advertise the first ERA-CAPS call in WP3, a workshop on data standards in WP4, and two ERA-CAPS grant-holders workshops in WP6. Not all members would be expected to attend every workshop, although the hope is that by organising some of them in the margins of other plant science conferences, this will save on travel costs (and time) for the Partners.

Each Partner will be allocated 12,000 Euros for travel and subsistence. This is calculated as follows:

Travel within Europe:	500€
Two nights' accommodation:	200€ (2 x 100€)
Subsistence:	<u>100€</u>
Total per meeting	800€

Therefore the T&S would cover 9 HLG and MB meetings at 800€ each = 7,200€

This leaves 4,800€ for attendance at a mixture of the workshops, moderating panel meetings or attendance at other ERA-CAPS related activities.

A small fund (40,000€) will be retained by the coordinator for offering assistance with T&S costs for Observers and other guests e.g. invited speakers, to attend meetings as deemed appropriate. It is important that Partners are able to attend as many meetings as possible and we would not want T&S costs to be a restricting factor, hence the sum calculated.

### Management Meetings

As described above there will be a total of nine management meetings during the project. The costs for these should be minimal as the meetings will be hosted by the Partners in turn. T&S costs for the members will already have been allocated to them so the only costs incurred directly will be a small amount for catering and perhaps room hire. Therefore we think that 1,000€ per meeting is adequate. We have allowed an extra 1,000€ in case an extra meeting needs to be held.

We suggest that the annual meeting of the High-Level Group takes place alongside one of the biannual Management Board meetings, either immediately before or after and at the same venue. This will allow for cost savings but will also provide a good opportunity for different participants in the programme to meet each other and share ideas. Where possible the members will make use of 'virtual' meetings using tools for video conferencing, teleconferencing and webinars.

Funds will be set aside to allow for two meetings of the Scientific Advisory Body. It is estimated that these will cost 10,000€ each as travel and subsistence will need to be covered for up to 12 international (including non-EU) experts, as well as room hire and catering.

In addition there will be a small reserve of 20,000€ to allow for organising other meetings required during the course of the programme, for example 5,000€ will be required by INRA to organise two meetings of IPR experts in task 3.3. The Coordinator will retain the other 15,000€ and allocate as required.

### Panel Meetings

Costs are included for two panel meetings for assessment of projects submitted to ERA-CAPS calls in WP3. These are estimated at 20,000€ each as they need to cover the T&S for expert panel members (~10) to travel from around the world (not just Europe), a small honoraria, and room hire and catering. The meetings will take two days, with a moderating panel from the funding agency Partners meeting on the second day to decide which proposals can be funded.

### Workshops

There will be six workshops held throughout the programme (detailed above) and a total budget of 110,000€ has been allocated for these. The majority of the workshops will last for two days with at least one overnight stay. Most of the T&S costs for delegates will be covered by the T&S allocation made to each Partner, or for the grant holders workshops, within the T&S allocations of the research grant. However, additional expenditure will arise to cover the costs of room hire, catering and T&S for invited speakers. Drawing on the prior experience of the Partners in organising workshops, a figure of 25,000€ has been allocated for larger workshops (up to 50 attendees), and 10-15,000€ for smaller workshops (up to 25 attendees).

### Secretariat Costs

A sum of 50,000€ has been set aside for additional secretariat costs. This will cover travel and subsistence for the PCO staff as at least one person will need to attend every meeting and two for larger meetings and workshops. This will also cover consumable items, such as printing costs and other publicity materials incurred for the duration of the programme.

### **2.3.3 Sub-contracting**

In order to keep costs to a minimum, subcontracts will only be included where absolutely necessary. All surveys, reviews and reports will be undertaken by the Partners. Those items where we deem it appropriate to subcontract the work to professionals are where in-house expertise does

not exist amongst the Partners. All of the subcontracts are associated with presenting a professional, corporate image for the programme and an identifiable and accessible portal for knowledge dissemination. We want to provide a clear and inviting 'shop window' for ERA-CAPS which sells the benefits and successes of the programme to the research community, funding organisations and policy-makers to best effect.

The items to be subcontracted are:

**a) ERA-CAPS website**

The ERA-PG<sup>60</sup> and UK GARNet<sup>61</sup> websites are hosted by third parties and this has proved to be economical and trouble-free. Subcontracting this to a professional server provides a level of security against the website crashing, malicious interventions and the reliance of ERA-CAPS Partners to always be on hand to deal with any difficulties. The initial design and set-up of the website would also be subcontracted to make sure it looks professional and has a user-friendly interface. Quotes have been received for the design, development and maintenance of the website and for the training of staff; also for the design of publications and the logo. It is likely that this will cost 37,000€.

**b) Design of logo and branding**

The importance of having a clear and recognisable brand should not be underestimated. A simple logo used on all ERA-CAPS communications, slide templates, presentations by Partners etc, helps to engender the feeling of an inclusive and coherent programme of work. (Included in the quotes received for the website).

**c) Printing of selected publications**

Subcontracting the (design and) printing of publications would only be used for certain high-impact official publications. Examples could include a small tri-fold leaflet describing the purpose of the programme and a more detailed booklet produced towards the end of the programme summarising the achievements and research funded through the programme. Quotes for the design are included in a) above, and the printing will cost in the region of 5,000€.

**d) ERA-CAPS Database**

Provision will be made for the construction and maintenance of the database in case it proves to be too specialist and/ or time-consuming for the Partners. Based on the costs required to establish similar databases for other ERA-NETs, a cost of 20,000€ is estimated.

### **2.3.4 Other countries**

The two 'Third Countries', New Zealand and Canada, are not requesting funding for any staff resource; both are providing this as an in kind contribution. The only costs that will go to either country will be some assistance with travel and subsistence costs to enable them to attend some of the key meetings and workshops. This will be 15,000 Euros each for the duration of the programme. This is a little more than the 12,000 Euros travel and subsistence allocation for each of the other Partners. Inevitably the cost of travelling from Canada and New Zealand to meetings in Europe will be greater than for the other Partners. It is essential that in order to fully participate in the programme, representatives from Canada and New Zealand are able to attend at least some of the meetings and workshops. These funds would ensure attendance at key meetings, enabling these partners to fully contribute to, and participate in the programme. (Refer to Section 2.3.1 for the benefits to be gained from the involvement of New Zealand and Canada).

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<sup>60</sup> <http://www.erapg.org/>

<sup>61</sup> <http://www.garnetcommunity.org.uk/>

## 2.4 RESOURCES TO BE COMMITTED

In the current difficult financial climate, and in the face of serious global challenges, it is important to ensure that all resources (financial and human) committed to this area of research are utilised efficiently and that value is added wherever possible. By working together and pooling our resources we can share both the costs and the risks associated with this important area of research. The Partners believe that the ERA-CAPS programme offers significant value for money, both in terms of the scientific gains to be made and the greater cohesion of the plant science community that the continuation and expansion of the network will realise.

The distribution of the resources requested between major cost headings is shown in Table 2.4A. Within each category significant additional 'in kind' contributions are being made by the ERA-CAPS Partners through the allocation and utilisation of their own resources.

**Table 2.4A Allocation of funds across cost headings within ERA-CAPS (in €)**

Cost type	Cost	7%	Total	%
Personnel costs	1,274,550	89,219	1,363,769	68.54
Other costs	527,000	36,890	563,890	28.34
Subcontracting costs	62,000	N/ A	62,000	3.12
			<b>1,989,659</b>	100

### Personnel Costs

The total requested for personnel is 1,989,659€ (inclusive of 7% overheads) which amounts to 68.0% of the total funds requested. The personnel costs have been distributed across the Partners bearing in mind the number and nature of tasks that they are leading or assisting with. The cost charged for each month is based on the rate that each organisation uses for a 'person month' (although for some they have agreed to use considerably lower rates than normal and will subsidise the work). The details of the amount requested for each Partner for staff resource can be seen in Table 2.3B. This can be cross-referenced with Tables 1.3E (p53) and 2.3A (p81) that show how the person months are distributed between the Partners for each work package and which tasks each Partner is leading.

The 'in kind' contributions offered by the Partners, relevant to the personnel costs requested, are significant. BBSRC, DFG, NWO and MIUR all using person month rates of 6,000-7300€, which are significantly below the actual rates (most are between 8,500 and 10,000). Moreover, the time charged to the project is considerably less than will actually be required; for example DFG will not be requesting time for the senior person involved in WP3, only for a support person to help with preparing and running the joint calls (Call Secretariat). BBSRC are only requesting person months to employ a full-time Coordinator dedicated to the project for its duration. No costs have been requested for the rest of the team that will support the Coordinator in their duties, or for the senior staff that will be involved in the network.

The management costs have been kept to a minimum and only 20 person months at a cost of 149,800€ (inclusive of 7% overheads) have been requested. This represents only ~7.5% of the total requested and is included within the overall personnel costs. Including an allowance of 30,000€ for 'other' costs associated with management tasks, the total management cost request is 181,900€ which equates to 9.1% of the total. These costs are for the financial and administrative activities in WP7 that will be administered by the Programme Coordination Office.

### Other costs

We are only requesting a small amount towards the costs of the management meetings as the Partners hosting the meetings, for the most part, will provide their time (and possibly room hire costs) as an 'in kind' contribution. In addition, personnel costs have only been budgeted to ensure the coordination and management activities of the project, and the preparation of major deliverables. Staff time to attend meetings and workshops has not been requested and will again be contributed 'in kind'.

### Overheads

In adherence with the financial rules for EC support of Coordination and Support Actions (CSAs), a rate of 7% has been used for the calculation of overheads on all direct costs. No overheads have been added to the costs for subcontracts. The actual overhead costs for the partners involved are significantly larger than the 7% which is reimbursed; for personnel these are usually between 60% and 100%. This shortfall is again being borne by the Partners as an 'in kind' contribution. Furthermore, no overhead costs have been requested for the day-to-day consumables associated with managing the project.

### Project funding

All projects funded through ERA-CAPS joint calls will be supported in their entirety by the partners of the call. Each organisation will pay the full costs of participation for the scientists from their own country.

In total, the Partners will be contributing as least as much again to the programme as the costs that they are requesting, i.e. the funds provided by the European Commission would leverage in excess of 100% of the amount awarded. The Partners are prepared to make these substantial 'in kind' contributions as they believe in the importance of the proposed programme, and recognise that it would simply not be viable (within the available budget) if they were to charge the true costs of their time to the project. This is of course, not entirely altruistic, as we recognise that in time, it is the national funding organisations and the scientific community that they support, that will reap the true benefits of increased coordination through ERA-CAPS.

## 3. IMPACT

### 3.1 EXPECTED IMPACTS LISTED IN THE WORK PROGRAMME

Impact is the demonstrable contribution that excellent research makes to society and the economy. The 'impact' of scientific research activities may take many diverse forms, such as, new knowledge and scientific advancement, public policy development, changes in societal values and direct economic benefits. Scientific impact may be achieved rapidly, but a full appreciation and evaluation of the impact of scientific research and the time this takes to cross subject and sector (public and private) barriers may take many years.

Modern bioscience offers enormous benefits to society and unprecedented opportunities for innovation and growth in multi-billion pound sectors of our economy such as food and drink, agriculture, biotechnology, energy, health and pharmaceuticals. Plant science may be unique in that it has much to offer to all of these sectors, and is therefore, vital to our future economic success. In addition, plant science can make valuable contributions to combating security risks, such as those to our food and water supply and our over dependence on fossil fuels for energy and feedstocks. Cutting edge research funded through the ERA-CAPS programme, directed towards challenges in food security, industrial biotechnology and bioenergy, along with greater integration and coordination of national capabilities, will help Europe respond to these risks.

To bring about Europe's main goals in plant genomics and biotechnology, a long-term strategic research agenda must be implemented based on the priorities identified through the ETPs and other vision and foresight documents. ERA-CAPS will deliver a European Research Area in molecular plant sciences with the overriding purpose of fostering coordination and cooperation between national plant science research programmes to enable transnational solutions to the massive challenges facing plant science in Europe.

#### **Impact on collaboration**

The Partners and Observers of ERA-CAPS represent a significant proportion of the EU member and candidate states as well as key players on the world stage for plant science research. Involvement of non-EU partners will further help future third country participation in EU activities; a key objective of the European Research Area.

The work packages described for ERA-CAPS seek to identify and share information relating to national programme content, national plant science capacity and strategy and the key personnel, facilities and requirements of the member countries. These activities will consolidate the initiated process of identifying major research needs through ERA-PG and extend and widen the existing partnerships. By identifying these capacities and aspirations in a wider network, ERA-CAPS aims to develop a common agenda and shared vision for plant science. This will enable us to pool resources and initiate co-funded, well aligned, transnational research projects in a synergistic manner, based on common priorities. ERA-CAPS is also committed to formulating and developing standardised procedures, not only for funding procedures (finance models, call procedures, legal documents etc.), but also for scientific process (data sharing and access). This kind of community-led collaborative activity will help facilitate durable long-term collaboration at the transnational level through harmonising procedure in plant science at all levels. Experience shows that it is those collaborations that arise from genuine bottom-up interactions that prove to be the most long-lasting.

The inclusion of many new Partners and Observers ERA-CAPS represents a significant leap forward in the evolution of plant science coordination activity within the EU. The size and scope of the consortia provides a substantial basis from which significant value will be added to regional and national research programmes through transnational collaboration. The networking and engagement activities of the consortia will also help to identify opportunities to integrate and collaborate with further relevant organisations at the national, European, and international levels. Building and sustaining relationships with new Partners and collaborators will generate new ideas, policies, and insights into the research and skills needed for particular stakeholders and sectors. The efficient use of research funds across the Partner countries, external engagement activities (representing the scientific base to policy makers and funders) and general supportive activities on the part of the ERA-CAPS Programme Coordination Office will enable the wide network of funding bodies brought together through ERA-CAPS to significantly strengthen their collaborative activities.

It is therefore anticipated that ERA-CAPS will have a significant impact on the ERA through improving collaboration, funding capacity and research quality, and addressing the issues of fragmentation and duplication of research effort and funding.

### **Impact on the ERA**

In terms of the ERA, the challenges facing modern society and the benefits derived from meeting them cannot and should not be dealt with at the national level. Likewise one ERA-NET alone cannot tackle all aspects of all problems. Plants form such a fundamental basis for almost every aspect of human society and health that challenges relating to plant production are inevitably huge and require networks of networks to interact to meet them. ERA-CAPS will therefore play an important role in the ERA network and interface with many other EU-wide initiatives to increase the impact and value of its efforts.

ERA-CAPS recognises that to reap the benefits arising from the pooled resources and collaborations generated through this ERA-NET we must identify complementarities between wider programmes, share common practises and avoid unnecessary fragmentation and duplication of effort. We therefore aim to actively interact and communicate with many external initiatives and groups at both the European (Table 3.1A) and global (Table 3.1B) level. This will include engagement with other KBBE ERA-NETS, individually and via the KBBE ERA-NET Platform. Similarly we will have an open dialogue with the European Technology Platforms, and more widely through BECOTEPS (or its successor). We have also agreed reciprocal Observer status with EPSO, which represents over 220 research institutions across Europe. This will massively enhance the information flow into ERA-CAPS and opportunities for dissemination of information out to the wider community. At a global level many ERA-CAPS Partners are also members of the International Steering Committee for Plant Genomics (ISCPG).

A further aspiration is that the activities within the ERA-CAPS programme can feed into the much larger Joint Programming Initiative on Agriculture, Food Security and Climate Change. It is envisaged that ERA-CAPS could help to implement and deliver some of the scientific aims and objectives of FACCE-JPI as set out in their Scientific Research Agenda.

Table 3.1A European initiatives that ERA-CAPS will engage with

European Initiatives	Brief Description
<b>The European Plant Science Organisation (EPSO)</b>	EPSO is an independent academic organisation that represents more than 223 research institutes, departments and universities from 30 countries in Europe and beyond. EPSO's mission is to improve the impact and visibility of plant science in Europe.
<b>Plants for the Future ETP</b>	The European Technology Platform (ETP) 'Plants for the Future' is a stakeholder forum for the plant sector, including plant genomics and biotechnology. It provides a 20-year vision and a short-, medium- and long-term Strategic Research Agenda for Europe's plant sector setting out a consensus on the research needed to fulfil the vision. Its members come from industry, farmer organisations, academia and other stakeholder groups.
<b>FACCE-JPI</b>	The Joint Programming Initiative on Agriculture, Food Security and Climate Change has more than 20 European partners and aims at targeting joint research to achieve a shared vision: to secure a safe and sustainable food supply, whilst reducing the impact of agriculture on climate change.
<b>PLANT KBBE</b>	Transnational Plant alliance for novel technologies - toward implementing the Knowledge-Based Bio-Economy' (PLANT-KBBE). Transnational research projects between France, Spain, Portugal, Canada and Germany, to promote predominantly industry-driven and clearly application-oriented research in Europe and beyond. The 2011 call will include France, Spain, Germany, Portugal and Brazil (FAPESP).
<b>Platform KBBE</b>	PLATFORM will bring together the ERA-NETs from FP6 and FP7 in the area of the Knowledge Based Bio-Economy (KBBE) with the aim to improve exchange and cooperation between ERA-Nets and strengthen their contribution to, and impact on, the European Research Area in the Knowledge Based Bio-Economy.
<b>Other KBBE ERA-NETs</b>	<ul style="list-style-type: none"> <li>• ARIMNet (Agricultural Research in the Mediterranean Area)</li> <li>• BiodivERsA (Biodiversity and ecosystems)</li> <li>• ERA-NET Bioenergy</li> <li>• CORE Organic (Organic food and farming)</li> <li>• ERA-ARD (Agricultural Research for Development)</li> <li>• ERASysBio (Systems Biology)</li> <li>• EUPHRESKO (Phytopathology ERA-NET)</li> <li>• ICT-AGRI (ICT and robotics in agriculture)</li> <li>• RURAGRI (Rural agriculture and sustainable)</li> <li>• WoodWisdom (Wood material science and engineering)</li> </ul>
<b>Other ETPs</b>	<p>The European Technology Platforms (ETPs) offer important opportunities for interacting with industry and other stakeholders. Other relevant ETPs include:</p> <ul style="list-style-type: none"> <li>• Food for life (Innovation along the agri-food chain)</li> <li>• Biofuels</li> <li>• The Forest-based sector</li> <li>• Agriculture Engineering Technologies</li> <li>• TPOrganic (Organic Food and Farming)</li> </ul>

**Table 3.1B International initiatives that ERA-CAPS will engage with**

<b>International Initiatives</b>	<b>Brief Description</b>
<b>Global Plant Council</b>	The mission of the Global Plant Council will be to define and engage in coordinated strategies to address the critical issues of world hunger, energy, climate change, health and wellbeing, sustainability, and environmental protection, and to increase awareness of the central role of plant science in their resolution.
<b>ISCPG</b>	The International Steering Committee on Plant Genomics is an informal body of 16 funding organisations from across the globe that fund and manage national plant genomics research programmes. Aims include sharing information and facilitating international collaborative research in areas where there is mutual benefit. ISCPG is co-chaired by BBSRC (UK) and the NSF (USA).
<b>CGIAR</b>	The Consultative Group on International Agricultural Research (CGIAR) is a global partnership that unites organizations engaged in research for sustainable development with the funders of this work. Research focuses on crop productivity, forestry and agroforestry, water management, aquaculture, and livestock. Much of the research is conducted in one of the 15 CGIAR Research Centres.

Through external engagement ERA-CAPS will share knowledge and expertise that will facilitate the harmonisation of procedures and practice, but also add value by bringing together expertise and resources (virtual or physical) within the ERA. To assist with the sharing of information and mutual learning, ERA-CAPS will be an active participant in the NETWATCH initiative, ERALEARN tool and similar future initiatives. Conversely, scientific advances and policy developments arising from other parties within the ERA can be rapidly disseminated to all the Partner countries within ERA-CAPS. Through these activities ERA-CAPS can enhance the influence of the plant science community by providing a single platform recognised and respected by other participants in the ERA.

### **Impact on science**

In scientific terms, the transnational research funded through the ERA-CAPS consortia has the potential to improve crop yield and quality and, in doing so, address multiple food security, biofuel and environmental issues. ERA-CAPS recognises that research focused on application, or addressing strategic needs, is as valuable, challenging and important as fundamental research and should be recognised as such. It is also recognised that impact is not only achieved through the research of individuals, but is frequently achieved by groups and wider teams, working across disciplines and sectors, both publicly and privately funded. Within these tenets ERA-CAPS seeks to strengthen the plant science research and funding capability of the EU and therefore augment the ERA's ability to address the social, environmental and economic challenges prompted by the need to feed an ever increasing population. This has huge implications for the peoples of the EU.

This will be achieved, in part, by enabling collaborative transnational research under the auspices of joint calls.

Coordination with other organisations ensures that public research investment is applied with the greatest efficiency and effectiveness. By funding high-quality, collaborative, transnational research ERA-CAPS will facilitate the efficient use of the genetic, infrastructure, personnel and funding resources available within the Partner countries. ERA-CAPS will promote the development of a shared vision and common priorities amongst its members whilst the research will benefit from the diversity of resources, facilities and knowledge across the Partner countries. Likewise ERA-CAPS seeks to develop shared solutions in respect to data management and encourage open access in the plant sciences. ERA-CAPS will support research consortia in utilising the best available methods and facilities within a shared contractual framework with respect to legal and IPR issues. ERA-CAPS will also undertake several brokerage events to bring together the scientific, policy, funding, technology, private and public sectors. These will focus on maximising opportunities for minimising barriers and increasing collaboration and also support tangible applications from the research funded.

Building on the academic strength and excellence present in the many countries making up the ERA-CAPS consortia through supportive collaborative action ensures a lack of duplication of funding effort between the national programmes and reduces fragmentation. The increased competition generated by the opportunity (and ability) to tackle bigger projects when collaborating beyond the national scope promotes scientific excellence and increases impact. Scientific excellence is also ensured through standardised selection procedures and subsequent monitoring of research projects and consortia. These standardised procedures allow for benchmarking between different Partner countries which in itself helps to promote scientific excellence. The impact of the selected projects will be increased as their goals will correspond to end-user's needs in multiple Partner countries. Dissemination of ERA-CAPS project results on both the European and global stages will ensure the impact of the science undertaken in ERA-CAPS is maximised.

### **Long term sustainability**

It is important to note that the many positive impacts on collaboration and coordination of plant science research that ERA-CAPS will bring about will not be restricted to the period of available EC funding for the network. The continuation of ERA-CAPS collaborative activities beyond the scope of EC funding is of paramount importance to the network. Benchmarking activities, research landscape surveys and facilitation of discussion meetings between programme owners and managers carried out in a dedicated ERA-CAPS work package will put in place the elements required for the continuation and expansion of transnational collaboration. Harmonisation of process and an accepted common agenda will facilitate the leverage of funding to allow future joint research programmes on topics of common interest to be developed in a durable and self-sustaining network. The very substantial investments of the different Partners already in ERA-CAPS demonstrate that a self-sustained network is a realistic goal.

### **3.2 SPREADING EXCELLENCE, EXPLOITING RESULTS, DISSEMINATING KNOWLEDGE**

ERA-CAPS has a responsibility to enable the optimal and successful application of the outcomes of the excellent research funded through the network. It must ensure the widest benefit to society and the economy both within and beyond Europe. Such application may lead to direct financial impact through commercialisation or, more commonly, through the development of research outcomes to deliver wider benefit in a range of different areas of society and the economy.

Researchers will be encouraged to consider how their proposed research, knowledge exchange and public engagement activities, address social issues, including public aspirations and concerns. ERA-CAPS will endeavour to publicise these activities and their outcomes in ways that enable the wider public both to see the outputs of the research funded and to engage in discussion around the potential applications of this research and their impact on society and the economy.

To facilitate the exploitation of results, within the framework of the preceding ERA-PG network a template for consortium agreements was agreed for transnational research consortia. These agreements provide a means to ensure that collaborations abide by predetermined rules conforming to a legal framework. An updated consortium agreement is proposed for ERA-CAPS to account for any new legal requirements arising from research consortia involving new Partner countries. Likewise a material transfer agreement template will also be drawn up to facilitate stable cooperation between consortium members. These agreements will form the basis for any intellectual property rights (IPR) issues arising from the research programmes sponsored through ERA-CAPS. By having a sound contractual basis for the exploitation of results arising from research funded through the programme, it will allow researchers to capitalise on the findings of their research and promote the uptake and translation of this knowledge into tangible outcomes that help to address the societal challenges described above. We must ensure that the outputs of the research are correctly targeted towards the appropriate audience and are in a form amenable for uptake and development.

ERA-CAPS fully recognises the importance of positive communication to maximise the impact of the network and has put several measures in place to ensure effective and targeted dissemination of project results. To meet the goals of both the consortium members and those of the community, multiple groups must be targeted for information exchange. To maximise the impact of the research programme we must engage with scientific, technical, business, funding and government audiences. We also recognise that FP7 (and in turn FP8), are supported by public funds and therefore we must also actively engage with the general public of the European community to fulfil the societal objectives of spreading education and generating an enthusiasm for science. All of the work packages in ERA-CAPS have a requirement for effective communication and dissemination of results, but in the main our communications plan is centred in WP4 and WP6, which specifically deal with external engagement, communication and dissemination.

All of the work packages involve gathering of information which ultimately must be shared with the ERA-CAPS community. This data is primarily in the form of identifying the priorities, resources and capabilities of the member countries to enable successful collaboration and cooperation. A series of workshops and meetings and an effective management structure will ensure that this information is suitably communicated to the ERA-CAPS members.

WP4 focuses on engagement within the scientific community to ensure that ERA-CAPS is well integrated with wider European and global initiatives. ERA-CAPS plans to monitor the activities of

related programmes, networks and collaborative initiatives to identify those we should be engaging with. Once identified, cross-membership and coordination will be established to allow effective interfacing between the organisations. Through attending meetings of the relevant initiatives, and exchanging information on best practise and actively participating in the NETWATCH initiative and ERA-NET Learn tool, we will increase the visibility and impact of ERA-CAPS and increase communication levels within the ERA.

WP6 focuses on general dissemination and communication and whilst the emphasis is on dissemination within the scientific community we seek to engage actors beyond the research community and with the public to foster dialogue and debate on the research agenda of ERA-CAPS. The communication activity of ERA-CAPS has been planned to exploit a variety of media and relevant funding has been requested to meet these goals. Our strategy is to provide a regular flow of information both internally to ERA-CAPS members via a password protected extranet site and externally through a publically accessible website. This site will contain information about the various Partners, work plan and work packages as well as more detailed information concerning the research program, meetings, networking activities and publications. We also plan to provide useful links to relevant European and global initiatives and to the institutes involved in the ERA-CAPS research programme. The website will also establish a portal of contacts that are informed about the overall strategy of ERA-CAPS and are able to deal with particular aspects of the network and/ or research programme. The ERA-CAPS website will raise the profile of the network and assist with dissemination of information to a variety of users including specialists, politicians, funding agencies and the general public alike.

This regular flow of information will be interspersed with specific, targeted press releases, position papers and publications. These will aim to publicise events such as the start of the programme, the funding of research consortia, major research outputs, findings of surveys and scoping exercises and a final summary of the ERA-CAPS activity. In all forms of media the financial contribution of the community will be acknowledged and a standardised ERA-CAPS logo and format will be adopted throughout to promote network recognition and provide an identifiable and trusted 'brand'.

Certain customary means of scientific communication (peer-reviewed publications and scientific congresses) will be employed to accomplish these targets, but ERA-CAPS will also aim to engage in a wider exchange by utilising external resources to exploit and improve our communications. Many such resources exist within the European Commission itself such as the Research DG press centre, CORDIS Wire and AlphaGalileo, all of which are involved in media activities. Utilising these portals will improve ERA-CAPS ability to communicate effectively with journalists from around the world through press release dissemination to media mailing lists and thematic press briefings, where the scientists involved in the research present their results to the media, to generate TV and radio publicity.

ERA-CAPS will endeavour to engage with actors beyond the academic research community and foster dialogue with industry and the general public on relevant topics. The main routes for this will be through the close links that the network will have with EPSO (an independent academic organisation with a broad membership) and the ETPs. Engagement with the Plants for the Future ETP will provide ERA-CAPS with a direct communication route to a much broader range of stakeholders; notably industry and farmer organisations. Through these channels we would hope that the research conducted within the programme can be translated into real advances in the field. Conversely, industry and farmers can help to shape the programme by ensuring that research within it can be targeted to real end-user needs.

In addition, we will make best use of each partner organisations' own external relations and media units. For example, BBSRC has a very active and excellent unit that organises a lot of public dialogue, consultations, attendance at science fairs and Town Meetings. These events are often specifically targeted at the general public. Other partners also have access to similar resources of their own, and between all of us we should be able to have a significant reach in terms of people exposed to the activities of the network.

Furthermore, ERA-CAPS will take advantage of new media outlets such as blogs, webcasts, RSS feeds, Twitter and YouTube, which will substantially increase the audience available to the network, and these have proven to be particularly popular and effective means of engaging with the public. Moreover, the website could include a section directed towards the general public containing simplified information on molecular plant sciences as well as a number of generalised articles on the findings of ERA-CAPS/ ERA-PG funded projects.

Therefore, by utilising the existing governance structures (High-Level Group, Management Board and Scientific Advisory Body), and exploiting the networks of those that sit on them, and through the links with other well established initiatives (EPSO, Plant ETP, FACCE-JPI), in addition to the communication and dissemination plans outlined in Work Packages 4 and 6, ERA-CAPS should have a broad reach and constructive two-way dialogue with a wide range of stakeholders.

Our communications plan should ensure that the ERA-CAPS scientific community is consistently well-informed regarding the development and progress of ERA-CAPS networking and research activities and also that results and progress are effectively and widely disseminated to further relevant groups and initiatives and to the general public alike.

### **In Summary:**

#### ERA-CAPS: Delivering a European Research Area in molecular plant sciences

Transnational research funded through the ERA-CAPS consortia has the potential to provide tangible advances towards meeting the challenges facing plant science and the need to provide high quality, secure and sustainable food, feed and fuel solutions for a burgeoning population. Meeting these challenges will have a huge impact on the peoples of the EU by bolstering the economic competitiveness of the EU, increasing the effectiveness of public services and enhancing quality of life, health and creative output.

A major impact of ERA-CAPS will be more intensified, sustainable collaboration and cooperation between the Partner and Observer countries and organisations which make up the consortium. ERA-CAPS will leverage the Partners' funding, exploit synergies and drive efficiencies throughout the system. We aim to develop new strategic partnerships to transform the way in which the funders of plant science and the research community work.

We aim to drive co-ordination, concentrate research and expertise, share facilities, and to network researchers across Europe and globally. The ERA-CAPS consortia is extremely wide ranging and the impact that a collaborative activity on this scale will have in terms of increased openness and the development of coherent transnational policies at the regional, national and international levels cannot be underestimated.

## 4. ETHICAL ISSUES

There are no ethical issues that may arise in this proposal.

### 4.1 ETHICAL ISSUES TABLE

(Note: Research involving activities marked with an asterisk \* in the left column in the table below will be referred automatically to Ethical Review)

Research on Human Embryo/ Foetus		YES	Page
*	Does the proposed research involve human Embryos?		
*	Does the proposed research involve human Foetal Tissues/ Cells?		
*	Does the proposed research involve human Embryonic Stem Cells (hESCs)?		
*	Does the proposed research on human Embryonic Stem Cells involve cells in culture?		
*	Does the proposed research on Human Embryonic Stem Cells involve the derivation of cells from Embryos?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	

Research on Humans		YES	Page
*	Does the proposed research involve children?		
*	Does the proposed research involve patients?		
*	Does the proposed research involve persons not able to give consent?		
*	Does the proposed research involve adult healthy volunteers?		
	Does the proposed research involve Human genetic material?		
	Does the proposed research involve Human biological samples?		
	Does the proposed research involve Human data collection?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	

Privacy		YES	Page
	Does the proposed research involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?		
	Does the proposed research involve tracking the location or observation of people?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	

Research on Animals		YES	Page
	Does the proposed research involve research on animals?		
	Are those animals transgenic small laboratory animals?		
	Are those animals transgenic farm animals?		
*	Are those animals non-human primates?		
	Are those animals cloned farm animals?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	

ERA CAPS

Research Involving Developing Countries		YES	Page
	Does the proposed research involve the use of local resources (genetic, animal, plant, etc)?		
	Is the proposed research of benefit to local communities (e.g. capacity building, access to healthcare, education, etc)?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	

Dual Use		YES	Page
	Research having direct military use		
	Research having the potential for terrorist abuse		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes	