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MINISTRY OF EDUCATION, RESEARCH & RELIGIOUS AFFAIRS
GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY (GSRT)

GREEK STRATEGY FOR
THE EUROPEAN RESEARCH AREA (ERA)

National Roadmap (2015-2020)

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INTRODUCTION

The decision to establish the European Research Area (ERA) was taken in March 2000 in the framework of the Lisbon strategy. Since then, a series of initiatives and measures towards ERA implementation have been undertaken at both European and national level, such as the restructuring of the EU Research Framework Programme in support of ERA objectives, the appointment of policy committees and dedicated working groups focused on the main ERA themes, and legal interventions at national and European level.

The fundamental legal intervention towards establishing the European Research Area has been its integration in the Treaty on the Functioning of the European Union (TFEU), and in particular in Article 179, as the primary policy objective of the Union for research, technological development and space (Articles 179-182). The European Research Area concept combines: a) a European «internal market» for research, where researchers, scientific knowledge and technology freely circulate, b) effective European-level coordination of national and regional research activities, programmes and policies, and c) initiatives implemented and funded at European level towards the consolidation and intensification of research efforts across the EU and their coordination with national and international initiatives.

The European Council, recognising ERA as an important driver for attracting talented minds and investors to the EU, called the European Commission and Member States (MS) to resolve any remaining issues and to complete its implementation by the end of 2014. Moreover, on the basis of Article 181 of TFEU, a special ERA Monitoring Mechanism (EMM) was introduced for all MS and associated countries as part of the European Semester.

In this context, the European Commission issued in 2012 two ambitious Communications entitled a) «A Reinforced European Research Area Partnership for Excellence & Growth» and b) «Enhancing and focusing EU international cooperation in research and innovation: a strategic approach». The two documents identified six (6) basic ERA priorities for further action, on the ground that they have the greatest impact on the European system of science, research and innovation.

The six priorities, which also constitute the basic pillars of the Greek national strategic plan/roadmap, are the following:

PRIORITY 1: More effective national research systems
PRIORITY 2: Optimal transnational co-operation and competition (jointly addressing grand challenges & optimal use of public investments in research infrastructures)
PRIORITY 3: An open labour market for researchers
PRIORITY 4: Gender equality and gender mainstreaming in research
PRIORITY 5: Optimal circulation and transfer of scientific knowledge (promoting open innovation and knowledge transfer & open access to publications and research data)
PRIORITY 6: International cooperation

The first ERA monitoring report was published by the European Commission in 2013, while the ongoing third progress report is expected to be published in autumn 2016.

The Competitiveness Council/Research continuously played a central role in promoting ERA realisation and in shaping policy guidelines and objectives, through structured policy discussions and through the adoption of Conclusions and/or Resolutions. In particular, in the Council Conclusions adopted in December 2014 on the basis of that year’s ERA progress...
report, Ministers considered that the conditions for ERA implementation had already been met, and that further efforts were required in order to ensure its optimal functioning. To that end, it was decided that all MS should prepare national ERA 2015-2020 action plans/roadmaps by May 2016.

National roadmaps will be prepared with a view to the fact that national research & innovation systems of MS have varying characteristics, and that this diversity is an asset which Europe should fully exploit. Each MS will design its strategy independently, according to the structure and the dynamics of the national research and innovation system.

The Greek government has supported the European Commission’s initiatives towards ERA completion and has promoted both the implementation of the vast majority of necessary actions at national level –within the given framework of its policy priorities and available resources– and the adoption of the corresponding legal framework.

Based on the above, and taking into account the dynamic evolution of the European Research Area, the Ministry of Education, Research and Religious Affairs (MERRA)/GSRT considers the development of the national roadmap towards ERA implementation as an opportunity to a) capture the current state of play with respect to the European objectives and to the national strategy on research and innovation and b) determine an orientation and objectives for the future, in particular regarding open access, which is a new field of intervention also at European level. Within this context, the Greek national roadmap describes the guiding principles for each ERA priority at both national and European level, and presents the current situation in Greece in relation to the pursued objectives and policy directions. Moreover, it sets targets for 2020, or 2025 where needed, depending on the maturity of the proposed actions and of the means to implement them, and it details the actions foreseen and/or any additional measures needed for meeting these targets.

At national level, the Research and Innovation Strategy for Smart Specialisation 2014-2020 (RIS3) constitutes a key instrument towards ERA implementation. RIS3 was formulated taking into account the ERA principles and guidelines, the Horizon 2020 thematic priorities, and the strategic agendas of various MS initiatives, especially those related to joint programming. Additionally, RIS3 enables Greece’s participation in joint actions and in the implementation of actions that present synergies/complementarity with Horizon 2020.

At Union level, effective ERA implementation and functioning, as well as the strengthening of the competitiveness of the European economy with jobs creation for highly skilled personnel, are reliant upon the successive RTD Framework Programmes; for the period 2014-2020, Horizon 2020, the EU Framework Programme for Research and Innovation. The Greek scientific and business communities consider that the most important activities in this direction are the traditional means of implementation/types of actions, i.e. collaborative projects in all areas and pillars of the Programme, selected after competitive calls open to all MS stakeholders, Marie Sklodowska-Curie actions/grants which offer mobility and career opportunities to researchers, and actions in support of research infrastructures.

The Greek Government attaches great importance to the country’s participation in the Union’s RTD Framework Programmes and the results are consistently quite satisfactory. To further strengthen and improve this participation, particular emphasis is placed on forming an appropriate strategy at national and European level. Key points of this strategy at national level are the selection and strengthening of support structures such as the National Documentation Centre and the Praxis Network (National Contact Points, Enterprise Europe
Network), institutions that have gained considerable experience through their long involvement in informing Greek stakeholders on Framework Programme opportunities. MERRA/GSRT also provides incentives for organisations/research teams that succeed in the European Commission’s calls for proposals. For MERRA/GSRT, the importance of participating in EU’s RTD Framework Programmes does not limit itself to the inflow of funds destined to Greek organisations of both the public and the private sector. This participation is also deemed as the most effective way to achieve international networking, extroversion, knowledge and technology transfer, specialisation and mobility of human capital.

The points mentioned above will be included in the formulation and implementation of the National Strategy for Research, Technological Development and Innovation (NSRTDI), according to the national legal framework (2014 Law on Research, Technological Development & Innovation, along with its existing and upcoming amendments).

Assessing the current state of play, Greece clearly adheres to the vast majority of ERA basic principles, in particular those relating to transparency and the evaluation of programmes, projects and research organizations in accordance with international practices and standards. Openness and meritocracy also apply to the recruitment and career development of researchers/faculty in the country’s research centres and higher education institutions. Despite the extremely adverse budgetary situation of recent years, the country continues to seek engagement in Public to Public Partnerships targeting networking and economies of scale and scope, both in the framework of research programmes and that of ESFRI roadmap infrastructures. Important advances have also been made in matters of human resources, mobility etc. However, there are still issues to resolve at national level. To address many of these issues, especially those relating to human resources and open access to research results, interventions are also needed at EU level. In that direction, Greece supports the European Commission’s proposals for the promotion of the necessary measures required at the Union level for ERA completion. In some cases, especially regarding co-funding schemes based on Horizon 2020 funds and national funds, or even the potential creation of new structures, the Commission should take into account the limited availability of resources (human and financial) and the additional administrative burden these might entail for smaller MS such as Greece.

Despite weaknesses detected in some areas and the difficult budgetary environment, the Greek Government attaches great importance to increasing its investments in science, research and innovation and to reducing overall administrative overhead. To that end, the Ministry of Education, Research and Religious Affairs has included in its immediate priorities the establishment of a foundation for funding research and innovation; talks are currently being held between the Ministry and the European Investment Bank for this purpose. The foundation, at its initial operation stage will aim primarily at funding basic research and human capital development, while at a later stage it will support entrepreneurship and innovation.

As a final observation, we should stress the fact that the European Research Area (principles, objectives, policy, measures) is not a static working framework. ERA is expected to evolve in line with rapid technological developments, changes in the international environment, and the new societal challenges and needs.

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1 European Strategy Forum on Research Infrastructures
1. PRIORITY 1: MORE EFFECTIVE NATIONAL RESEARCH SYSTEMS

1.1 INTRODUCTION

The effectiveness and efficiency of national Research & Innovation (R&I) systems, and their ability to meet the needs of society and the economy are the focal point of ERA implementation and exploitation of its advantages. Funding availability along with improved processes for evidence based policy, the selection of appropriate tools for achieving policy objectives, and the utilisation of synergies and complementarity are crucial to maximising benefits at all levels.

Achieving these objectives also requires long-term commitment to investing in knowledge-intensive activities, such as education, research and innovation, and to improving the attractiveness of the national R&I systems so as to limit the brain drain phenomenon and other similar unilateral flow of knowledge or capital.

In this context, the European Commission (EC) has identified two action areas in order to address the structural differences between national R&I systems: enhancing competition and excellence within these systems, and ensuring the efficient use of public resources. The former is about increasing the share of funding that is available through open calls for proposals and implementing peer evaluation procedures that meet international standards. The latter is about evaluating research institutions and using the results of this evaluation in the decision making process on the distribution of state funding. The EC also encourages the use of tools and methods to improve policy quality and sustainability (policy intelligence tools), such as the Policy Support Facility, OECD’s Innovation Policy Platform, and foresight exercises (Foresight).

We note that the top priority that emerged during the public consultation conducted by the EC on ERA priorities was “strengthening the evaluation of research & innovation policies and seeking complementarities between, and rationalisation of, instruments at EU and national level”.

1.2 STATE OF PLAY IN GREECE

The Greek Research, Technological Development and Innovation (RTDI) system is characterised by the high quality of its human capital and the existence of pockets of excellence, both in the public research institutions and in the private sector. The system also performs well with regard to the participation in Framework Programmes co-funded by the EU, in international research networks, and in projects of the European Strategy Forum for Research Infrastructures (ESFRI). The efforts of previous years, mainly through the use of Structural Funds, have led to an improvement in Greece’s performance in many areas, without however ultimately reducing the distance from the European average. As a result, Greece remains a Moderate Innovator, according to the Innovation Union Scoreboard 2015.

To overcome the structural weaknesses of the Greek RTDI system, a number of significant interventions have been implemented during the last two years, both in terms of legislation and in terms of research governance structures, aiming to create favourable conditions for enhancing RTDI and for utilising the new knowledge it creates.

The reformed legal framework (Law 4310/2014 and its amendments) provides for the development of a National Strategy for Research, Technological Development and Innovation (NSRTDI). Formulation of the NSRTDI is an immediate priority for the Greek...
government. Its implementation will be funded through both national resources and resources of the European Structural and Investment Funds (ESIF). The law also provides for new advisory bodies (Regional Research and Innovation Councils) to support the NSRTDI implementation at regional level, and for coordination mechanisms between Ministries (Scientific RTDI Liaison, Coordination Committee).

The national Research and Innovation Strategy for Smart Specialisation (RIS3) for the 2014-2020 period is one of the central pillars of NSRTDI. RIS3 specifies action lines in order to achieve a series of horizontal objectives (development of innovative products and services, creation of R&I infrastructures, development of human capital, connecting science to society, international cooperation) in the framework of the sectoral priorities that emerged through open consultation and the entrepreneurial discovery process. Promoting the excellence and competitiveness of the national system of R&I, however, requires at the same time a level of funding that will allow the maintenance and further development of research capacity in terms of human capital and infrastructure as well as long-term activity planning in order to enable research performing organisations (RPOs) to fulfil their mission.

The resources available for RTDI in Greece are limited. The main sources of funding are the ordinary budget of the Ministry of Education, Research and Religious Affairs (MERRA), the Public Investment Programme (PIP), which consists mostly of ESIF resources, and the European and international competitive programmes. As the lack of national resources has been a limiting factor for the formation of a long-term national strategy in the past, it is a government priority to increase financial resources for research through national funds complementing ESIF funds. To that end, talks are currently at an already advanced stage between MERRA and the European Investment Bank for the creation of a Foundation for Research and Innovation.

Data available for the year 2013 and provisional data for 2014 show an upward trend in Gross Expenditure on Research and Development (GERD), mainly due to increased spending through the National Strategic Reference Framework (NSRF). RTDI intensity (GERD as a percentage of GDP) reached 0.81% in 2013 and 0.83% in 2014, up from 0.67% in 2011. This increase in the value of the GERD/GDP index is partly due to the continuous increase of GERD across sectors (business, government, Higher Education Institutes, non-profit organisations), but mainly to the decrease in Greece’s GDP. Even this increased intensity, however, significantly lags behind the EU-27 average, which stands at 2.02%.

**Institutional funding of public research organisations – Funding of projects jointly implemented by public and private bodies**

Permanent staff salaries and other operating costs of higher education institutions are covered through state budget subsidies. The total amount of these types of funding is calculated on a non-competitive basis, using algorithms that take into account mainly quantitative characteristics. Payroll costs and operating expenses of public research institutions that constitute public law bodies are covered by the state budget in a similar way. Public research organizations that constitute private law bodies, as well as technological institutions, are funded in full by the ordinary budget for their payroll expenses under the current legal framework, while their operating costs are partly covered on the basis of programmatic agreements.

This type of funding has been greatly reduced in recent years and is normally complemented by funding allocated through competitive processes that aim to strengthen the research ecosystem in terms of function, infrastructure and capacity. These types of grants include,
among others, funds made available under NSRF for the improvement of higher education curricula, for the action "Development proposals of Public Research Centers/institutions - KRIPIS", and for preparatory actions (networking, construction phase) of the Greek stakeholders participating in ESFRI roadmap infrastructures. Finally, additional funding is made available on the basis of successful participation in EU’s RTD Framework Programmes or other international programmes.

According to provisional EUROSTAT figures for 2015, 46.27% of public expenditure on R&D was allocated to project funding through competitive processes. The increase in this ratio in comparison to previous years (31.37% in 2012) is partly due to the reduction of regular/ordinary funding, within the overall context of decrease in public spending. Project funding has come almost exclusively from Structural Funds and therefore has not been affected by the financial situation of recent years. Significant funding has also been attracted through the participation of Greek researchers in EU’s RTD Framework Programmes.

The fundamental, internationally accepted, principles of peer review apply in all cases of research project funding.

Proposals are evaluated by independent experts or by a committee/committees of experts recorded in GSRT’s Evaluator Register. The legal framework allows foreign experts to participate in these committees; representatives of the Federation of Enterprises or the Union of Chambers of Commerce and Industry can also participate, without the right to vote. During the previous programming period, in several cases of large-scale actions (e.g. EXCELLENCE I & II, Large-scale Collaborative R&D Projects/Cooperation II) the evaluation was conducted entirely by international experts (proposals submitted in English).

Evaluation criteria vary according to the nature and objectives of each action; they are complemented by the use of indicators for project outputs and results. The main evaluation criteria are the reliability/operational capacity of the proposer(s), the scientific and technological excellence and technical soundness of the proposal, and the contribution of the project to the objectives of the action as well as to society and the economy at large.

**Evaluation of Research Centres & Higher Education Institutions**

A high-quality, systematic and objective evaluation is necessary for the recognition and promotion of excellence across the entire Greek research system.

The first evaluation of the Research Centres/Institutions that are supervised by GSRT was performed in 1995. In 2001, a periodic evaluation every 4 years was legislated. The evaluation was to be performed by committees of internationally acclaimed experts using criteria on each organisation’s activities compared to international scientific and technological developments, its achievements and their impact on scientific knowledge and technological development, its operational costs, the generation of new knowledge utilisation activities, its capability to attract high quality personnel and external funding for scientific and technological services, and its growth prospects for the next years.

There have been three rounds of international evaluation of research institutions to date: in 2001, in 2005 and in 2013-14. Additionally, a mapping of the Greek R&I system was performed by RAND S.A. as an instrument for use by the political leadership regarding possible mergers between public research centres.
Similar provisions on evaluation have been made in the new legal framework for R&I. The evaluation will be conducted every five years under GSRT supervision, on the basis of criteria similar to those mentioned previously, using quality and efficiency indicators consistent with international best practices.

The existing legal framework also requires that research centres keep up-to-date data allowing the application of evaluation criteria for the assessment of their work. These data are submitted to GSRT on a yearly basis and are included in the National Register of Researchers, Research Organisations and their Infrastructures.

The evaluation of Higher Education Institutions (HEIs) was established recently through Law 4009/2011. The evaluation process involves an internal evaluation phase that aims to capture the operating characteristics of each academic unit and to record its goals and perspectives. The Internal Evaluation Report is approved by the academic unit and then submitted via the corresponding quality assurance unit to the Authority for Quality Assurance and Certification in Higher Education. An external evaluation is then performed by a committee composed of five independent experts (usually Greek expatriate or foreign Greek-speaking scientists). The purpose of the external evaluation is to determine the completeness, transparency and objectivity of the internal evaluation and to express an opinion on the key components of the operation of higher education institutions (quality of curriculum, teaching, research work, and other services).

1.3 OBJECTIVES

We consider the Greek national research and innovation system to be compliant with the basic principles/objectives of this priority (More Effective Research Systems) and to operate according to international practice on all issues mentioned.

Limited application of these principles in some cases is due to either a policy choice or a difficulty in the current environment. We could mention two such cases: a) increasing the share of funding allocated to research institutions based on evaluation is bound by (i) the availability of resources and (ii) the need to achieve a necessary balance so as to avoid problems created under very high competition, and b) knowledge of the Greek language is among the qualifications required for the position of Research Centre Director, due to the administrative duties attached to this position.

Ongoing activities that are expected to improve the national R&I system are a) streamlining the coordination between MERRA/GSRT and other Ministries as well as between Central Government and Regional Authorities, b) formulation of the National Strategy for Research, Technological Development and Innovation (NSRTDI), c) implementation of the Smart Specialization Strategy for R&I (RIS3), and d) development of a mechanism for the scientific documentation, monitoring and evaluation of applied policies.

In addition to the cooperation between Greece and OECD for the improvement of the national innovation system, GSRT will make use of the Policy Support Facility, recently created under Horizon 2020 with the aim to increase the efficiency of actions and policies and to enhance their contribution towards attaining the established goals.

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2 This type of financing can only be considered as a complementary measure under the condition that sufficient funds have already been granted to each institution for their day-to-day operation, in particular when the results of previous evaluations record satisfactory to excellent performance.
Greece will strive to achieve the national GERD/GDP\(^3\) target ratio of 1.2% by 2020 and to increase private sector contribution to 0.38%. Particular attention will be paid to promoting activities/actions to leverage RTD by the private sector and to increase the number of skilled staff in companies.

1.4 MEASURES

To achieve these objectives, the following actions will be implemented:

- **Improvement of the legal framework for the national research and innovation system.** A Bill amending Law 4310/14 has been submitted to Parliament for deliberation, with the aim to improve certain points of the original law.

- **Implementation of the new legal framework for research and innovation, after the upcoming amendment to Law 4310/2014.** The provisions of the framework are consistent with ERA principles/directions, while providing the legal basis for the implementation of necessary measures in all priorities. Moreover, there will be a specific provision (Article 38) dedicated to the Greece’s participation in ERA activities.

- **Development of a long term National Strategy for Research, Technological Development and Innovation (NSRTDI).** NSRTDI (Law 4310/2014, Article 4) will include all actions seeking to systematically and effectively promote basic and applied research, technology and innovation, shape options for the future, and provide the resources necessary for achieving these objectives. NSRTDI formulation aims, inter alia, to: a) align with EU policy directions for RTDI and achieve optimal transnational cooperation through participation in similar efforts at European and international level, b) enhance synergies and complementarity between national/regional RTDI actions with other, centrally managed, EU programmes, c) introduce state-of-the-art assessment indicators, d) address human resource issues, such as the geographical and sectoral mobility of researchers across institutions, disciplines, sectors and countries through removal of existing barriers, e) contribute to promoting gender equality.

It is noteworthy that, to date, the national RTDI strategy only addressed funding of programmes/projects through Structural Funds in the framework of EU cohesion policy (Community Support Frameworks, NSRF).

- **Implementation of an effective mechanism for data collection and recording, which will feed into the process of formulating, monitoring and evaluation of RTDI policy.** Furthermore, the national RIS3 strategy provides for the development of a Monitoring Mechanism for assessing the progress, effectiveness and efficiency of RTDI actions. These data will be used, inter alia, towards the compilation of an annual evaluation report (Law 4310/2014, Article 32) on the country's progress in promoting RTDI, using effectiveness indicators in accordance with international practice.

- **Implementation of the Smart Specialisation Strategy for Research and Innovation (RIS3) 2014-2020, which has entered the phase of preparation for activity implementation.** A key feature/innovation in the formulation and implementation of RIS3 2014-2020 has been the creation of Innovation Platforms. These platforms constituted the nucleus of the consultation process during the formulation of RIS3, in the context of entrepreneurial discovery, and continue to play an important role in the implementation phase, especially with respect to the thematic areas of the various activities. By incorporating participatory processes in the RIS3 system of governance, we promote the concept of “open innovation” and the harmonisation with Horizon 2020 advisory body practices.

- **Creation of an Institute for funding Research and Innovation.**

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\(^3\) GERD/GDP: Gross Expenditure on Research and Development/Gross Domestic Product
2. PRIORITY 2: OPTIMAL TRANSNATIONAL CO-OPERATION AND COMPETITION

2.1 JOINTLY ADDRESSING GRAND CHALLENGES

2.1.1 INTRODUCTION

The improvement of the co-operation between MS in the field of research, with or without EC participation, contributes to reducing effort fragmentation and duplication, to a better use of resources, and to economies of scale and scope. The review process of the Lisbon Strategy was the starting point for “Joint Programming”, a process of voluntary and strategic coordination of national efforts for the establishment, development and joint implementation of research agendas towards tackling issues that require international cooperation in order to be resolved. The main objective of joint programming is the effective use of synergies and the creation of sufficient leverage and critical mass to carry out R&D activities that contribute to addressing global societal challenges. In this context, the Council of the EU selected 10 areas for the development of a common agenda/joint projects by those MS participating in each initiative.

Under this priority, MS are invited to harmonise their national strategies with the priorities of the Scientific Research and Innovation Agendas (SRIAs) of the Joint Programming Initiatives (JPIs) and to allocate sufficient resources for their participation in JPIs. On a second level, MS are requested to remove barriers to the coordination of national programmes in terms of implementation processes, through mutual recognition of evaluation procedures that meet international standards and through convergence of national rules in terms of terminology, funding and management environment in general.

According to the recent evaluation report on Joint Programming progress to date, carried out by an expert group on behalf of the EC, a budget of € 265 million had been committed until the end of 2015 to fund international cooperation projects, selected under 32 joint calls with the participation of 37 countries. Almost two thirds of the funding came from 7 countries (Germany, Sweden, the Netherlands, France, United Kingdom, Italy and Norway). Available resources are expected to increase in the coming years with the use of funds made available by the EC through the ERA-NET Cofund tool. Conclusions as to MS commitment and the effect of JPIs on national strategies are not so encouraging. The main inhibiting factor seems to be financial. A second obstacle can be identified in the fact that MS do not earmark separate funding to address societal challenges. Programmes are sometimes designed based solely on horizontal objectives, such as supporting SMEs or developing innovative products, and therefore completely lack a thematic dimension. According to the report, corrective actions that can be immediately undertaken at national level include establishing coordination mechanisms among ministries and identifying possible synergies with smart specialisation strategies.

We note that the top priority that emerged during the public consultation on ERA priorities conducted by the EC was “improving alignment within and across the Joint Programming process and the resulting initiatives”.

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2.1.2 STATE OF PLAY IN GREECE

Developing the extroversion and the networking ability of the Greek research community, and utilising international partnerships both in the framework of Horizon 2020 and other EU initiatives and that of bilateral/multilateral cooperation agreements, constitute horizontal components of the national RTDI strategy.

However, Greek involvement in Joint Programming Initiatives to date has been limited despite the considerable interest of the research community, the existing critical mass in terms of research capacity, and the agenda of joint initiatives being almost identical to national priorities and policy goals. In terms of joint calls, Greece participated, through GSRT, only in the first call of the Initiative on “Combating Neurodegenerative Diseases, in particular Alzheimer’s”. Under this call, three Greek participants/stakeholders were funded through NSRF 2007-2013. Greece also participated as an observer in two other initiatives.

Conversely, Greek participation is important in other forms of Public-Public Partnership (P2P)/Joint Programming, such as ERANETs, which also aim to coordinate national research programmes in specific research areas. According to data from the ERALEARN platform, Greece participates in 84 P2P networks. Moreover, Greece has participated in 61 joint calls during the last five years, while Greek involvement in international networks currently amounts to 43 institutions/stakeholders. Greece/GSRT has participated in the following ERANETs5: MARINERA, MARIFISH, PV-ERANET, ICT-Agrifood and ICT-Agrifood C-2, BS-ERA.NET, ERA.NET-RUS and ERA.NET-RUS Col, E-Rare 2 (JTC2011), ERACOBUILD, EMIDA, SEAS-ERA C-1, TRANSCAN C-1, ERA.NET FENCO and CAPITA. Projects involving Greek stakeholders that were selected in the framework of joint calls were funded through the NSRF 2007-2013 action “European S&T Cooperation – Action for funding Greek organizations participating successfully in the Joint Calls for Proposals of European ERA-NETS”. To that end, four national Calls for Proposals (CFPs) were issued. Greece/GSRT has also participated in three joint calls for the 6th and 7th Framework Programme networks SEE-ERA.NET, COMPLEXITY NET, SEE-ERA.NET PLUS, which were financed through national funds (100% national Public Investment Programme/PIP).

Greece’s limited involvement in Joint Programming Initiatives is primarily due to the significant reduction in the national PIP, which resulted in lower funding for international cooperation, to the difficulty in securing 100% national PIP funding in the long term, as well as to the shift in focus by MERRA/GSRT to different types of coordination actions, such as ERANET/ERANET PLUS (FP7), whose procedures were considered simpler and more flexible.

In the event that project funding is provided by Structural Funds, an option that GSRT has preferred in most cases to date, the difficulty in synchronising planning processes, funding flows and timetables acts as an additional obstacle to long-term planning (in essence, Greece’s participation is limited to one call per programming period).

In addition to these factors, Greek/GSRT participation in similar joint programming activities6 under a different legal basis (TFEU Article 1857), aiming to address global societal challenges, namely a) in the programme of clinical trials on poverty-related diseases (EDCTP/6th RTD FP) and b) in the programme to improve the quality of life of the elderly through the use of ICT (Ambient-Assisted Living/AAL), has not been an encouraging experience. In the former case, the country had to honour its obligations, such as contributing to the joint management

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5 GSRT data
6 Funded with national resources (100% national PIP)
7 Programmes of increased budget, co-funded by the EC through RTD FPs
structure, even though no Greek participants were funded. In the latter case, there was a very important Greek participation; nonetheless, as MS assumed project management during a time of reduction in staff and resources at GSRT (and a time of shifting priorities), significant delays ensued in project implementation and financing. Moreover, based on the overall experience gained from the implementation of joint programming actions, regardless of mechanisms/tools applied, we believe that the European added value sought from networking for both Greek and other participants is not clear. We view the initiatives promoted under the ERALEARN platform and the Joint Programming Committee (ERAC/GPC) as very important. However, despite the progress of recent years in improving the relevant processes, we believe that further action is needed, mainly regarding the description of the role and responsibilities of the joint management structures and national authorities, as well as the evaluation and monitoring procedures by the Dedicated Implemented Structures.

As a general remark, and regardless of GSRT participation in these initiatives, MERRA/GSRT supports the harmonisation of national programmes. This harmonisation has already been implemented in the national RIS3 agenda and constitutes a major axis of the national RTDI strategy. As a further action, an assessment/evaluation is needed in order to identify the most suitable joint planning and international cooperation tool(s) for the Greek R&I system. The model used to date, whereby the conditions for eligibility and funding are determined at national level has worked effectively to a certain extent. Funding should continue to follow a 'virtual common pot' model, where each MS finances project partners based in its area. Any variations at the level of national regulations or barriers of legal nature can be sufficiently addressed and in any case do not constitute the most critical limiting factor for Greece.

Concerning the removal of legal (and other) obstacles to the harmonisation of funding rules and to the mutual recognition of international evaluations, we note that when the international activities mentioned above include common peer review procedures, Greece recognises their results. There are also provisions for the mutual recognition of evaluation results in the framework of bilateral agreements. However, given that there is currently no effective coordination with other Greek Ministries, GSRT has so far handled all relevant matters.

2.1.3 OBJECTIVES

The improved internationalisation/networking of the Greek R&I system at European and international level through participation in relevant initiatives is a key objective of MERRA/GSRT, as is the continuous effort to create a favourable environment for international cooperation in research.

In this context, Greece’s future objectives include:
- Participation in joint international calls aiming to align RTD project policies.
- Provision for the applicability at national level of Framework Programme rules of participation (this will considerably simplify procedures, reduce red tape and increase work quality and efficiency) – fundamental Greek position in the negotiations for the next FP.
- Participation in joint programming activities, mainly ERA-NET Cofund (Horizon 2020), that provide added value for the country.
- Funding of P2P activities from FP and national sources in a way that is not detrimental to those MS using resources from the Structural Funds (instead of national resources),

8 30 projects in the first two CfPs
which, based on the current interpretation, are not entitled to an FP grant. Our objective is the revision of this interpretation.

- The effective coordination with other Ministries.

### 2.1.4 MEASURES

To improve the international character/networking ability of the Greek R&I system at European and international level, the following measures are being implemented:

- Greece’s active participation in ERAC/GPC in the future.
- The appointment of a GSRT Committee for the evaluation of Greece’s participation in Joint Programming/ERA actions in the framework of Horizon 2020. The selection criteria are: a) the actions’ subjects, priority areas and goals, and their consistency with the national RIS3, b) the added value in comparison to promoting a similar action at national level only, c) the availability of financial resources, and d) other matters, mainly in terms of GSRT’s management capacity. The Committee has already approved GSRT participation in six international research networks under P2P schemes, such as ERANET Cofund actions (ERANETMED, EURONANOMED, COFASP, E-RARE, TRANSCAN, ERANET RUS PLUS), and in three more international research networks (ATC-ERANET COFUND, QUANTERA fET ERANET COFUND and FLAG-ERA II).
- Greek participation in the PRIMA initiative on Euro-Mediterranean cooperation (possibly under TFEU Article 185).
- Greece will continue participating in intergovernmental networks such as COST, which complement R&I Framework Programmes and constitute an important tool for building ERA in a bottom-up manner through their flexibility and coherent governance structure, as well as in European Space Agency (ESA) and EU Space programmes, which also enable stakeholder networking. Participation in future Eureka/Eurostars actions is under consideration.
- Integration into the national legal framework of all the possibilities offered by Regulation 1303/2013 (ESIF) on harmonising research programme management procedures with those applied in Horizon 2020. These provisions mainly refer to procedural simplifications and cost models, subject to the limitations set by the regulatory framework on state aid. GSRT intends to apply these procedures both in co-funded projects under RIS3 and in national programs.
- During future negotiations on the new RTD Framework Programme, GSRT will request the application of FP rules for participation at national level also, regardless of funding source. This is the only way to achieve actual simplification of procedures and reduction in administrative overhead.
- In future negotiations, GSRT will continue its efforts towards improvement of the rules for synergies/complementarity/co-funding of actions between the Structural Funds and the new Framework Programme, based on the position that the RTD Framework Programme and the Structural Funds have distinct roles, goals and principles. The main objective of the RTD FP should continue to be project funding on a competitive basis using the excellence criterion, with horizontal calls open to participants from all MS (the minimum participation should remain at current levels of three institutions from three MS). Structural Funds, on the other hand, aim to reduce inequality and improve regional competitiveness on the basis of the particular features/structure of each region’s economy and society.
- Transnational-bilateral partnerships are an important tool for promoting the international S&T cooperation between Greece and a large number of other countries.
The implementation of actions related to bilateral research agreements will continue during the 2014-2020 period. Furthermore, it is planned to extend these agreements to include large actions directly related to RIS3 priority needs, in addition to small transnational project funding.

- In parallel, Greece’s participation in Joint Programming activities for current/critical issues in new or existing areas is being considered. In this context, Greece supports the initiative to create a Joint Programming action on migration.
- Coordination between MERRA/GSRT and other Ministries will take place in the context of the national legal framework for research, through a Scientific Liaison Officer for Research, Technological Development and Innovation appointed in each Ministry, with the aim of policy and project coordination.

2.2 OPTIMAL USE OF PUBLIC INVESTMENTS IN RESEARCH INFRASTRUCTURES

2.2.1 INTRODUCTION

The term “Research Infrastructures” (RIs) refers to unique facilities, resources and related services used by the scientific and research community to conduct high level research across the entire spectrum of scientific domains. RIs constitute a vital ERA element, by offering unique research services to users from different countries, by attracting young people to science, by forming multidisciplinary research communities, and by contributing to innovation promotion and economic growth.

Following the Lisbon Strategy on ERA, coordination at European level towards the creation of common RI has been a top priority at national and EU level. To that end, the European Forum for Research Infrastructures (ESFRI) was created in 2002 by the EC and MS in order to formulate and coordinate coherent common European policies for the design, creation, operation and international visibility of European RIs. The first ESFRI roadmap was announced in 2006 and was subsequently revised in 2008, 2010 and 2016.

Funding for the preparation of joint European RIs, i.e. for the development of each European RI’s business plan and its statute of operation, came from RTD Framework Programmes (FP6, FP7 and Horizon 2020). Funding for the construction and operation of the joint European RIs comes exclusively from national resources of participating MS that decide on the type and the amount of their contribution. All MS contribute to the central RI administration structure, situated in the country hosting the RI’s headquarters. The host country shoulders a significant part of the RI’s construction and operation costs. Most European RIs are distributed (networking of participating MSs’ existing infrastructures); nonetheless, some RIs were built from scratch. To facilitate their creation, a Regulation entitled “European Research Infrastructure Consortium” (ERIC) was approved at EU level. The Regulation provides a single legal basis for the joint establishment and operation of European RIs, without being mandatory. Initial commitment/accession to the RI is usually valid for five years.

Greece actively supported all decisions at European level and was active both in the main Committee and in all ESFRI working groups, while at national level MERRA/GSRT supported the Greek participation at all stages.

We note that, during the public consultation conducted by the EC on ERA priorities, the top priority that emerged was “Making optimal use of public investments in RIs by setting
national priorities compatible with the ESFRI priorities and criteria taking full account of long-term sustainability”.

2.2.2 STATE OF PLAY IN GREECE

Participation in pan-European Research Infrastructures of the National ESFRI Roadmap – Funding

Despite low R&D expenditure, both public and private, in Greece during the last decades, the Greek research community is particularly active in global Research Infrastructures. Meanwhile, Greece fares well in EU’s “Research Infrastructures” programme, both through integration activities, bringing the research community closer to ERA, and through active participation in ESFRI projects and infrastructure. After successful participation of Greek research institutes, Greece/GSRT decided, at the end of FP7, to initially fund a) the development of a national network and a national action/business plan for all RIs with Greek participation whose preparatory phase was financed in FP7, and subsequently b) the upgrade of the Greek infrastructure/National network (“Construction Phase”) for 14 of the 35 RIs included in the first European RI Roadmap (2006). These RIs belong to the following thematic areas: Environment, Social and Cultural Innovation, Health and Food, and Electronic Infrastructures.

Participation in already established and operational European RIs: To date, Greece has joined the following eight (8) infrastructures: PRACE, BBMRI-ERIC, INFRAFRONTIER, SHARE-ERIC, CLARIN-ERIC, DARIAH-ERIC, Euro ARGO-ERIC, CESSDA AS. Procedures for formally joining LIFEWATCH-ERIC, CESSDA-ERIC are at their final stages, as is the renewal of participation in PRACE (PRACE-ERIC), which is the only electronic infrastructure of the ESFRI Roadmap.

Participation in the 2016 Roadmap: Greece participated in the 2016 review process of the ESFRI Roadmap, mobilising the research community to participate in the new EU effort, at the same time participating in the ESFRI RI Preparatory Phase. In particular, there is ‘Greek contribution’ to all four (4) new projects/infrastructures selected to be included in the 2016 ESFRI RI Road Map following an open call, to a reformed existing project (KH3NET2:0), and to two (2) emerging RIs.

MERRA/GSRT has decided for various reasons, after consultation with the stakeholders participating in RIs’ preparatory phases, to be represented at European RIs mainly by a scientific organisation, namely the coordinator of the National Network. Organisations participating in the various stages to date, especially those funded also by GSRT, are for the most part based in the Attica and Crete regions. Organisations representing the country in RIs that Greece has formally joined are based in Attica.

National Research Infrastructure Roadmap 2014

At national level, Greece has compiled the 2014 National Roadmap for Research Infrastructures as part of a bottom-up approach which included the publication of a call for expression of interest to the research and academic communities. The main objective is to support the decision-making process, fulfilling strategic research priorities and developing a national evidence-based strategy in line with European priorities.

The proposals submitted for inclusion in the 2014 national RI roadmap were evaluated by international experts, using as criteria the scientific and technical quality of the proposal, the innovation potential merit and their economic viability. The evaluation was followed by a
strategic prioritisation of the proposed RIs on the basis of the expected socio-economic benefits for Greece and the relevance of the RIs to national and regional priorities for Research and Innovation. This stage also included the aggregation of certain RIs so to reinforce critical mass, networking, synergies and return on investment. This evaluation and consolidation process led to the selection of 26 RIs for the National Roadmap, of which eighteen (18) are associated with 26 RIs of the renewed 2016 ESFRI roadmap.

Assessment of the Greek participation: In what regards the harmonisation of RI thematic areas, joint programming and international networking, it is clear that Greece has fully participated, despite the reduction in RTD budgets of recent years. This demonstrates both the priority attached to this matter by the Greek State and the importance that research institutions and the Greek research community in general, attach to international networking and participation in joint European infrastructures. Moreover, in the framework of the RIs evaluation by international experts, the criteria of competition, sustainability and impact on the economy and society have been taken into account so as to develop an investment plan for their funding using ESIF funds.

2.2.3 OBJECTIVES

MERRA/GSRT will continue to provide policy support for RI and ERA matters. The focus will be on enhancing participation in European RIs and, above all, on exploitation of the services that they provide. In this context, Greece’s main objectives include:

- Strengthening Greek participation in European RIs.
- Further use/accessibility of RI services by the Greek scientific community of the public and private sectors.
- Funding of Greek institutions participating in ESFRI RIs.
- Continuing and enhancing Greek participation in the Horizon 2020 RI programme.
- Evaluation of the Greek participation in ESFRI RIs to date, mainly those that Greece has officially joined.
- Geographic coverage of the Greek participation, as well as thematic coverage, in particular in the energy sector where there are comparative advantages on many levels.
- Development of an infrastructure-friendly culture in the Greek scientific ecosystem.
- Further harmonisation of national RI policy implementation with European ESFRI policies in the context of ERA implementation.
- Enhancing business access to RIs and promoting relevant partnerships in order to upgrade RI capabilities towards producing innovative products.

2.2.4 MEASURES

- GSRT supports and encourages the country’s participation in European RIs to a great extent. Greece has expressed its interest and is involved in RIs that are currently in their preparatory phase; many of those RIs are very close to the establishment phase.
- Funding RIs that are included in the 2014 National RI Roadmap with approx. € 140 million from Structural Funds/RIS3. 80% of these infrastructures are associated with RIs on the ESFRI Roadmap.
- Support to information-dissemination activities, both in the academic/research and business communities and towards the general public, highlighting the role of RIs. In this context, GSRT will organise a series of workshops, among other activities. The first workshop will present the activities of the Greek networks within the framework of European ESFRI roadmap RIs which Greece has already joined. This will include
presenting each RI as a whole, the services it offers, and the experience gained from participation in the RI. Moreover, awareness-raising activities will focus on the importance of emerging research, which can lead to applied research and to production of innovative products of a high added value, with multiple benefits for civil society.

- Funding of RIs on the national roadmap will enhance and ensure access to excellent infrastructure for the Greek research, academic and industrial communities. These infrastructures, based on optimal use and needs prioritisation, facilitate research of a high level, while at the same time helping to address major challenges in innovation, related to the Greek economy as a whole and to financing decisions. We believe that these infrastructures will also be attractive to researchers from other EU MS.
- Continuation of national-level actions to encourage the participation of the Greek research and business communities in Horizon 2020/RI funding programme.
- RI roadmap implementation will be supervised by GSRT in the framework of a wider monitoring plan for the 2014-2020 programming period (including a RI register), so as to ensure a maximum return-on-investment for society and the economy.
- Moreover, research institutions and HEIs will be encouraged to contribute to the coordination/streamlining of RI roadmap procedures at national and European level, and to harmonise their priorities and strategic plans with the roadmap.
- Active participation in ESFRI roadmap processes: Greece will continue to participate in the ESFRI Roadmap review process and the relevant consultations, which examine the priority criteria and the evaluation and decision-making procedures, in cooperation with all partners. The aim of this process is to support multilateral initiatives that will lead to the better use and the development of research infrastructures at European and international level, and will showcase them as nodes of “scientific diplomacy”.
3. PRIORITY 3: AN OPEN LABOUR MARKET FOR RESEARCHERS

3.1 INTRODUCTION

The free circulation of knowledge has been identified as the fifth freedom necessary to maintain an attractive and competitive labour market, to assist the transition towards knowledge society and to prevent brain drain. Open, transparent and merit-based recruitment procedures enhance the attractiveness of RTDI systems and contribute to maintaining and improving research human capital in the long term, both in quantitative and qualitative terms. At the same time, they foster cooperation and competition among research institutions, thereby providing the motives to continuously improve quality, innovative character and excellence within ERA.

Maintaining an adequate scientific skill base requires attracting young people to the researcher profession, improving education systems to meet the highest international standards and be attractive in conditions of global competition, implementing high-quality doctoral curricula, creating links between the academic/research and business communities in order to increase employment of researchers in enterprises, and creating an environment of open innovation to accelerate the exploitation of research results.

Actions financed under the Horizon 2020’s “Excellence” pillar promote the objectives of this priority through support to the most talented and creative researchers (ERC), to mobility (international and cross-sectoral) and training (Marie Sklodowska Curie Actions), and to world-class research infrastructures and researchers’ access to these infrastructures. Another important contribution in this direction comes from the EURAXESS initiative, which supports mobility and promotes the principles of the “European Charter for Researchers” and of the “Code of Conduct for the Recruitment of Researchers”9, publishes jobs vacances and, through the EURAXESS link, supports establishing connections with European researchers living in third countries, so that in the future they can return to Europe.

Other initiatives undertaken at European level include the principles of innovative doctoral training, which mainly promote cross-sectoral mobility, the Scientific Visa Package to facilitate the mobility of researchers from third countries, and the recent RESAVER programme (Retirement Savings Vehicle for European Research Institutions) that aims to establish a pan-European researchers' retirement facility.

We note that a top priority that emerged during the public consultation on ERA priorities conducted by the EC was “using open, transparent and merit based recruitment practices with regard to research positions”.

3.2 STATE OF PLAY IN GREECE

Greece possesses a research workforce of high quality. According to the results of a study performed by the National Documentation Centre (NDC)10, Greece has a large highly-skilled specialised workforce, with 7.3 PhDs per 1,000 economically active persons, and ranks 9th among the 22 countries surveyed. However, the limited increase in absolute terms of the

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9 The principles contained in these documents are also related to the development of a toolkit for open, transparent and merit-based recruitment procedures (Open, Transparent and Merit-based Recruitment/OTMR).
10 “PhDs in Greece: Career and mobility” (NDC, 2015). Publication of the results of the “International Survey on Careers of Doctorate Holders-CDH” study.
researcher population during the 2000-2010 period (about 2,000)\textsuperscript{11} along with an increase in the brain drain phenomenon among highly skilled scientific personnel constitute worrying trends that need to be addressed through the implementation of human capital support policies and the improvement of research environment attractiveness in general.

In terms of the legal framework, providing conditions for a sufficient flow of new competent researchers, providing education and offering researchers attractive career prospects, achieving superior geographical and cross-sectoral researcher mobility between institutions, disciplines, sectors, and countries constitutes one of the goals of the National Strategy for Research and Innovation, according to Law 4310/2014.

Other legislative initiatives, such as Law 4009/2011, introduced reforms to modernise HEI management, improve the employment status of faculty/research staff and reshape curricula towards achieving greater flexibility, strengthening inter-disciplinarity and introducing teaching in a foreign language so as to attract foreign students. The role of the Hellenic Quality Assurance and Accreditation Agency (HQA) has also been upgraded with respect to its responsibilities on certification of internal evaluation procedures and curricula quality assurance.

Greece also participates in initiatives at European level, such as the EURAXESS network with 13 nodes/centres in 8 different cities, designed to inform researchers about mobility issues (residence permits etc.) and to raise awareness of research and academic institutions towards implementing the principles of the “European Charter for researchers” and of the “Code of Conduct for the recruitment of researchers”. The network, coordinated by CERTH, has contributed significantly to the implementation of ERA principles at national level and to researchers’ support and information.

MERRA/GSRT considers the relevant Horizon 2020 actions particularly important. Hence, GSRT works on the one hand towards strengthening Greek participation in FP actions such as Marie Sklodowska Curie fellowships and on the other hand towards strengthening/expanding these actions at Union level.

**Recruitment system and Publicity**

In Greece, as in several other countries, there are two distinct labour markets for researchers. One market includes faculty members and researchers holding permanent jobs in HEIs and public research bodies, respectively. The other market comprises researchers\textsuperscript{12} employed under contracts either project-related contracts or fixed-term, mainly for the implementation of research projects or as fellowships.

The process for recruitment, evaluation and carrier progression of permanent staff (researchers) in public research institutions is documented in the relevant legislation (Law 4310/2014) and is in line with the principles of transparency, openness and meritocracy. Compliance with these principles applies also in the case of faculty members (Law 4009/2011). The selection and evolution of all faculty levels is performed by special seven-member committees, in which at least three members are selected from a register of external experts; at least one of these experts must be a faculty member at an equivalent HEI abroad.

\textsuperscript{11} A study on the Open, transparent, and merit-based recruitment of researchers, Final Report, March 2014, Technopolis group

\textsuperscript{12} According to Law 4310/2014 (Art. 18), the term “researcher” applies exclusively to permanent scientific staff working in research centres following an elected procedure.
Calls for applications are widely publicised, including posting on the EURAXESS website (for research centres, this only applies to Directors’ positions).

At the same time, progress has been made regarding the implementation of open, transparent and merit-based procedures for the selection of non-permanent staff. Specifically, despite the fact that HEIs and public research organisations are exempt from applying the law regulating contact based recruitment in the public sector, national regulations on expenditure eligibility under NSRF 2007-2013 mandate compliance with the principles of equal treatment, non-discrimination, gender equality, and transparency on temporary staff recruitment procedures. In applying these principles, public research organisations were to follow a procedure that included, as a minimum, publishing a call on their website, appointing a selection committee, disclosure of the evaluation criteria in advance, ensuring sufficient time between publication of the call and the deadline for application submission, respect for the right of candidates to be informed on the outcome of the process and for their right to object.

In recent years there has been a rising tendency in publicising job announcements on international platforms. According to data contained in «Deloitte, Researchers Report 2014», the number of posts on the EURAXESS website was 80.7 per 1,000 public sector researchers in 2013, while the respective average in the EU and the Innovation Union control group was 43.7 and 39.9, respectively. More than 1,900 jobs were posted in 2012, compared with about 700 posted in 2011. Based on these data, Greece ranked sixth in job publication out of a total of 51 countries. The response of the private sector, however, has remained extremely low (<2%).

Despite the steps taken, it is estimated that a large percentage of positions is not published, while there are also weaknesses in terms of the selection process. According to the report, only a small percentage of Greek researchers (30%) believe that research positions are widely communicated while less than 60% believe that the procedures are sufficiently merit-based and transparent.

**Strategies for human resource development**

To attract young people to the researcher profession, financial incentives are among the most decisive factors. Nonetheless, we should not overlook the contribution of other forms of support, such as recognition/reward mechanisms, mobility facilitation, freedom in the choice of research subject, and opportunities for access to training, funding and world-class research infrastructures.

The measures implemented to date include interventions at all levels of education in order to increase young people’s interest in science (communication and dissemination activities, summer schools, awards, etc.), initiatives/actions for improving curricula and for training/life-long learning, financial incentives (scholarships, employment in research projects, etc.).

Moreover, in October 2010 the Rectors’ Conference adopted the “European Charter for Researchers” and of the “Code of Conduct for the Recruitment of Researchers”, encouraging all HEIs to sign and implement them. Ten HEIs have announced adoption of the Charter until today (Universities of Crete, Ioaninna, Thessaly, Macedonia, Patras, Aegean International University, Aristotle University of Thessaloniki, Democritus University of Thrace and the Alexander Technological Educational Institute of Thessaloniki), as have four research centres (CERTH, NCSR Demokritos, National Research Foundation, Foundation for Research and
Technology). Two among these organisations (CERTH and University of Crete) have been accredited with EC’s special HRS4R logo. Two private institutions (CHIMAR Hellas and Euroscience) and MSCA Researchers’ Association have also adopted the Charter.

Doctoral programmes play an important role in preparing new researchers for the labour market and should thus be enriched with courses leading to a broader skill set that will enhance career prospects and increase the efficiency of research activities in general. The number of PhD graduates in Greece has increased significantly during the last decade, as has the freedom of universities in shaping the respective curricula. In 2013 the total number of PhDs in Greece was 35,457 (of which 38.9% are women). The vast majority of doctorate holders (94.8%) was employed (salaried employees or self-employed), while 8.7% is employed in the private sector.

Law 4009/2011 introduced provisions for improving the quality of postgraduate and doctoral studies through cooperation with foreign universities and research centres/institutes and through the possibility of organising courses taught entirely or partly in a foreign language. A prerequisite for implementation of all curricula is their certification in accordance with HQA procedures and criteria. Some doctoral programmes apply, albeit not systematically (no formal adoption), all or at least most of the principles on Innovative Doctoral Training.

Funding mechanisms for employing doctoral candidates and postdoctoral researchers in non-permanent jobs mainly include scholarships, funding of specific support actions for doctoral candidates/post-doctoral staff, and participation in research project implementation under national or international programmes so as to enhance their skills and mobility.

Law 4009/2011 also provides HEIs with the possibility of employing acclaimed scientists (PhD holders, PhD students or individuals with exceptional technical expertise) as fellows, under fixed-duration private law contracts. Fellows can be involved in teaching, research, scientific, organisational, laboratory or clinical work, as specified by their contract.

**Funding through NSRF 2007-2013**

Under NSRF 2007-2013, specific actions were funded to strengthen excellence and frontier research (ARISTEIA/EXCELLENCE I & II, ERC-GSRT), to support networking between Greek research institutions, and to attract important foreign scientists (THALES, ARCHIMIDES). In the framework of these actions, doctoral candidates and postdoctoral researchers were employed in order to gain experience and upgrade their skills through their participation in research projects of high quality. Actions to support doctoral candidates (HERAKLEITOS) and postdoctoral researchers were also funded. In the case of postdoctoral researchers, part of the research project could be implemented abroad so as to enhance the beneficiaries’ mobility and improve their career development prospects.

Moreover, scholarships for doctoral candidates and postgraduate researchers are offered by academic and research organisations through the respective programmes of the State Scholarships Foundation (SSF/IKY).

During the previous programming period, the operation of horizontal structures (Employment and Career Structures) was also funded at HEIs with the basic task of coordinating the actions of specific units (Liaison Office, Innovation & Entrepreneurship Unit, placement office) and the ultimate aim of a better and more effective liaison between HEIs.
and the labour market. These structures also implement career counselling actions (mentoring) and training on entrepreneurship, protection of intellectual property and the acquisition of communication skills, among others.

**Mobility**

The Greek legal framework includes provisions to facilitate the mobility of Greek researchers, such as the possibility of working in parallel at a foreign university for a specified time period and the right to a sabbatical or other type of leave of absence (unpaid leave and leave related to patent acquisition). In a similar way, it is possible for faculty of foreign HEIs to be elected to a position at a Greek HEI through an individual evaluation, for a renewable five-year term. During this employment, they have all faculty rights and duties, except for participation in the institution's governing bodies. Directive 2005/71/EC of 12 October 2005 is also applied, regarding the special procedure for admitting third-country nationals for purposes of scientific research (Law 4251/2014).

Despite equal treatment in the areas of employment conditions, social security etc., attracting foreign researchers remains limited. Language is an obvious barrier, but a more important inhibiting factor seems to be the limited attractiveness of work conditions and development prospects in Greece.

Cooperation with industry (cross-sectoral mobility) has been supported mainly through joint research projects and by providing funding to enterprises for hiring highly skilled workforce. Apart from the funds allocated for the implementation of these programmes, mobility of this kind depends largely on other factors related to the characteristics of the private sector in each country. Cooperation can be further supported through relevant provisions included in Law 4310/14 (Article 37), which allow and regulate all possible ways of cooperation, introducing also the concept of “visiting researcher”.

### 3.3 OBJECTIVES

- Full implementation of ERA principles for human resources, and further improvement in certain areas where, based on the above, some weaknesses seem to persist.
- A key objective is to promote activities and incentives that will help reduce the brain drain phenomenon while enhancing free movement of researchers and knowledge, and improving staff expertise.

### 3.4 MEASURES

To achieve these objectives, MERRA/GSRT will promote the following measures:

- Actions to inform all stakeholders on ERA principles and to collect proposals for possible interventions (in cooperation with the EURAXESS network).
- Introduce the issue at future meetings of the Rectors’ and Research Centres Directors’ conferences in order to a) implement the principles of the “European Charter for Researchers” and of the “Code of Conduct for the Recruitment of Researchers” and ensure HR54R certification by all organisations, and b) improve the regulatory framework so that selection procedures for non-permanent research staff can become more open, transparent and merit-based.
- Enhance participation in Marie Skłodowska-Curie Actions (MSCA), as well as in international networks and partnerships that provide opportunities for training and access to research infrastructures/activities of international scope. In this context, the
posibility for Greece to benefit from the advantages of MSCA COFUND actions\(^{13}\) will be examined (co-funding of regional, national and international programmes). Greece is one of the few countries not having submitted any proposals to the COFUND programme, which would allow it to double its scholarship resources for researchers and young scientists.

- Information and dissemination actions regarding EURAXESS activities – improvement of the national EURAXESS network for support/information consulting services.
- After the approval by Parliament of the new social Insurance law, GSRT will initiate dialogue with all stakeholders regarding Greece’s participation in the pan-European retirement savings vehicle for researchers (RESAVER).

In achieving the second objective in particular, a contribution is also expected from more general provisions intended to strengthen RTDI capacity, and from interconnecting research and education along with specific actions to strengthen excellence, support networking between institutions, and improve career development prospects for young researchers in the academic/research sector but also in the areas of self-employment and innovative entrepreneurship. We can mention, for instance:

- **Doctoral programmes – cross-sectoral mobility:** including courses that contribute towards acquiring additional skills and broadening the alternatives for career development (entrepreneurship, research project/team management skills, communication, IPR management etc.)

- **Funding of actions for the development of human research capital with an emphasis on young researchers (PhD candidates, postdoctoral researchers).** The actions of the Operational Programme “Human Capital Development, Education and Life-long Learning” are already at the stage of activation; they will provide funding for PhD candidates to prepare a PhD thesis and for young Doctorate holders to acquire academic teaching experience. Moreover, an important part of the Foundation for Research and Innovation’s Phase A funds will be directed to actions supporting PhD candidates and postdoctoral researchers.

\(^{13}\) Intended for organisations that fund or manage doctoral programmes and fellowships for experienced researchers.
4. 1. PRIORITY 4 : GENDER EQUALITY AND GENDER MAINSTREAMING IN RESEARCH

4.1 Introduction

The systematic integration of the gender dimension in research has been an objective of the EC since the 1990s and its promotion takes place at two levels:

- The first level concerns addressing gender imbalance in decision-making processes related to research and the composition of research teams, including the removal of barriers related to gender in recruitment and career progression.
- The second one involves strengthening the gender dimension in research programs and projects.

According to the above, the structure of the research area in terms of gender representation and sexism in research content are the object specific interventions.

The importance of this priority is not just identified in the compliance with the principles of non-discrimination, justice and equality. It is also linked to efficiency, competitiveness, avoiding the waste of resources and talent by adopting strategies aimed at the systematic integration of the gender dimension in the organizational structure and operation of organizations, culture in its broader sense, programs, policies and practices in R&I at all levels. In this context, MS are expected to proceed with the development of a suitable institutional framework and a series of policies and incentives to remove legal and other barriers to the recruitment and career progression of researchers, to address imbalances in decision-making and strengthen the gender dimension in research programs / projects.

In accordance with the above, the actions of the EC within Horizon 2020 are based on a threefold goal that includes the promotion of gender balance in research teams of funded projects and in decision-making bodies (40% participation of the under-represented sex in evaluation panels and expert groups and 50% for advisory groups) along with the integration of the gender dimension in R&I.

Despite the existence of strategies at national and European level, the process of change is rather slow and there are still significant disparities among member states. The barriers to the employment and progression of women and imbalances, mainly in the higher ranks, still remain and the gender dimension in research content has often been overlooked. Specifically, according to the information contained in the EC report (SHE Figures 2015):

- The percentage (33%) of female researchers remains low in relation to the percentage of women doctorate holders (47%). The corresponding figures for Greece are 36.7% and 44% respectively.
- In higher education institutions (data for 2013) only 20% of grade A academic positions are occupied by women. The corresponding figure for Greece is close to the EU-28 average, amounts to 19.6% and increases when switching to lower grades, as in most countries.
- Women in charge of higher education institutions: the rate for the EU-28 appears improved (20.1%) compared with that of 2010 (15.5%), but it still remains low. Little improvement was recorded on the index for the phenomenon of the glass ceiling (Glass Ceiling Index) that dropped from 1.9 in 2004 to 1.75 in 2013. For Greece it was estimated at 1.49 for the same year.
We also note that the top priority that emerged from the public consultation conducted by the EC on the ERA priorities was “Translating national equality legislation into effective action to address gender imbalances in research institutions and decision making bodies and integrating the gender dimension better into R&D policies, programmes and projects”.

4.2 STATE OF PLAY IN GREECE

As part of ERA implementation, the dual objective of combating gender discrimination in research and the integration of the gender dimension in research content and in the management processes and governance is particularly important, especially for MS with more traditional regimes in addressing gender. The imbalance is more apparent in specific areas and disciplines, e.g. as demonstrated by the increased representation of women in the public sector and the social sciences, as opposed to the stronger presence of men in the private sector and science/engineering sciences.

Greece is one of those cases, where, despite the significant changes that have taken place in recent years, mainly due to the increase of female graduates rate, which currently exceeds that of men, the research sector continues to be characterized by significant imbalances both horizontal, between different scientific disciplines, and vertical (levels of hierarchy).

Specifically, there have been delays in taking concrete measures, and even in cases where measures were indeed taken, were either never activated or implemented too slowly. The whole process is further hampered by the fact that the full implementation of certain measures requires deeper social changes exceeding the research field. As a result, changes in research either take time to become visible or clash with male-centred or male superiority attitudes that prevail in the field of Science/Science Engineering, as well as stereotyped gender attitudes in the sector of Social Sciences and Humanities. Surprisingly, integration of the gender dimension seems to fail even when it is considered redundant, because "the gender dimension should be everywhere."

The Greek Constitution (Article 2, par. 4) enshrines 'equality of the genders' in terms of rights and obligations. The 2001 revision (Article 116, par. 2) for one explicitly clarified that positive measures to promote equality are allowed and also abolished the part that provided for exceptions to the principle of equality "for serious reasons and in cases specifically defined by law". It also provides that «the state shall take measures for the elimination of inequalities actually existing, in particular to the detriment of women.» The purpose of this provision is to eliminate institutional and actual inequality towards women and to promote not only institutional equality, but also equal treatment of the genders through equal opportunities.

The overall institutional framework is complemented by a series of laws that transpose the relevant EU directives regulating access to employment and protection against discrimination both in the workplace and in industrial relations, including the case of self-employed workers.

Additionally, the General Secretariat for Gender Equality implements a series of relevant initiatives, such as the flagship project “Organization of services for integration, monitoring and evaluation of gender equality policies across the breadth of public action (Observatory)”, aiming to support public administration and local authorities in designing
and implementing relevant policies. The project qualified as “good practice” and, as such, was included in the E. Commission Report on Equality (March 2016).

**Addressing the imbalance between the sexes in research**

Greece still lacks a comprehensive legal framework. This issue, however, seems to be settled through certain amendments of Law 4310/2014 (essentially Article 4) that has been introduced by the government and will be enacted by the Parliament. Even in cases, however, where such statutory provisions do exist, the organizations in charge rarely abide by them, most of the time without any impact whatsoever. This intensifies discrimination and legitimizes approaches used to refer to gender as a procedural / legal obligation without tangible results or consequences.

At the same time, both in the private sector, where the pressure is linked to productivity, and the public sector, gender discrimination is not considered an important issue and the obstacles to the progression of women are attributed to the social division of labour between the sexes in general, connected with caring responsibilities rather than the individual workplace.

To address this critical policy issue, P. Hatzopoulos, N. Kambouri and K. Kiki-Papadakis made some interesting proposals for positive measures to be taken that include, inter alia, a) the adoption of gender action plans for the promotion of gender equality in the private and public sectors, b) the adoption of statutes on the operation of research teams, which will include the dimensions of gender, and c) provision of substantial training on the management of research groups for men and women researchers. To these we could add a) interventions in the organizational structure of research institutions, b) flexible work schedules, c) specific efforts to alter prevailing perceptions on the ‘glamour’ of certain research areas in relation to gender, d) interventions in areas of research showing over-representation of one gender, e) measures to encourage new researchers taking into account gender equality etc.

All the above areas call for effective measures to eliminate gender discrimination in research. It should also be noted that the gender of the researcher does not automatically identify the type of research produced. Sexist approaches can be found in both genders, thus undermining the innovative nature and quality of the produced research. Therefore, the promotion and support of women in research is a necessary measure, which must be completed by promoting the integration of the gender dimension in the research object and the research perspective.

**Strengthening the gender dimension in research programs**

If the result of the above mentioned proposals or other equivalent measures could tackle, at least partially, the imbalance between the genders in research and the discrimination against women, the issue of the absence of ‘gender mainstreaming’ in research as a whole constitutes a much more difficult task. Besides the elimination of sex discrimination, gender mainstreaming in research constitutes a much more important factor for enhancing the quality and innovative nature of research.

Although it has been demonstrated that the integration of the gender dimension in research significantly contributes to innovation and is an asset to society and science (these are the reasons why it has become a target of the EC), this perception is still not widely accepted,
especially in countries such as Greece, in which the gender relations system is more traditional than in other EU societies and dominated by naturalistic conceptions.

This fact has serious implications in all areas of research, but mainly in exact sciences (science) where the neutrality of gender issues is taken for granted by default and rarely questioned. This 'neutrality' does not appear to be confirmed by the recent findings of a study with regard to the innovative integration of the gender dimension in scientific research. As demonstrated by a group of experts who addressed the issue, we can no longer ignore that the integration of the gender dimension, even in research areas that do not show visible correlation, provides valuable new knowledge that contributes to innovative research and the production significant results. The importance of gender in science is a matter that should be of particular concern for the research policy, because it represents a field that shows considerable resistance when questioning the supposed neutrality.

A similar situation exists in the field of Humanities and Social Sciences in Greece, where bias on gender issues are an important resistance factor, the only notable exception being Social Anthropology, in which the prevailing views are influenced by gender. This does not mean that non-sexist research is non-existent in other areas and fields, especially in Sociology. In fact, there are notable exceptions in many fields, but are a minority in Greek academic production, as regards choice of subject and approach, and related concepts are often characterized as idiosyncratic, ideological (i.e. not neutral and objective) or even outdated. The same applies to specific cases of bodies active in social research (e.g. NCSR), where research on gender issues is carried out ad hoc and on an occasional basis.

With the exception of some specific actors that conduct targeted research on gender issues (Research Centre for Gender Equality / KETHI, Panteion University), no systematic measures have been taken to guide research on gender issues. Much less has been done to integrate a perspective that takes the gender equality dimension into account in all areas of research.

As part of the funding provided by the E. Commission for the integration of the gender dimension in research, the subject is often treated superficially and is limited to adding the relevant field in the proposal for purely financial reasons, without the required processing and the organic connection of the questions that will be addressed in the proposed project. Reviewers with insufficient knowledge in this field are often satisfied with that shallow reference.

4.3 OBJECTIVES

- To improve/complete the existing institutional framework and develop policies and incentives to create a more favourable environment in terms of recruitment and career progression of female researchers, in collaboration with stakeholders combined with general actions of awareness raising and training of personnel.
- To come up with ways of exploiting scientific knowledge that has been produced on gender issues in undergraduate courses and postgraduate level, as well as measures to encourage researchers to integrate a gender perspective in the design of projects.
- Among the immediate objectives of the Greek research policy on gender issues, together with the initiatives taken in the context of Horizon 2020, shall be (a) to address the existing hierarchies and gender discrimination through the adoption of clear and specific rules governing the research workplace and also (b) weaken perceptions that
profess gender neutrality of science and bias about gender issues in social research by promoting and further strengthening research efforts that incorporate the gender dimension in all scientific areas.

- The EU Framework Programme for R&I, Horizon 2020, in which “gender” is an important element of the project selection process, will play a key role in Greece, as regards the strengthening of research objects that will incorporate the gender dimension.
- Finally, taking into account the horizontal nature of policies, more systematic collaboration with the General Secretariat for Gender Equality will be pursued, as well as the exploitation of synergies/complementarity with relevant actions to be implemented in the new programming period 2014-2020, under the OP “Human Resources development, education and lifelong learning” to promote equal access of women to the labour market, education, training and lifelong learning.

4.4 MEASURES

1. Institutional regulation and immediate implementation of the relevant provisions including:
   - Incorporating for the first time gender mainstreaming in the national institutional framework for the Greek research and innovation system. This is regulated under the amending provisions of Law 4310/2014. As mentioned above, among the purposes of the national Strategy for Research, Technological Development and Innovation (Article 4) is “contribution to gender equality with the equal integration of the female gender in research and balanced gender representation at all levels of staff, including supervisory, managerial and administrative level, through the application to this end of equal opportunities in recruitment, in the subsequent career stages and in selection and evaluation committees in conjunction with the implementation of quality criteria and qualifications’
   - Specifying a minimum representation percentage for each gender in the composition of advisory bodies (1/3 of members), provided that the candidates have the necessary qualifications for the position in question. The provision is based on Article 116 of the Constitution and regards: a) the National Council for Research and Innovation, b) the Sectoral Research Councils, c) the Regional Research and Innovation Councils and d) the Scientific Councils of Research Centres.

2. Increasing the participation of women at national level, mainly within the scope of RTDI actions of smart specialization strategy (RIS3), setting minimum gender representation rate in the composition of proposal review committees / independent review committees at 1/3 of the members to begin with, in order to gradually reach 40%, provided that the necessary quality and competence criteria will be met. The ultimate goal being the redesign of project funding schemes at national level and the adoption of practices similar to those applied in the context of Horizon 2020.

3. Promoting the immediate funding by the State Scholarships Foundation of a program that will incorporate the gender dimension in all fields of doctoral research (at least two doctorates).

4. Encouraging public research bodies to draw up action plans to promote gender equality and to incorporate relevant provisions in their Internal Regulations and / or strategic plans.

5. Wide publicity of the rules governing Horizon 2020 and the “gendered innovations” approach, particularly in research organizations active in the area of science, in order to raise awareness on gender issues, which are very limited in this area.

6. Encouraging universities to promote teaching and research on these issues with the introduction of relevant doctoral programs in all areas.
7. Support research on gender issues through its emergence as one of the research areas that are a priority for funding and provision of incentives (e.g. by funding auxiliary research staff).

5. PRIORITY 5: OPTIMAL CIRCULATION AND TRANSFER OF SCIENTIFIC KNOWLEDGE

5.1 OPEN INNOVATION AND KNOWLEDGE TRANSFER BETWEEN PUBLIC AND PRIVATE SECTOR – E-INFRASTRUCTURES (DIGITAL ERA)

5.1.1 INTRODUCTION

According to the Green Paper on ERA (2007), the creation, diffusion and exploitation of knowledge are at the core of R&I systems. The removal of legal, political and technical barriers to the wide circulation and use of knowledge is particularly important both in the ERA context, where knowledge must freely circulate without obstacles, and in the context of the general objectives to increase the economic impact of research and its contribution to growth and competitiveness.

To achieve these objectives, MS are invited to formulate and implement knowledge transfer policies, both at central level and at the level of individual institutions, that will focus on increasing the public sector’s role in open innovation, on strengthening the professional character of knowledge transfer activities, and on promoting measures/incentives to facilitate interaction, strategic cooperation and common research agendas between the research and business communities. The development of appropriate and coherent strategies for the management of intellectual property on the part of academic and research institutions, in accordance with EC’s Recommendation and guidelines, is also encouraged.

Given that digital media are one of the main instruments used for the creation and transfer of knowledge, e-infrastructures and related digital services are closely linked with policies for strengthening “open innovation” and the links between research, business and education (the “knowledge triangle”), but also with the access to scientific information and its long-term preservation. In this context, MS are invited to harmonise their policies on the access to and use of e-infrastructures related to research and education, and to formulate national strategies for the electronic identity of researchers aimed at providing access to digital services at international level.

Finally, this priority provides for open access to scientific publications resulting from publicly funded research, as this will contribute decisively to the rapid dissemination and use of knowledge, to the avoidance of duplication and to the improvement of the quality and ability to reproduce results, with benefits for both science itself and society as a whole. Open access to research data is a subject on which discussions are still at an early stage, namely that of investigating appropriate tools and implementing pilot actions (e.g. Open Data Pilot under Horizon 2020).

In this context, and to better reflect the situation, we examine open access separately as a sub-section of this priority, as follows:

5.1 Open innovation and knowledge transfer between public and private sector – e-infrastructures (digital ERA)

5.2 Open access to publications and data from publicly funded research

14 In 2007, year of adoption of the Green Paper on ERA, the EC also issued a Communication on improving knowledge transfer, accompanied by voluntary guidelines for research organizations.

15 Commission Recommendation C(2008)1329/10-04-2008 on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations. These documents are currently under revision.
As a final remark, we note that the top priorities relating to 5.1 that emerged during the public consultation on ERA conducted by the EC were: a) “Fully implementing knowledge transfer policies at national level in order to maximise the dissemination, uptake and utilisation of scientific results” and b) “Transfer of knowledge should be an integrated part of the day to day work of research institutions and research funding organisations”.

5.1.2 STATE OF PLAY IN GREECE

Promoting open innovation and knowledge transfer

Open innovation and knowledge transfer from the public to the private sector, and in general support to every form of cooperation between the academic, research and business communities, as well as the exploitation of research results, have been Greece’s basic policy priorities over time. All RTDI actions (programmes, infrastructures, support structures etc.) have been designed in this direction and most available funding has been earmarked for this purpose.

In addition to the promotion of various types of programmes, the creation of intermediate support structures was a key priority of MERRA/GSRT. Initially, the focus was on the creation of Science & Technology Parks within GSRT research centres and subsequently on the creation of business incubators by the private sector. These initiatives, however, did not produce the expected results in terms of promoting open innovation or consolidating permanent/strategic partnerships between the business and the research communities. A third type of action, aimed towards creation of an innovation- and entrepreneurship-friendly environment in HEIs and research institutions through the establishment and operation of Technology Transfer Offices (TTOs) staffed with qualified personnel also did not yield the expected results. This was primarily due to the fact that the TTO was not considered an integral part of the organisation; instead, it operated mainly using temporary staff and for as long as government funding was available. Similar structures (Liaison and Innovation Offices) are included in the legal framework on higher education. According to the law, their activities will include, inter alia, management of intellectual property matters and promoting communication and cooperation with industrial establishments for further exploitation of research results.

During the previous programming period (2007-2013), the most important actions promoted by MERRA/GSRT mainly funded cooperation schemes/partnerships between business and academia, creation of new innovative enterprises, support for SMEs, and support for new businesses (COOPERATION, CREATION/spin-offs, Vouchers for SMEs, PAVE, actions for SME groups etc.). Funding was also provided for the creation of clusters, initially in the field of microelectronics (mi-Cluster) and later in the fields of Gaming Technologies & Creative Content (gi-Cluster), and Space Technology and Applications (si-Cluster). The Research and Innovation Center Athena/Corallia played an important role in cluster implementation. Furthermore, GSRT also participated in the ARTEMIS and ENIAC Joint Technology Initiatives (JTIs), with very large participation of Greek organisations.

Similar/complementary actions were promoted by the Ministry of Development to support entrepreneurship, including the provisions of the Investment Law (3908/2011)16 concerning incentives for cooperation between business and HEIs/research institutions based in Greece and the EU.

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16 Currently under revision; similar actions will be included in the new version.
Despite these efforts to provide leverage to private funding for research and to strengthen partnerships, the links between businesses and R&I still remain weak, in part because of a weak demand for R&I on the part of businesses, which in Greece are in their vast majority SMEs and active in sectors of low knowledge intensity. Measures for the creation of innovative firms and spin-offs for the exploitation of research results also failed to deliver the desired outcome. Despite the horizontal nature of most programmes, a significant priority was the promotion of actions for the development, implementation and use of ICT in both the public and the private sector, with significant response (very high demand) on the part of the beneficiaries. The actions in this field to date have helped to create critical mass both in the public and in the private sector. This is evidenced by the Greek presence in the respective EU programmes and actions, notably in the context of FPs for RTD.

**Regulatory Framework – Intellectual Property**

In terms of regulatory framework, provisions to promote the actions mentioned above have been available for several years; however, they often involved complex procedures. This fact, combined with the obligations arising from Structural Funds Regulations, which were the main source of funding RTDI activities, and State Aid Regulations, caused significant delays in action implementation. Furthermore, these provisions did not adequately regulate intellectual property matters.

The intellectual property protection framework has evolved in recent years into one of the new factors that influence competitiveness, not only because it constitutes an intangible capital for businesses, but also because of its importance for the development of innovations and their promotion in the market, particularly as part of the transition to more “open” innovation models. Accordingly, sound Intellectual property management by public research organisations accelerates the exploitation of research results and facilitates knowledge transfer to the private sector, mainly through licensing and spin-offs.

Performance is also quite low in this area (industrial designs and patents), with Greece attaining one of the last places among EU countries, despite the existence of the relevant legal framework and incentives (e.g. tax incentives, Law 3842/2010). The efforts that have been undertaken in the past to enhance the role of intellectual property had limited effects, mainly because Greek companies have not incorporated new knowledge generation into their strategy. The prolonged economic downturn has acted as an additional deterrent.

Despite the steps taken in this area, all RPOs should aim at systematically address intellectual property issues through development and publication of policies and procedures, and through the implementation of concrete measures in accordance with the EC Code of Practice. Similar measures should be taken for training/specialisation of intermediate structures’ personnel in matters of intellectual property management, knowledge transfer and entrepreneurial culture. We expect these issues to be taken into account by public research bodies through the integration of provisions for intellectual property management into their internal regulations, in accordance with Law 4310/2014.

**E-infrastructures and Digital Agenda**

Given that the creation and transfer of knowledge is increasingly performed through digital media, MERRA/GSRT has set Digital Agenda as a high priority by integrating/promoting relevant actions at all levels in its field of competence. In this context, electronic infrastructures (e-infrastructures) and digital services related to these infrastructures play an
important role, especially new technologies enabling online collaboration, sharing of computational tools and resources, and access to scientific information (e-science).

The Greek e-infrastructures ecosystem provides research and advisory services, supports training activities, and manages network and data centre operation. It thus combines advanced ultra-high-speed national connectivity, a high-performance and large-scale experiment computing system, and cloud computing infrastructure/services in a Distributed Computing Infrastructure (DCI) environment. At the same time, through various ‘as a Service’ offerings, researchers have the opportunity to take part in infrastructure management.

The Greek Research and Academic Network (GRNET) will play a leading role in the field of networking and cloud brokering/middleware infrastructures, and will work with other e-infrastructure providers around Europe to gain insight into new networking requirements posed by cloud computing, the data deluge and high-performance computing (HPC) developments.

At the same time, the cooperation with the General Secretariat of Telecommunications and Post will continue so as to ensure the necessary complementarity with the national strategy on Digital Development, in particular with respect to reinforcing and operating nationwide e-infrastructures with a European and international impact.

MERRA, in cooperation with GRNET, provides a central single academic identity e-service for students and staff of the Greek HEIs and public research organisations. The national identity for the approximately 300,000 students has been issued yearly for the last four years and as of 2015 an academic identity has been provided to HEI staff.

The national service for the provision of academic identity is a member of eduGAIN as part of the GÉANT infrastructure, and this identity is accepted all over the world for services like eduroam wi-fi roaming. This service, combined with inclusive Authentication and Authorisation Infrastructure (AAI) and Persistent Data Identification services, reinforces GRNET’s responsiveness to the increased demand expected in big data management for research and education, as well as in the context of e-government systems.

GRNET is also the coordinator of the eduGAIN–STORK interoperability pilot, and it operates the national HellasGrid Certification Authority and the South East Europe GRID Certification Authority, which provides certification services to the European Grid Infrastructure (EGI).

As a final remark, e-infrastructures form part of the 2014 National RI Roadmap.

5.1.3 OBJECTIVES

Improving knowledge circulation, “open innovation”, and the links between research, business and education (knowledge triangle) for the benefit of the economy and society.

5.1.4 MEASURES

1. Achieving this objective is a key aspiration of the vast majority of RIS3 2014-2020 measures, in particular those funded through the Operational Programme for Competitiveness, Entrepreneurship and Innovation (EPANEK), and as such it will absorb the bulk of the relevant resources. RIS3 is at the stage of preparation for action implementation. In summary, the interventions foreseen by RIS3 are as follows:
• The first set of interventions will include the creation of competence centres, intermediary supporting structures and structures for the management and exploitation of research results and intellectual property rights, coupled with the promotion of strategic partnerships between public research institutions and enterprises. It will also include actions to strengthen human capital through the acquisition of professional knowledge and skills in intellectual property management, innovation, and technology, in order to cover the significant lack of know-how and experience in this area.
• A second set of interventions will involve support for the exploitation of research results, mainly through the establishment of spin-offs, support to young scientists for developing the maturity of their business ideas, and the establishment of new thematic business clusters with the participation of academic and research institutions.
• The third set of interventions will focus on the better design of funding mechanisms and the implementation of regulatory interventions to support entrepreneurship and innovation. Actions supporting the development of an innovation culture and the dissemination of the social impact of the activities of the Greek research community will also continue.

2. Application of the provisions of Law 4310/2014, and in particular those regarding intellectual property management as modified by the Bill currently being debated in Parliament. They regulate the exploitation of research results by public research and technological organisations (HEIs, research centres etc.) and, more generally, the use/utilisation of their property.

5.2 OPEN ACCESS TO PUBLICATIONS AND RESEARCH DATA

5.2.1 INTRODUCTION
Open access to publications and data resulting from publicly funded research constitutes a core priority of the EU; its application requires actions and policy initiatives at international, union and national level. In this context, we present it as a discrete sub-priority within optimal circulation and transfer of scientific knowledge. The EC under J.-C. Juncker has set as its priority for R&I the three pillars “Open Innovation”, “Open Science”, “Open to the World”.

5.2.2 STATE OF PLAY IN GREECE
The main players in the Greek open access ecosystem are the government agencies responsible for RTDI policy development and funding (MERRA/GSRT) and other sectoral Ministries, such as the Ministry of Rural Development and Food, the Ministry of Culture and Sports, the Ministry of Interior and Administrative Reconstruction, as well as research organizations (HEIs, research centres) and other research practicing bodies. Beneficiaries of open access to research publications and data include also businesses cooperating with public organisations, including SMEs, through reuse of publicly funded research.

MERRA/GSRT has so far supported all efforts towards open science/open access at Union level, and the relevant Greek stakeholders have actively participated in all EU initiatives and projects. In particular:

Following the 2012 “Recommendation to the Member States on access to and preservation of scientific information” by the EC, GSRT was set as the National Reference Point (NRP) for Open Access. An informal committee, comprising representatives of the main Greek open access stakeholders, was appointed under the Secretary General to better plan and
coordinate the actions necessary for the development and adoption of the relevant policies. A position paper was drafted with the aim to support the formulation of a national plan for the implementation of open access policies for scientific publications and research results.

Open access to scientific content, despite the incompleteness of the regulatory framework on research, has been supported in Greece through the reinforcement of research and academic organisations’ e-infrastructures, mainly towards the development of scientific content repositories, but also through the successful participation of the relevant stakeholders in competitive EU programmes. Horizontally, Greek organisations that play a pivotal role in supporting open access and open science in general comprise:

1. The Greek Research and Academic network (GRNET S.A.), the technological organisation that provides RPOs with network technologies and cloud infrastructures, as well as the interconnection to the world research and education ecosystem through GÉANT infrastructures.
2. The “Athena” Research and Innovation Centre, which provides management services for research data (e.g. CLARIN, DARIAH, INSTRUCT, ELIXIR) and Linked Open Data services to support open access initiatives of the public sector.
3. The National Documentation Centre (NDC/NHRF) of the National Hellenic Research Foundation, mandated to aggregate R&T content and to provide access to the Greek scientific output. NDC/NHRF has also undertaken, on behalf of GSRT, the compilation of the official statistical data on research output (bibliometrics) and R&D activities.
4. The Academic Libraries Association (HEAL-Link), which provides services/subscriptions relating to academic libraries and services relating to HEIs’ open access repositories.

Additionally, the Greek Free/Open Source Software Society (GFOSS), a non-profit organisation, provides the platform for open standards, free software, open content, open access and open hardware.

These Greek organisations have an important contribution in the area of open access/open science at European level also. Athena (in cooperation with the University of Athens) coordinates the OpenAIRE European e-infrastructure, and the installation of the emerging European e-infrastructure for data mining on scientific results (OpenMinTeD). NDC/NHRF is the coordinator of the EU-funded project PASTEUR4OA (Open Access Policy Alignment Strategies for European Union Research) and systematically cooperates with European organisations, promoting the adoption of open access policies. Moreover, it played a decisive role in preparing policy proposals for open access as a partner of the RECODE project (Policy RECommendations for Open Access to Research Data in Europe). GRNET SA, a core member of the GÉANT academic network, offers the academic community a set of network (and related) services, such as High-Performance Computing/HPC (PRACE-encapsulated ARIS), cloud computing services (OKEANOS – EGI- and EUDAT-compatible), certification services (EPIC-compatible for access to EduGain, eduroam), services for the accumulation of open access educational content (Ariadne European network for tertiary education, and Open Discovery Space for primary/secondary education).

HEI interest in the development of open access policies has also been important. The Rectors’ Conference, for instance, approved, in 2012, open access for the dissemination of scientific results, and signed the Berlin Declaration. This fact implies an increasing realisation of the importance of open access, particularly in light of the Horizon 2020 open access requirements. As of early 2016, only two HEIs had adopted an open access policy, the International Hellenic University (IHU) and the Technical University of Crete (TUC). IHU’s
open access policy, in effect since 10 October 2015, is mandatory for publications, while it encourages researchers to submit research data to the organisational repository. TUC’s open access policy, in effect since November 2014, encourages its members to submit publications and research data to the organisational repository. In contrast to HEIs, none of the Greek research centres has adopted an open access policy. Nevertheless, there is interest in the area, and all RPOs are preparing their policies. With respect to content, Greek repositories mostly contain postgraduate dissertations/theses and doctoral theses (NDC’s National Archive of PhD Theses), not peer reviewed publications. The absence of open access policies at institute/research centre level can explain the lack of peer reviewed publications in these repositories while the same publications appear in other sectoral repositories (e.g. arXiv, PMC Europe).

At the level of research funding bodies, GSRT has included the submission of publications to an open access repository as a prerequisite in one of its recent calls (“Diversity, inequalities and social inclusion” Programme). As an alternative, researchers can select an open access publisher, while the submission of research data is also foreseen.

As mentioned previously, developments at policy/coordination level are slow; at infrastructure level, however, the image is different, as is the case in other European countries too. In general, there is a steady infrastructure development (mainly e-repositories), boosted by the relevant funding through Structural Funds. The creation of repositories can be considered as a first step for the further promotion of open access in Greece, given that successful policy implementation requires the existence of the necessary infrastructure. The time is right for the formulation of a strong strategy that will integrate existing initiatives, improve them where needed, and promote a coordinated approach for the benefit of the national and European economy.

5.2.3 OBJECTIVES

In summary, the main objective for Greece until 2020 is the definition of a clear strategy for open access and open science, and its application through the development of a roadmap. By that time, all public research funding bodies and public research organisations must have adopted open access policies for publications and open data. Greece will support the development of open science and investigate ways for minimising barriers to open knowledge circulation, especially with respect to evaluation systems and matters related to intellectual property rights and licensing, so that full utilisation of scientific information becomes possible. Until 2025, all publicly funded publications will be freely accessible. In parallel, measures will be taken for the integration of training and skill reinforcement programmes for research data management into HEI curricula.

Finally, we will promote the active participation of national representatives/experts in all committees and working groups functioning at EU level, and the harmonisation/adjustment of the national strategy on the basis of developments at Union level.

MEASURES

• The main measure will be funding the creation of the HELIX horizontal e-infrastructure, included in the National RI Roadmap; HELIX will integrate/coordinate all available infrastructures by defining the basic principles and priorities which will enable open access to the results of publicly funded research.

• MERRA/GSRT will appoint a committee with the task of formulating a strategy for open access to publications and research results, taking into account a) the proposals
submitted by the informal GSRT committee, b) the current state of play at national and Union level, in particular the latest developments at the level of the Council of the EU\textsuperscript{17}, and c) best practices from other MS. The committee’s mandate will include the identification of the regulatory measures necessary for implementing the strategy.

- Coordination with all relevant Ministries.
- Encouragement of Greek researchers to choose open access to publications: Greece, having invested in creating institutional repositories and in the development of the national HELIX/OpenAire-D infrastructure, will investigate ways to support the transition from the existing subscription-based system towards a system of open access to publications, by participating in the international debate and in the coordination of efforts towards development of alternative models. Aligning with European initiatives and best practices, Greece will further investigate the financial aspects of such models and, if needed, determine the measures necessary for the transition.
- Continuation of the efforts to inform, educate and develop the relevant skill sets.
- Gradual implementation of open access practices similar to those applied in Horizon 2020 in programmes funded by GSRT.

\textsuperscript{17} Specifically, the policy directions included in the Conclusions of the Competitiveness Council/Research “On the transition towards an open science system”, expected to be adopted on 26 May.
6. PRIORITY 6: INTERNATIONAL COOPERATION

6.1 INTRODUCTION

Effective international cooperation with third countries is necessary for tackling global societal challenges in common, facilitating access to new emerging markets, and attracting talented researchers and investment to the EU. According to the Communication published by the EC in September 2012\(^{18}\), a coherent strategy is required, that will utilise the multidimensional dynamics of initiatives implemented at bilateral and regional level or through multilateral fora and that will create synergies with policies in other sectors, both at EU level and at national level.

The systematic promotion of S&T cooperation and the synthesis of its components in the framework of further ERA development require revisiting bilateral cooperation with third countries, developed at MS level, under the light of priorities emerging at EU level, and developing mechanisms that will facilitate active MS participation in these negotiations. This coordination between MS and the EC is pursued mainly through the Strategic Forum for International S&T Cooperation (SFIC), which functions as an advisory body on shaping and applying EU strategy while it also implements pilot actions with selected countries (India, Brazil, China and the USA).

This strategy also encompasses the international dimension of the Horizon 2020 programme that includes both the general “opening” to third countries (granting the right to participate) and targeted actions in terms of thematic areas and partners. In what regards targeted actions, and according to the EC Report on strategy application (2014), there is a clear tendency to go beyond the “simple encouragement for direct participation of third country researchers” and towards participation in multilateral initiatives, as was the case in the joint call on blue growth of the Galway declaration.

Finally, the strategy includes the efforts to shape common principles and a cooperation framework on cross-cutting issues, such as IPRs, evaluation procedures and responsible R&I, participation in international organisations and multilateral initiatives mainly on matters relating to facing global challenges in critical areas (e.g. Belmont Forum, GEO, GLOPID-R, GEANT, RD-Alliance), and the implementation of a communication strategy that will highlight the advantages of the EU and its role in R&I matters at a global level.

6.2 STATE OF PLAY IN GREECE

Greece, as part of an ERA open to the entire world, actively promotes international cooperation with EU and third countries, both through bilateral cooperation agreements and through the wide participation of the Greek research community in Horizon 2020 projects and actions, in particular those regarding cooperation with third countries such as ERA.Net RUS and ERA.Net RUS Plus. International cooperation/networking is also promoted through Greece’s participation in International Organisations such as the European Space Agency (ESA), CERN, EMBL, and in joint programming initiatives on RTD and RI projects. The latter were extensively covered in the section of this document devoted to Priority 2.

We note that regarding international cooperation, and in particular bilateral S&T cooperation agreements, there is close cooperation between MERRA/GSRT and the Ministry

\(^{18}\) COM (2012) 497 “Enhancing and focusing EU international cooperation in research and innovation: A strategic approach”.
of Foreign Affairs for setting priorities in the context of promoting diplomacy through science, taking into account the policy/priority directions of the EU and ERA in particular.

**Bilateral cooperation**

To promote bilateral S&T cooperation, the Greek Government has over the years placed emphasis on bilateral S&T agreements for joint project implementation in areas of mutual interest. To date, Greece has signed 57 protocols of bilateral cooperation, many among them renewed during the last few years. 17 protocols have been signed with EU MS and 40 with third countries, including associated countries of EU’s RTD Framework Programmes. At present, Greece is working, through GSRT, to further strengthen and focus bilateral cooperation through a) raising project budgets and b) focusing cooperation on third countries with which economic and other ties already exist. Moreover, taking into account the cooperation between Greek research teams and teams from other EU MS in the framework of various Horizon 2020 actions, this type of bilateral cooperation will be limited to MS for which there is a significant demand from the S&T community and/or there is interest for knowledge transfer between the two countries not covered by Horizon 2020 cooperation and ERA joint initiatives.

In the framework of the NSRF 2007-2013 national action “Bilateral, Multilateral and Regional S&T Cooperation”, € 32.2 million was used to implement joint actions in areas of mutual interest with the following countries:


**RTD FP Associated Countries:** Turkey 2010-2011, Israel 2013-2015

**Third countries:** China 2012-2014

Project budget is usually € 15,000-20,000. This policy was modified for the bilateral cooperation with Germany (€ 250,000 per project), Israel (€ 300,000 per project) and China (€ 400,000 per project).

An important parameter of the projects implemented within these joint S&T programmes was the bidirectional mobility of participating researchers, as well as the promotion, networking and dissemination actions linked with the project themes that took place at national and international level.

For all these reasons, promotion actions for cooperation with other MS and third countries will continue in the next programming period also, in conjunction with strengthening Greece’s participation in similar actions funded in the context of Horizon 2020 and ERA.

### 6.3 OBJECTIVES

International S&T cooperation is a Government priority both as an essential means of economic growth, mobility and staff specialization and for reasons of S&T support to national policies and especially foreign policy (science diplomacy). In this context, the following objectives have been set:

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19 Bulgaria, United Kingdom, France, Spain, Italy, Croatia, Cyprus, Germany, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia, Czech Republic

20 Egypt, Azerbaijan, Albania, Argentina, Armenia, Australia, South Africa, Vietnam, Bosnia, Georgia, Yugoslavia, Estonia, USA, India, Jordan, Iraq, Iran, Israel, Canada, Qatar, China, Kazakhstan, Korea, Cuba, Kuwait, Libya, Montenegro, Mexico, Moldavia, New Zealand, Nigeria, Ukraine, Uzbekistan, Palestine, Peru, Russia, Saudi Arabia, Syria, Tunisia, Turkey
• Continuation of bilateral cooperation: cooperation with Germany, China, Israel and Russia will be given priority through joint actions of increased budget. The agreement with Israel, according to very recent decisions at Head of State level, is transformed into a multilateral/trilateral one with the participation of Cyprus.
• Strengthening Greek participation in actions of international S&T cooperation in the Horizon 2020 framework, especially with neighbouring countries and groups of countries such as the Mediterranean and Black Sea regions, but also China and Russia.
• Contribution to the EU targets/policy directions for international cooperation.

6.4 MEASURES

• Application of the international cooperation policy as described in the RIS3 context; the policy has a horizontal character, as is the case in Horizon 2020, and covers all thematic areas.
• Earmarking of € 37 million, initially, from RIS3 for funding of programmes in the context of bilateral cooperation by 2020. At a first stage, this money will fund cooperation with Germany, China, Israel (Cyprus) and Russia. Government priorities also include the promotion of cooperation programmes with other non-EU countries.
• Encouraging RPOs (HEIs, research centres) towards further international networking and contribution to ERA’s international dimension.
7. MONITORING & PROSPECTS

The Greek strategy for the European Research Area was formulated having the following central objectives:

- To provide the Greek research and business communities with information, in particular those stakeholders relevant for ERA aims and objectives (Ministries, research organisations, researchers, citizens).
- To record the state of play with respect to application of ERA objectives and principles per priority at national level, to identify the proposed actions that have not been implemented yet or fully implemented by the stakeholders involved and to analyse the reasons for this (e.g. need for additional funds/measures, removal of barriers, or the measure does not comply with the characteristics and priorities of the national research and innovations system).
- To incorporate Government policy directions and to record the new measures required, where necessary.
- To constitute the basis for deliberation (open public consultation) and coordination with the principal stakeholders.
- To be discussed at the National Council for Research and Innovation (NCRI), which will be appointed after the Bill modifying Article 11 of Law 4310/2014 is passed.

For these reasons, the strategy is mainly aimed at Greek stakeholders, while at the same time it provides full information to all interested parties (European Commission, Member States etc.)

The present strategic plan has been formulated by the GSRT International S&T Cooperation Directorate/European Union Department, which is responsible for all matters related to the European Union. There has been close cooperation with the Directorate for Planning and Programming of Research and Innovation Actions and with all GSRT Directorates, while there has also been cooperation, per priority, with the main Greek organisations that implement actions and/or support/inform the relevant stakeholders.

Another objective of the strategic plan is the future discussion (by end-2016) of all relevant matters with HEIs (at the Rectors’ Conference) and with the research centres supervised by GSRT (at the Directors’ Conference), mainly with respect to human resources, joint programming, and strategy formulation for open access to publications and research results with a view to 2025.

Based on the above, the Greek Government, and in particular the Ministry of Education, Research and Religious Affairs, will undertake a revision of the strategy and the implementation of additional measures, if needed. Implementation monitoring will be the responsibility of GSRT/International S&T Cooperation Directorate/European Union Department. The provision for including monitoring of ERA implementation in the NSRTDI monitoring mechanism –under development– is also being examined. Regarding the formulation-implementation of open access strategies in particular, a monitoring mechanism will be created by end-2016, along with relevant indicators for progress assessment and implementation of corrective measures, where necessary, as prescribed by OpenAIRE-D or CRIS.

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