

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

**Geneva, Switzerland
23-25 January 2017**

Contribution of Portugal

to the CSTD 2016-17 priority theme on ‘The role of science, technology and innovation in
ensuring food security by 2030’

**DISCLAIMER: The views presented here are the contributors' and do not necessarily reflect the views
and position of the United Nations or the United Nations Conference on Trade and Development.**

PORTUGAL

The role of Science and Technology and Innovation for Development in ensuring food security by 2030

1. Location: Portugal

2. Time period of implementation/starting date:

In the frame of the XXI Government Programme 2015-2019¹ on its chapter, (IV, pg 181) dedicated to “Priority Innovation”, it is clearly mentioned on bullet “3. Reinforce of investment on science and technology, democratizing innovation”. The Government defends strengthening knowledge internationalization instruments throughout the following guidelines:

- Reinforce Portugal participation on European programmes and another networks and international partnerships, especially transatlantic framework;
- Strengthen international partnerships with international scientific institutions and Internationally renowned centers
- Focusing on science diplomacy and relationship with the scientific diasporas, enabling our consular network in the world for the systematic dialogue with scientific diasporas and knowledge networks that emerge, especially among the scientific institutions and leading business groups worldwide
- Re-launch the program 'Science GLOBAL ', facilitating the involvement of Portugal and the Portuguese scientific and technological institutions in training researchers from African Portuguese-speaking countries, with programs for the promotion of Portuguese as a language of science, in logic use of Portuguese for scientific and technological training and promotion cultural industries.

Measures to be consolidated:

Strengthening of the visibility of Portuguese Science and of the Portuguese language as a language of Science through the following instruments:

- o Participation in European programmes and other international networks and
- o Commitment to science diplomacy and to the scientific diaspora; mainly involving internationally leading research institutes and business firms;
- o Potential relaunching of the ‘Global Science’ Programme, further promoting the advanced training of researchers from Portuguese speaking African countries.

Development of large-scale thematic mobilizing programmes, oriented to societal challenges; Boosting the participation of business firms in international R&D networks;

At the bilateral level, reinforcement of the Atlantic relations, tightening relations with emerging countries, namely in Maghreb and Asia Pacific countries;

Supporting HEIs internationalization instruments.

In the “Major Planning Options 2016-2019” published on the Portuguese Official Journal² the above mentioned measures are also published.

Ministry for Science, Technology and Higher Education is currently elaborating thematic research agenda’s towards 2030, one of those, in agriculture and agro-food, forestry and biodiversity.

¹ <http://www.portugal.gov.pt/media/18268168/programa-do-xxi-governo.pdf>

² <https://dre.pt/application/file/a/74008569>

3. Main actor:

Ministry of Science, Technology and Higher Education and the performance agency, (the national research council) – Fundação para a Ciência e a Tecnologia (FCT) and the Ministry of Agriculture, Forestry and Rural Development and its National Institute for Agrarian and Veterinarian Research (INIAV, I.P.). On 13 February 2015, the Banco Português de Germoplasma Vegetal – the Portuguese national genebank – officially launched a new information system to manage their precious collection of plant genetic resources.

The collection has a strategic importance for food security at the national and global level. Hosted in Braga, Portugal, it includes 45,000 samples from 150 species and 90 genus of cereals, aromatic and medicinal plants, fibers, forages and pasture, horticultural crops and other species.

The new system is based on GRIN-Global, a free platform developed in a joint effort by the Global Crop Diversity Trust, the Agricultural Research Service of the United States Department of Agriculture and Bioversity International.

The full collection of plant genetic resources and the associated knowledge conserved at the Banco Português de Germoplasma Vegetal is now managed by a powerful and efficient system and, for the first time, the information will be available online for public consultation.

Since 2011, Bioversity International has been working with the Portuguese genebank to implement and evaluate the system, strengthening the capacity of staff to use the system along the way. The lessons learned from this process are crucial for the deployment, adoption and implementation of GRIN-Global in other countries and regions.

The goal of GRIN-Global is to provide the world's crop genebanks with a powerful, flexible, easy-to-use global plant genetic resource information management system that will allow genebanks around the world to permanently safeguard plant genetic resources vital to global food security, and to encourage the use of these resources by researchers, breeders and farmers.

INIAV, I.P. is the national reference laboratory for:

- Animal Health
- Animal diseases including zoonoses (Triquinella, Bovine spongiform encephalopathy-BSE, Brucellosis, Cattle Tuberculosis, Clamidia, etc) and bacteria and antimicrobial resistance
- Food security
- Feed
- Veterinary drug residues and other environmental contaminants in live animals and animal products
- Pesticide residues in fruit, vegetables and cereals, milk and dairy products;
- Campylobacter
- Salmonella
- Escherichia coli O157 and other E. coli
- Enteropathogenic;
- Staphylococcal enterotoxina
- GMO's
- Fertilizer Compliance
- Plant Health (quarantine organisms)

INIAV is the reference Laboratory for the OIE and FAO: contagious bovine pleuropneumonia (cbpp)

4. Target audience:

National citizens, research community.
Diaspora's citizens, research diaspora's community
Citizens from Maghreb, Africa and Latin America, the Countries of Portuguese Official Language (PALOP and East Timor) and research community.

5. Funder:

Fundação para a Ciência e a Tecnologia, I.P. (FCT)
The funding of the Portuguese Science and Technology and Innovation for Development in ensuring food security by 2030 system is mainly conducted by FCT, which acts as a Research Council under the authority of the Ministry of Science, Technology and Higher Education (MCTES).

FCT supports five main funding actions (Figure 1):

- Research projects;
- Fellowships and grants;
- Institutional funding, and;
- Research Infrastructures
- Scientific Community Support Program (FACC), as described in figure 1.

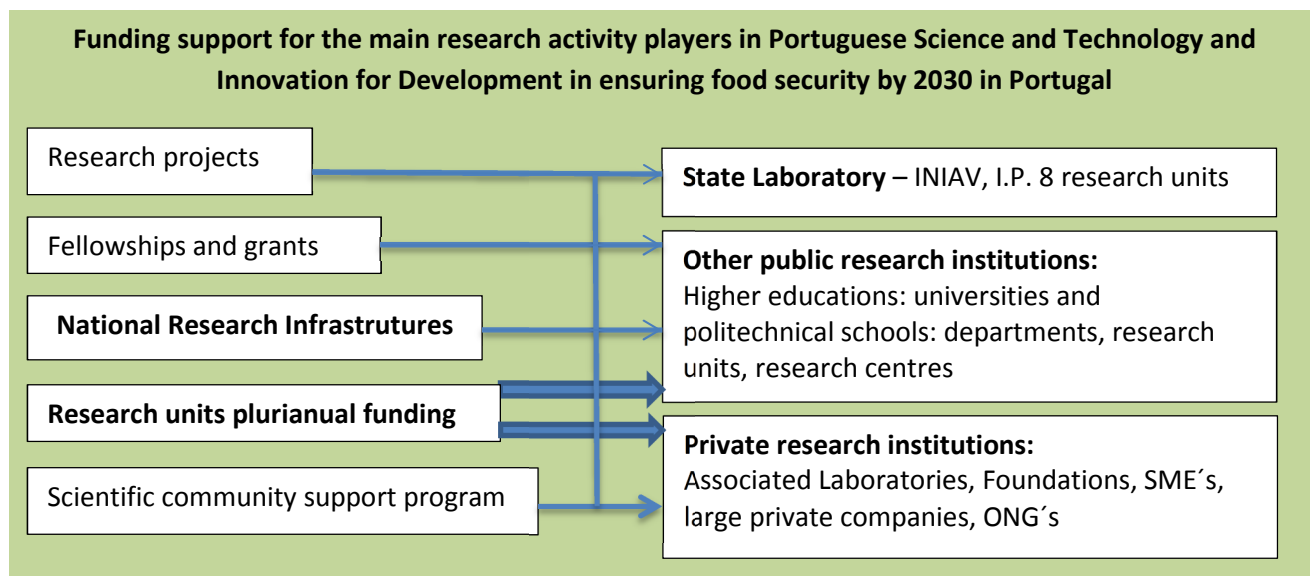


Figure 1. Funding support scheme by FCT, for the main research players in food security.

Research projects

FCT supports an important research program which funds projects in all domains of science. This major program selects and funds research projects on the basis of scientific excellence. Since this program is directed to all scientific domains, it encompasses food security research, however, it does not focus on any priority theme. FCT has launched calls for proposals in all scientific domains every 2 years since 2000, and almost every year since 2008.

Fellowships and grants

Advanced training and qualification of human resources is a key priority in Portugal's Science and Technology policy. One aims at speeding up the convergence of scientific qualification of human resources in Portugal to the level generally seen in other European Union countries, particularly with respect to post-graduate education. FCT supports a great variety of fellowships and grants for graduate students (e.g. PhD, post-doc) through annual public calls, according to the applicable regulations.

The Commitment to Science aims to clarify the terms under which different types of grants are awarded, in the context of bolstering public investment in qualification and post-graduate education and, to simplify the administrative procedures associated with the application and registration process.

Another recent FCT initiative is the funding for initiation in scientific research. These grants were offered for the first time in 2008 and are designed for undergraduate students in the early years of their training (including 1st year students), with good scholastic performance. These grants aim to foster scientific activity and develop critical reasoning skills, creativity and autonomy in undergraduate students through the practice of research, and participation in the research institution activities.

Institutional funding

There are three types of R&D Units (Figure 1):

- a. State Laboratory (in agriculture domain, INIAV, I.P.) – funded directly by the Ministry of Agriculture, Forestry and Rural Development, although applying for FCT funding;
- b. Other public research institutions;
- c. Private research institutions such as Associate Laboratories, associations, NGO's, foundations, research societies, etc.

The majority of Portuguese scientific research takes place in research units evaluated and funded by FCT, namely covering Food security for development (Annex 1).

Since 1994, a legal framework for institutional funding of units was established by FCT.

FCT puts in place a periodic evaluation process for research units, which will determine access to multi-year funding. The evaluation is done by several panels of international experts and includes the analysis of research activity plans with direct contact with the researchers through visits to all units. This evaluation process culminates with the panel attributing a qualitative grade, which determines the amount of funding to be received. This procedure was regulated in 1996.

Scientific Community Support Program

The Scientific Community Support Program (FACC) provides selective funding to Portuguese scientific community initiatives that foster R&D activities or dissemination of information, in any scientific area, which is not supported by a specific programs. FACC is used to complement and articulate with the regular programs, namely:

- Organisation of scientific meetings in Portugal;
- Publication of scientific periodicals;
- Operation of scientific societies or scientific institutions of a similar nature;
- Publication of non-periodical scientific literature;
- Participation of researchers holding a PhD or post-doctoral students in scientific meetings abroad;
- Short term stays in Portugal for scientists who reside abroad.

Since 2008 FCT integrated the Office for International Relations in Science and Technology has a Department for International Relations aiming at following and implementing the bilateral and

multilateral International interministerial and/or interinstitutional S&T cooperation agreements in science and technology. Joint activities mainly concerns the launch of joint calls for S&T projects.

In terms of geographical priorities, covering regions in Maghreb, Africa and Latin America, the Countries of Portuguese Official Language (PALOP and East Timor) assume, for historical reasons and sharing of a common language and legal matrix, a prominent place.

Appreciation of the special historical relationship between Portugal and Latin America has been one of the priority options for Portuguese external policy, translated particularly into the role it has played within the scope of Ibero-American Summits and the special relationship between the EU and the countries of that region, as shown in the active involvement in the preparation of and participation in different Summits, with a view to strengthening EU relations with emerging global partners.

FCT pursuits and supporting ongoing initiatives with all the above mentioned regions in food security for development has summarised in figure 2.

The bi-regional political dialogue between the EU and Latin America in S&T started during the 6th EU-CELAC Summit of Heads of State and Government, in 2010, where "Innovation and Technology for Sustainable Development and Social Inclusion" were taken as priorities, with the following being defined as priority areas: energy, environment and climate change, food processing, health, information and communication technologies and horizontal activities involving S&T policy with an emphasis on human and institutional empowerment.

Portugal joined this dialogue in 2011, with the adoption of the Joint EU-Latin America Initiative for Research and Innovation, for the "Roadmap" and for the implementation and Action Plan for the 2010-2012 period, having participated in the working party "Horizontal Activities in on S&T policy with an emphasis on Human and Institutional Empowerment Capacity Building". In this context, Working Parties in important areas for the regions concerned were set up: bioeconomics – including food security; renewable energy, biodiversity and climate change; information and communication technology for societal challenges.

Since 2009, Portugal has participated in an instrument supported by the European Commission aiming at the promotion of the bi-regional dialogue on STI between the EU and Latin America INCO-NET EULARINET (2009-2013) and its successor EU-CELAC ALCUENET (2013-2017) which has been provided support to the work carried out under the scope of the SOM EU-LAC and EU-CELAC. Portugal is also participating in a joint initiative launched by the EC for the establishment of a joint transnational funding scheme between UE-LAC targeting the thematic areas of the UE-LAC policy dialogue (SOM) namely ERA-NET EULANEST (2009-2013) and its successor ERANET-LAC (2014-2017) involving various countries from this region, where bioeconomy i some of the research and innovation areas.

EUREKA initiative and IBEROEKA

EUREKA aims to boost productivity and competitiveness of European industry, R&D institutions and universities to jointly develop market oriented R&D projects at European and global level. The EUREKA Initiative gathers 40 European Commission and three associated states: South Korea, Canada and South Africa. It is based on cooperation equality of all its members.

IBEROEKA is an instrument aiming at technological cooperation in industry on the IberoAmerican region to enhance the cooperation between industry and other type of organisations on research and technological development domain.

In addition, at the multilateral level, but not in the a non-European manner sphere, cooperation has been developed under the framework of the Ibero-American Science and Technology Programme for Development (CYTED), which has enabled the establishing of scientific and technical cooperation projects with teams from a large number of countries in that region. CYTED aims to contribute to the harmonious development of the Latin American Region through the establishment of cooperation mechanisms between the universities research groups, R&I centers and innovative companies from Latin American countries, who want to achieve science- and technology transferable to productive systems and social policies.

The deepening of ties with Brazil falls within the framework of policy options regarding relations with strategic special partners whom the country has been intensifying and this has led to active involvement in preparing and participating in Summits with the European Union strategic partners – EU-Brazil Dialogue.

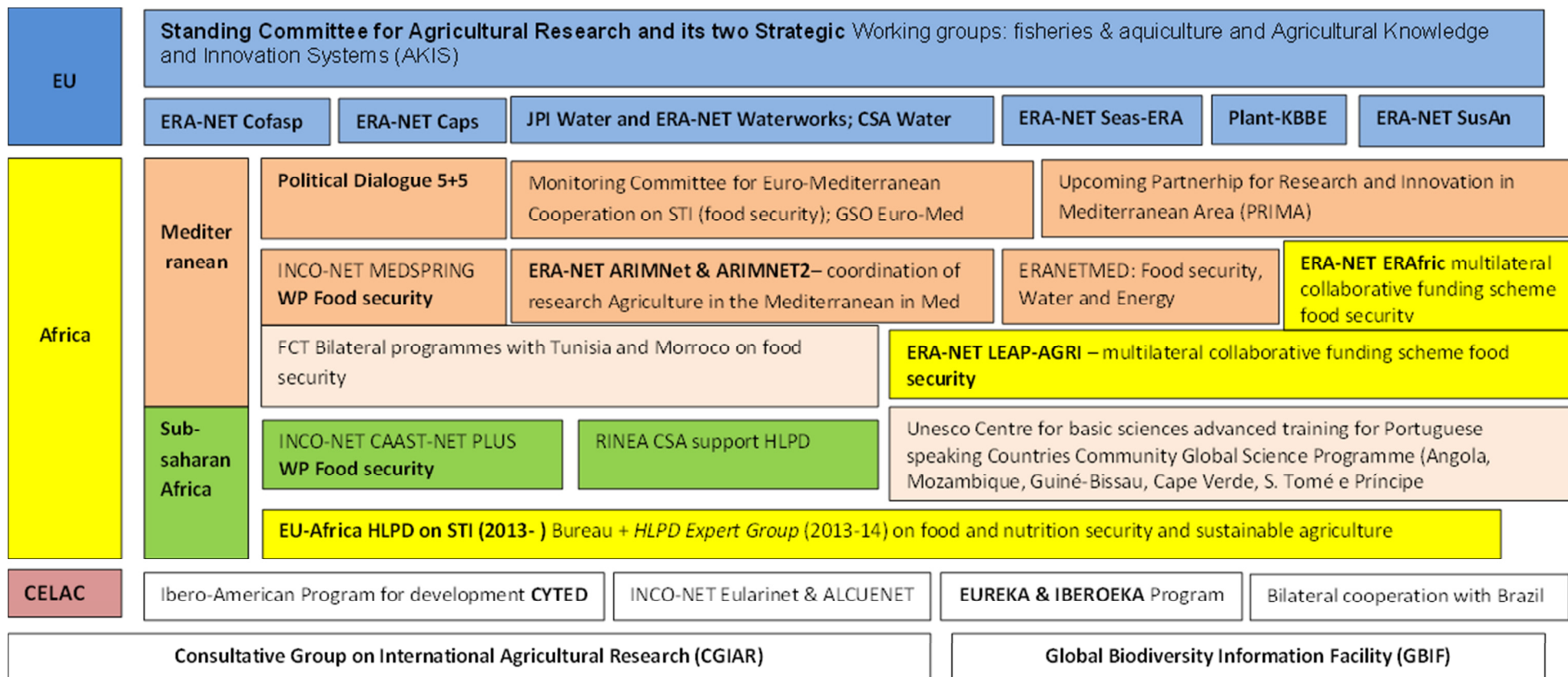


Figure 2. FCT, Portugal major multilateral/bilateral initiatives on food and nutrition security (mostly since 2008).

FCT supports the Portuguese participation in joint projects with institutions from other countries in the framework of scientific and technological agreements. This also includes scientific and technological bilateral and multilateral cooperation with the African countries, particularly with PALOP countries (Portuguese Speaking African Countries), with which Portugal has cultural, geographical and historical proximity: Mozambique, Angola, São Tomé and Príncipe, Guinea-Bissau and Cabo Verde. It is also to be noted the recent bilateral cooperation in STI with South Africa, translated into agreements in 2015.

6. Technology and Innovation used

7. Tools to disseminate technology and innovation

Open Access Portals

Portugal is prosecuting an open access policy with strategic regions and countries. On this framework Portugal is active partner on the following open access portals:

Latindex- Regional information online system for scientific reviews from Latin America, Carabean, Spain and Portugal. Latindex represents a major initiative started by UNAM in 1997 to improve the visibility and dissemination of Iberoamerican scientific journals, and help improve the quality of journals published in the region. As of 2015, Latindex is a regional network with participation of national focal points in 22 countries of Latin America and the Caribbean. This regional collaborative initiative coordinated by UNAM receives contributions from the national focal points, for three open access databases:

Directory, a comprehensive inventory of Iberoamerican journals in addition to a collection of European journals on Latin American studies. Provides basic bibliographic data on each title.

Catalogue, which includes a selection of those titles from the Directory that meet a minimum of previously agreed upon Latindex editorial standards. The Catalogue provides additional information on the individual profile of these journals.

Index of electronic journals, which provides direct access to a growing collection of Iberoamerican online journals offering full text articles, mainly open access and free.

A new development is Portal de portales a Latinex OAI-Harvester that allows searching in a collection of journals from several journal portals (Scielo, Redalyc, Dialnet, Revist@s, Pepsic, UNAM, RACO, among others).

In addition to these open access journal databases, a series of guidelines, workshops and meetings for editors are organized by Latindex partners in several Iberoamerican countries.

Scielo – Scientific electronic library online

The Scientific Electronic Library Online - SciELO is an electronic library covering a selected collection of Brazilian scientific journals.

The library is an integral part of a project being developed by FAPESP - Fundação de Amparo à Pesquisa do Estado de São Paulo, in partnership with BIREME - the Latin American and Caribbean Center on Health Sciences Information. Since 2002, the Project is also supported by CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico.

The Project envisages the development of a common methodology for the preparation, storage, dissemination and evaluation of scientific literature in electronic format.

As the project develops, new journal titles are being added in the library collection.

The objective of the site is an electronic virtual library, providing full access to a collection of serial titles, a collection of issues from individual serial titles, as well as to the full text of articles. The access to both serial titles and articles is available via indexes and search forms.

Arquivo.pt

Arquivo.pt - the Portuguese Web Archive is a research infrastructure that enables search and access to files archived from the web since 1996. Its main objective is the preservation of information published on the Web for research purposes. It is open to all Portuguese speaking countries all over the world.

8. Issues address

9. Goals and objectives related to food security

Goals and objectives related with food security are well developed in several national strategies, such as:

- a) Portuguese Strategy for Smart Specialization (2014-2020)
- b) Ministry of Agriculture and for the Sea Strategy for agro-food and forestry research and innovations 2014-2020
- c) Strategy for the Public irrigation 2014-2020
- d) National Strategy for the Climate Change Adaptation
- e) National Strategy for the Forests
- f) Several other programs and plans: drought, water eficiente use; nature conservation and biodiversity

10. Stage of Implementation

Ongoing

11. Is resilience or sustainability of projects measured or evaluated? If yes how?

2. Contact persons:

On nodal agency responsible for food security: Maria Maia (Maria.Maia@fct.pt)

Experts from Academia:

- Gottfried Basch, Inst. Ciências Agrárias e Ambientais Mediterrânicas (ICAAM, (www.icaam.uevora.pt), Évora University (gb@uevora.pt);
- Isabel Ferreira, Mountain Research Centre, School of Agriculture, Polytechnic Institute of Bragança (iferreira@ipb.pt);
- Luis Goulão, School of Agronomy, Technical University of Lisbon (goulao@isa.ulisboa.pt);
- Maria Manuela Estevez Pintado, Food Processing Laboratory, Biotechnology School, Catholic University of Portugal (mpintado@porto.ucp.pt);
- Jorge Manuel Alexandre Saraiva, QOPNA - Química Orgânica Produtos Naturais e Agro-alimentares, Department of Chemistry; Aveiro University (jorgesaraiva@ua.pt)
- Teresa Pinto-Correia, Inst. Ciências Agrárias e Ambientais Mediterrânicas (ICAAM, (www.icaam.uevora.pt), Évora University (mtpc@uevora.pt);
- SKAN Platform, - Sharing Knowledge Agrifood Networks (<http://www.skanplatform.org/>)

Experts from private sector:

Portugal Foods, Isabel Braga da Cruz (isabel.bacruz@portugalfoods.org) www.portugalfoods.org
Agro-Cluster Ribatejo, Carlos Lopes de Sousa (geral@agrocluster.com) www.agrocluster.com
ViniPortugal, Jorge Monteiro (geral@viniportugal.pt) <http://www.viniportugal.pt/>

Experts from Civil Society:

Luis Mira, InovISA (lmbignolas@gmail.com) <http://inovisa.pt/en/>

Experts from Government:

- Paulo Jorge Ferreira Cameira dos Santos, Instituto Nacional de Investigação Agrária e Veterinária (INIAV, I.P.), Unidade Estratégica de Investigação e Serviços em Tecnologia e Segurança Alimentar (paulo.cameira@iniav.pt);
- Carla Brites, INIAV (Carla.Brites@iniav.pt);

3. Documentation, references, or report on the specific examples cited for food security in your country or region

<http://en.unesco.org/news/unesco-and-portugal-signed-agreement-category-2-centre-sciences>
<http://www.erafrica.eu/>
http://www.erafrica.eu/_media/ERAfrica_The_projects_2014.pdf
<https://caast-net-plus.org/>
https://caast-net-plus.org/sti_networks/outcomes_and_impact
https://caast-net-plus.org/.../CN__FoodSecurityReport_v7.pdf
[https://caast-net-plus.org/object/news/994/attach/0_CN__ClimateChangeReport_v4_\[ELECTRONIC_.pdf](https://caast-net-plus.org/object/news/994/attach/0_CN__ClimateChangeReport_v4_[ELECTRONIC_.pdf)
https://caast-net-plus.org/object/document/1522/attach/0_CN__HealthReport_v6_WEB.pdf
<http://www.cytcd.org/>
<http://www.cytcd.org/es/Impactos%20Cualitativos>
<http://www.cytcd.org/pt-pt/node/112>
https://ec.europa.eu/research/iscp/pdf/policy/eularinet_110913.pdf
<http://alcuenet.eu/>
<http://alcuenet.eu/policy.php>
<http://www.eranet-lac.eu/>
http://eranet-lac.eu/Joint_Calls.php
http://www.rinea.org/media/content/eu-africa_roadmap_2016.pdf

Annex 1 Current Research Units covering Food Security for Development in Portugal

- Instituto de Patologia e Imunologia Molecular da Universidade do Porto (IPATIMUP)
- Instituto de Tecnologia Química e Biológica (ITQB)
- REQUIMTE - Rede de Química e Tecnologia - Associação (REQUIMTE)
- INESC Tecnologia e Ciência (INESC TEC)
- Centro de Investigação Marinha e Ambiental (CIMAR)
- Centro de Biotecnologia e Química Fina (CBQF)
- Centro de Estudos do Ambiente e do Mar (CESAM)
- Instituto Dom Luís (IDL)
- Instituto de Biotecnologia e Bioengenharia (IBB)
- Instituto de Nanotecnologias (IN)
- Rede de Investigação em Biodiversidade e Biologia Evolutiva (InBIO)
- Centro de Ambiente e Tecnologia Marítimos (MARETEC/IST/UTL)
- Centro de Biologia Ambiental (CBA/FC/UL)
- Centro de Biologia Molecular e Ambiental (CBMA)
- Centro de Botânica Aplicada à Agricultura (CBAA/ISA/UTL)
- Centro de Ciência Animal e Veterinária (CECAV/UTAD)
- Centro de Engenharia dos Biosistemas (CEER)
- Centro de Estudos de Ciência Animal (CECA/ICETA-Porto/UP)
- Centro de Estudos de Hidrosistemas (CEHIDRO/IST/UTL)
- Centro de Estudos de Recursos Naturais, Ambiente e Sociedade (CERNAS/ESAC/IPC)
- Centro de Investigação de Engenharia Química e Biotecnologia (CIEQB-ISEL/ISEL/IPL)
- Centro de Investigação de Montanha (CIM/ESA/IPBragança)
- Centro de Investigação e de Tecnologias Agro-Ambientais e Biológicas (CITAB/UTAD)
- Centro de Investigação e Tecnologia Agrária dos Açores (CITAa/UAçores)
- Centro de Investigação em Ambiente e Sustentabilidade (CENSE)
- Centro de Investigação em Engenharia dos Processos Químicos e dos Produtos da Floresta
- Centro de Investigação em Química da Universidade do Porto
- Centro de Investigação em Química do Algarve (CIQA)
- Centro de Investigação Interdisciplinar em Sanidade Animal (CIISA/FMV/UTL)
- Centro de Oceanografia (CO/FC/UL)
- Centro de Processos Químicos (CPQ/IST/UTL)
- Centro de Recursos Naturais e Ambiente (CERENA/IST/UTL)
- IMAR - Centro do Mar e Ambiente (CMA/UC)
- Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM/UE)
- LEPABE-Laboratório de Engenharia de Processos, Ambiente, Biotecnologia e Energia
- Química Orgânica, Produtos Naturais e Agroalimentares
- Research Institute for Medicines and Pharmaceutical Sciences (iMed.UL)
- Unidade de Biotecnologia Ambiental (UBiA/FCT/UNL)
- Unidade de Parasitologia e Microbiologia Médicas (UPMM/IHMT/UNL)

Annex 2: National Research Infrastructures (2014-2020) on food security for development in Portugal

- Portuguese Coastal Monitoring Network (CoastNet)
- European Marine Biological Resource Centre - Portugal (EMBRC.PT)
- European Multidisciplinary Seafloor and Water Column Observatory - Portugal (EMSO-PT)
- Portuguese E-Infrastructure for Information and Research on Biodiversity (PORBIOTA)
- Consortium for Genetically Tractable Organisms (CONGENTO)
- National Facility for Genome Sequencing and Analysis (GenomePortugal)
- In Vivo Arthropod Security Facility (VIASEF)
- BioData.pt - Portuguese Biological Data Network (BioData.pt)