ERAWATCH Country Report 2009
Analysis of policy mixes to foster R&D investment and to contribute to the ERA

Greece

Nikos Maroulis
The mission of the JRC-IPTS is to provide customer-driven support to the EU policy-making process by developing science-based responses to policy challenges that have both a socio-economic as well as a scientific/technological dimension.
ERAWATCH COUNTRY REPORT 2009: Greece

Analysis of policy mixes to foster R&D investment and to contribute to the ERA

ERAWATCH Network – Logotech

Nikos Maroulis
Acknowledgements and further information:

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Executive Summary

As highlighted by the Lisbon Strategy, knowledge accumulated through investment in R&D, innovation and education is a key driver of long-term growth. Research-related policies aimed at increasing investment in knowledge and strengthening the innovation capacity of the EU economy are thus at the heart of the Lisbon Strategy. This is reflected in guideline No. 7 of the Integrated Guidelines for Growth and Jobs. This advocates increasing and improving investment in research and development (R&D), with a particular focus on the private sector. This report aims at supporting the mutual learning process and the monitoring of Member States efforts. Its main objective is to characterise and assess the evolution of the national policy mixes in the perspective of the Lisbon goals, with a particular focus on the national R&D investments targets and on the realisation and better governance of the European Research Area. The report builds on the analytical country reports 2008 and on a synthesis of information from the ERAWATCH Research Inventory and other important available information sources.

Since 2000 Greece has experienced high growth rates of 4.1% on average well above the EU average of 2.2%. Based on its rate of growth Greece is ranked second only to Ireland among the OECD countries (OECD, 2007). Despite high growth rates the expansion of the economy is not innovation driven and the contribution of technology intensive sectors in value added is marginal. Gross expenditures in R&D GERD in 2007 represented only 0.57% of GDP while, in the same year, the EU-27 average was 1.83%. BERD as a percentage of GDP is among the lowest in EU amounting to only 0.15% of GDP compared to 1.17% for the EU-27.

In the new programming period research policy has become more visible in the government agenda and its contribution to the transition towards the knowledge economy has been acknowledged in the National Reform Programmes (NRPs) and in other policy documents. The initial target to increase R&D investments to 1.5% of GDP by 2010 was regarded as unrealistic and the target shifted to 2015. Despite the rhetoric, public funding of R&D as a percentage of general government expenditure is half the EU average, and public funding of private R&D is around 78% of the EU average. The high public deficit and debt constitute significant constraints which reduce the flexibility of government to increase public spending on research.

Mobilisation of resources by the business sector is also insufficient. Business expenditure for R&D is among the lowest in the EU, reflecting the low demand for research based knowledge from the business sector. A combination of factors related to the country’s historical trajectory, including structural characteristics, significant institutional and bureaucratic obstacles and a volatile policy environment are orienting business activities towards less knowledge intensive and lower value added segments of the economy. In addition, the low absorptive capacity of the business sector and in particular the very low (by EU standards) demand for highly skilled human resources, is both a cause and effect of the low demand for knowledge.

Restricted access to capital, especially for new firms, due to the reluctance of the financial system to finance innovation and risky investments is also among the factors hindering mobilisation of resources for R&D.
Poor demand for research based knowledge is being exacerbated by the limited ability and willingness of the public research system to increase the exploitability of the knowledge produced.

The existing research Policy Mix addresses the main barriers to R&D investment by focusing on strengthening R&D performing firms, shifting existing firms towards more knowledge intensive activities and setting up R&D intensive indigenous firms. This strategy is reinforced by the strengthening collaboration between firms and the public research system which is complemented by efforts to increase both the exploitability of research results and the capacity of the firms to collaborate with public research.

Increasing R&D investment in the public research sector is supported by directing funding to areas of economic and policy priority.

<table>
<thead>
<tr>
<th>Barriers to R&amp;D investment</th>
<th>Opportunities and Risks generated by the policy mix</th>
</tr>
</thead>
</table>
| High debt-to-GDP ratio and public deficit reduce flexibility of government to mobilise sufficient resources. | - The pressures to increase the public deficit in the context of the current economic crisis will probably farther restrict public funding.  
- Dependence on Structural Funds will mean that management rigidity and complexity persist. |
| Demand for research based knowledge from the private sector is low due to its orientation towards less knowledge intensive and lower value added segments of the economy. | - Emphasis on establishing new R&D performing firms contributes to shifting the economy towards more knowledge intensive segments, although the unfavourable business environment is hampering the prosperity and sustainability of new firms.  
- Increased emphasis on non R&D-performing firms and on supporting extramural R&D and technological services to SMEs addresses a significant drawback.  
- Attracting foreign R&D performing firms is not addressed properly by the policy mix. |
| The characteristics of the business environment encourage short-sighted and risk-averse behaviour of the business sector discouraging investment in research. | Innovation related policies aimed at improving innovation dynamics and entrepreneurship contribute to a changing business culture. However, progress in the domain is hindered by the insufficient improvements in the business environment. |
| Low absorptive capacity, which is both a supply and demand problem, is further hindering demand for knowledge. | - Measures for the support of both research and non-research human resources will improve absorptive capacity.  
- Reforms to the HE sector would contribute to improving quality in graduate and postgraduate studies. However, the misalignment of supply with demand persists.  
- Increased funding for life long learning and development of relevant infrastructures is expected to improve supply. However, overlooking the demand side will reduce performance, focus and quality. |
| Limited interaction between public research institutions and firms. | Measures supporting subcontracting and research collaboration between business and public research organisation (including HEIs) could contribute to increased interaction. However, the low demand for knowledge and the significant inefficiencies of intermediary organisations could reduce the effectiveness of these efforts. |
| Limited access to capital due to the risk averseness of the financial system and the high cost of capital compared to other European countries | Public co-funding of investments in both R&D and non-R&D performing firms counter-balances to some extent the restricted access to capital. Furthermore, operation of TANEO encourages Venture Capitals to be less risk averse. However, the measures have little structural impact which is necessary to address the problem effectively. |

A route for increasing R&D expenditures that has been relatively overlooked is attracting foreign R&D performing firms. However, given the very limited success in
attracting FDI in general, policies in this route should go far beyond the research policy domain. Therefore, the current approach of starting addressing the issue by launching a mini policy mix combining elements from research, industrial, FDI and spatial development policies focusing on a specific geographical area, is appropriate.

Although the overall policy mix is coherent and well balanced in terms of the barriers it addresses, most of the underlying causes of these problems are related to other policy domains. Therefore, the scope of the policy mix needs to go beyond research policy. Furthermore, the large number of measures involved means that resources have to be spread across too many objectives, which is preventing the accumulation of a critical mass in the most essential domains. In addition, significant inefficiencies in the implementation of these policies decrease the overall effectiveness of the policy mix. Finally, the economic recession is exacerbating the deficiencies in the system and preventing any increase in either private or public investment.

Within this context and given the lack of progress towards the target of 1.5% during the last nine years, it seems that achievement of this goal within the set time frame is unrealistic for Greece.

In terms of national research policy, ERA provides the opportunity to tap into additional sources of funding, attract highly qualified researchers, profit from international knowledge and increase local research capacity through collaborations and use of European resource infrastructures. Furthermore, ERA is seen as the means of increasing the prominence of Greek research in the Balkans and Southeast Europe.

Among the ERA pillars, the creation of a European researcher market is low priority within the ERA policy mix, due to low demand from the private sector for researchers and the orientation of universities towards the domestic market. Therefore, evolution in this pillar is being driven by European policy rather than national needs.

Similarly, developing the autonomy of universities is being driven by the Bologna process rather than national research policy and reforms are focused mainly on education issues. Research autonomy in universities is strong, however administrative autonomy is very limited and links to public policy and economic needs are very weak.

Governance of the research infrastructure is the most important element in the national ERA policy mix. Bottom-up pressure to participate in European infrastructures is very strong; however no coherent policy for setting priorities for the participation and development of national infrastructures has been developed yet.

Finally, opening up national research programmes is a priority. The few research programmes published so far allow the participation of non-nationals; however, due to financial constraints and administrative complexity there is no financial support provided by these programmes.

A balanced implementation of the policy mix is being hindered by problems related to coordination between the different ministries responsible for the different aspects of ERA policy mix, namely Ministries of Development, Education and Employment.
<table>
<thead>
<tr>
<th>Labour market for researchers</th>
<th>Short assessment of its importance in the ERA policy mix</th>
<th>Key characteristics of policies</th>
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<tbody>
<tr>
<td></td>
<td>• Overall demand from the private sector for researchers is very low compared to most European countries. Public sector demand is oriented towards the local market. • Opening-up of the national labour market for researchers is an element of the ERA policy mix however it is driven by European policy rather than by the expression of national needs.</td>
<td>Opening up of the market through introduction of reforms on the supply and demand sides including: • improved framework for joint postgraduate and doctoral programmes, and programmes taught in other languages. • Inward mobility is encouraged through incentives and adaptations to the social security and pension legislation. Local demand for non-nationals, especially from the public sector, is limited</td>
</tr>
<tr>
<td>Governance of research infrastructures</td>
<td>• Importance is growing and participation is extending beyond the main research implementation bodies and actors. • There is strong bottom-up pressure for participation although overall funding is low and do not meet existing demand.</td>
<td>Participation in European research infrastructures has been a key element in research policy for several years. However, there is no coherent policy for the development of national infrastructures and no specific policy for their opening-up to non-nationals. • Greece participates in infrastructural facilities and is actively involved in the ESFRI although the available budget is low.</td>
</tr>
<tr>
<td>Autonomy of research institutions</td>
<td>• Research autonomy is strong • Collaboration with business by the academic community is still a taboo for the academic community and no efforts are being made at the institutional level towards strengthening links between HEIs and the economy. • Policies are mainly driven by the Bologna process and are addressed to education issues.</td>
<td>Reform of the system started in 2008 to increase the autonomy of HEIs to manage their finances, recruit academic personnel and professionalise the administration. HEI-economy links are not addressed.</td>
</tr>
<tr>
<td>Opening up of national research programmes</td>
<td>This is one of the GSRT priorities but its implement is unclear.</td>
<td>Most of the measures supporting research are at the planning stage; relevant references to their opening-up to foreign participation are included in programming documents.</td>
</tr>
</tbody>
</table>
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1 Introduction

As highlighted by the Lisbon Strategy, knowledge accumulated through investment in R&D, innovation and education is a key driver of long-term growth. Research-related policies aimed at increasing investment in knowledge and strengthening the innovation capacity of the EU economy are thus at the heart of the Lisbon Strategy. This is reflected in guideline No. 7 of the Integrated Guidelines for Growth and Jobs. This advocates increasing and improving investment in research and development (R&D), with a particular focus on the private sector. For the period 2008 to 2010, this focus is confirmed as main policy challenge and the need for more rapid progress towards establishing the European Research Area, including meeting the collective EU target of raising research investment to 3% of GDP, is emphasised.

A central task of ERAWATCH is the production of analytical country reports to support the mutual learning process and the monitoring of Member States’ efforts in the context of the Lisbon Strategy and the ambition to develop the European Research Area (ERA). The first series of these reports was produced in 2008 and focused on characterising and assessing the performance of national research systems and related policies in a comparable manner. In order to do so, the system analysis focused on key processes relevant for system performance. Four policy-relevant domains of the research system have been distinguished, namely resource mobilisation, knowledge demand, knowledge production and knowledge circulation. The analysis within each domain has been guided by a set of generic “challenges”, common to all research systems, which reflect possible bottlenecks, system failures and market failures which a research system has to cope with. The analysis of the ERA dimension still remained exploratory.

The country reports 2009 build and extend on this analysis by focusing on policy mixes. Research policies can be a lever for economic growth, if they are tailored to the needs of a knowledge-based economy suited to the country and appropriately coordinated with other knowledge triangle policies. The policy focus is threefold:

- An updated analysis and assessment of recent research policies
- An analysis and assessment of the evolution of national policy mixes towards Lisbon R&D investment goals. Particular attention is paid to policies fostering private R&D and addressing its barriers.
- An analysis and assessment of the contribution of national policies to the realisation of the ERA. Beyond contributing to national policy goals, which remains an important policy context, ERA-related policies can contribute to a better European level performance by fostering, in various ways, efficient resource allocation in Europe.

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2 Characteristics of the national research system and assessment of recent policy changes

2.1 Structure of the national research system and its governance

In terms of GDP, Greece is classed as a medium European Union country with 1.9% and 2.2% of the EU’s GDP and population respectively in 2008. In terms of R&D expenditure, however, it falls with the classification of small countries with only 0.58% of EU’s GERD. GERD in 2007 represented only 0.57% of GDP while, in the same year, the EU-27 average was 1.83%. BERD as a percentage of GDP is among the lowest in EU amounting to only 0.15% of GDP compared to 1.17% for the EU-27.

Since 2000 Greece has experienced high growth rates of 4.1% on average well above the EU average of 2.2%. Based on its rate of growth Greece is ranked second only to Ireland among the OECD countries (OECD, 2007). The relatively better performance of Greece in terms of growth is expected to continue in 2009 and 2010. In 2009 growth is expected to fall to -0.1% while the EU average will fall to around -4%. According to the OECD the drivers of this high growth in the Greek economy in the last decade include: improvements in product market regulation; liberalisation of the financial market; membership in the EMU; the stimulus provided by the 2004 Olympic Games; a dynamic presence in the export markets of south-eastern Europe; and strong immigration of low cost unskilled human capital (OECD, 2007).

Main actors and institutions in research governance

Governance of the research system is somewhat fragmented with coordination at the political level rather weak. The inter-ministerial committee described in the law for the co-ordination of R&D and innovation policies, was operating occasionally and has now been discontinued (GSRT, 2007). The Ministry of Economy and Finance controls the flow of funding to ministries and sets management and accountability rules. Policy making and funding are mainly implemented at the operational level by the General Secretariat for Research and Technology (GSRT) of the Ministry of Development (MoD). GSRT is also responsible for supervising 12 of the 18 public research centres in Greece.

The National Council for Research and Technology (NCRT) is the main advisory body for research. It is attached to the GSRT and contributes to priority setting for research funding and to the selection of management for the public research centres supervised by GSRT. Members of the NCRT are all academics although participation of industry is encouraged by law.

The Parliament has a Special Permanent Committee on Technology Assessment which is not very active.

The Ministry of Education is the second biggest contributor to R&D; however, its involvement in policy making has been limited and mainly reactive until recently, with research priorities in the academic sector defined bottom-up, based on requests from

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2 GERD as a percentage of GDP was revised downwards recently as a result of the upward revision in Greece’s GDP by 9.6%.
3 Unless stated. otherwise, all quantitative indicators are based on Eurostat data sourced March 2009.
4 Eurostat May 2009
the academic community. In 2008 efforts were made to independently plan new measures for the support of academic research and to define research priorities.

Other ministries with involvement in the governance of research include the Ministries of Rural Development and Defence. Each of the three ministries has its own research centre(s). The Ministry of Economy and Finance has indirect involvement in R&D policy making mainly through tax incentives for R&D and its central management of the Structural Funds, one of the main sources of R&D funding.

**Figure 1: Overview of the Greek research system governance structure**

A new law for the organisation of research governance was approved by parliament in March 2008. The law introduces new structures and bodies. Research policy will be coordinated, via an inter-ministerial committee, by the Prime Minister; a National Council will formulate the main policy directions; and a National Agency will be responsible for funding and coordinating research. GSRT will be integrated within the new structure, although it is not yet clear what part of its current responsibilities will be transferred to other bodies. However, in January 2009 it was announced that implementation of the new law was being postponed to January 2010.

Source: [ERAWATCH Research Inventory](#)
The institutional role of regions in research governance

At regional level the Regional General Secretariats, which are part of the Ministry of Interior, play a limited role in R&D policy making due to lack of policy making and implementation capacity (GSRT, 2007). Part of the central administration, since 1999, they have had increasing freedom to shape policy priorities, including R&D, within the general national policy framework and to use funding from the Structural Funds for their implementation. However, few regions have exploited this opportunity to any great extent with management of these measures for the regions being generally relinquished to GSRT.

Investments in or measures for the support of universities and Technological Educational Institutes (TEI) foreseen in the Regional Operational Programmes (OP) are centrally controlled by the Ministry of Education.

Main research performer groups

The country’s 22 universities are the main research performers and account for approximately 48% of GERD, while the TEI, which recently became a part of the higher education system, make a limited contribution to research. Together, universities and public research centres are responsible for 69% of GERD, while private R&D performers have the lowest share (approximately 30% of GERD) among the EU member states after Cyprus and Lithuania (DG Research, 2008).

2.2 Summary of strengths and weaknesses of the research system

The analysis in this section is based on the ERAWATCH Analytical Country Reports 2008 which characterise and assess performance in national research systems. The system analysis focuses on key processes relevant to system performance. Four policy-relevant domains in the research system have been distinguished, namely resource mobilisation, knowledge demand, knowledge production and knowledge circulation. The analysis within each domain is guided by a set of generic "challenges", common to all research systems, which reflect possible bottlenecks, system failures and market failures in the a research system. The Analytical Country Reports for specific countries can be found on the ERAWATCH web site.

The Greek research system has several deficiencies across all policy-related domains. Despite the efforts of the system to respond to the main challenges, systemic weaknesses and lack of coherence among the main elements of the system hinders its effectiveness.

The main drawback, which has significant cross-domain implications, is the low demand for scientific and research based knowledge from the business sector, due to its orientation towards low risk and less knowledge intensive activities. In addition, the low absorptive capacity of the business sector restricts its ability to pursue alternative strategies, feeding a vicious circle of low knowledge demand, insufficient mobilisation of resources - especially in the business sector, and low knowledge circulation among the business sector and the research organisations.

The low level of interest from the business sector has created imbalances in the way the system recognises and responds to knowledge needs that favour the academic and the public research communities. Thus, a typical supply driven system has been developed in which orientation and priorities are driven by funding opportunities and
not by market demand. This has affected the exploitability of the knowledge produced as well as the knowledge circulation and exploitation patterns.

Table 1: Summary assessment of strengths and weaknesses of the national research system

<table>
<thead>
<tr>
<th>Domain</th>
<th>Challenge</th>
<th>Assessment of strengths and weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource mobilisation</td>
<td>Justifying resource provision for research activities</td>
<td>The justification for R&amp;D investments is well established and a commitment to increase R&amp;D expenditures to 1.5% of GDP has been made by government in line with the Barcelona target, although the time frame has now been shifted twice.</td>
</tr>
<tr>
<td></td>
<td>Securing long term investment in research</td>
<td>High dependence on Structural Funds’ funding and management mechanisms, while overall investment in R&amp;D and especially by the business sectors is among the lowest in Europe. Furthermore, significant delays in planning and implementing policy measures of the programming period 2007-2013 reduced significantly public funding for research.</td>
</tr>
<tr>
<td></td>
<td>Dealing with barriers to private R&amp;D investment</td>
<td>Reducing the barriers to business R&amp;D investments is high in policy rhetoric and planning, however implementation of the new measures and policies remains low. Furthermore mobilisation of resources for R&amp;D remains low priority for the business sector due to its orientation towards low risk, less knowledge intensive activities.</td>
</tr>
<tr>
<td></td>
<td>Providing qualified human resources</td>
<td>Despite the good supply of PhD graduates significant shortcomings related to quality and alignment with economic needs exists.</td>
</tr>
<tr>
<td>Knowledge demand</td>
<td>Identifying the drivers of knowledge demand</td>
<td>Demand for knowledge from the private sector is very low due to its orientation to less knowledge intensive segments of the economy. Efforts are being made to improve the methods used to identify demand. Coordination with EU over identifying demand is good.</td>
</tr>
<tr>
<td></td>
<td>Co-ordination and channelling knowledge demands</td>
<td>Mechanisms for systematically responding to knowledge needs, especially in the private sector, are not well developed and lack coordination.</td>
</tr>
<tr>
<td></td>
<td>Monitoring of demand fulfilment</td>
<td>An evaluation culture and evaluations mechanisms are not sufficiently developed although some progress has been made in this direction in research centres and more recently in universities.</td>
</tr>
<tr>
<td>Knowledge production</td>
<td>Ensuring quality and excellence of knowledge production</td>
<td>Overall the quality of research is lagging in terms of excellence although there are niches of recognised scientific excellence. Excellence is systematically monitored in public research centres and is linked to funding. However, only very recently mechanisms for ensuring excellence in universities have been introduced.</td>
</tr>
<tr>
<td></td>
<td>Ensuring exploitability of knowledge</td>
<td>A strong policy focus on the exploitability of research and the existence of a sufficient set of mechanisms. However, the orientation of universities and research centres towards the production of exploitable research results remains weak.</td>
</tr>
<tr>
<td>Knowledge circulation</td>
<td>Facilitating circulation between university, PRO and business sectors</td>
<td>Although there are sufficient measures and institutions in place, circulation of knowledge among local research actors remains weak due to lack of professionalism and the existence of institutional inertia and inefficiency of the actors involved.</td>
</tr>
<tr>
<td></td>
<td>Profiting from international knowledge</td>
<td>The public research sector has an international orientation and participates in international knowledge circulation mechanisms. However, knowledge spillovers in the national economy are low.</td>
</tr>
<tr>
<td></td>
<td>Enhancing absorptive capacity of knowledge users</td>
<td>The absorptive capacity of the business sector is weak, the mechanisms for its improvement are not well developed and there is a misalignment between supply and demand for graduates.</td>
</tr>
</tbody>
</table>
Research policy efforts have failed to resolve the main challenges, i.e. low demand and low business R&D investment, as both are determined by many factors that lie outside the traditional sphere of either R&D or innovation policies. Furthermore, for many years R&D and innovation has been low on the policy agenda while institutional inefficiencies in the governance of research have reduced policy effectiveness. The most important of these inefficiencies are lack of strong leadership and weak coordination in budgeting and priority setting; strong dependence on Structural Funds which leads to the development of rigid and bureaucratic management mechanisms; weak mechanisms for ensuring quality in universities; ad hoc and ill developed mechanisms for identifying, channelling and monitoring knowledge demand; and ill developed system of lifelong learning.

2.3 Analysis of recent policy changes since 2008

The contribution of research and research policies to Lisbon goals (as well as to other societal objectives) goes beyond the fostering of R&D investment. It is therefore important to also analyse how other remaining shortcomings or weaknesses of the research system are addressed by the research policy mix. The focus of the section is on the analysis of main recent policy changes which may have a relevant impact on the four policy-related domains.

2.3.1 Resource mobilisation

Research retains its importance in policy rhetoric exemplified by the references in the National Reform Programme 2008-2010 (see also box on NRP below), although mobilisation of resources for the implementation of the goals remains poor. The launch of research programmes for the programming period 2007-2013 has been delayed resulting in low levels of public funding for 2008 and the first half of 2009. The first programme was launched in December 2008 and project implementation is due in spring 2009. Thus, the only sources for funding of research for the whole of 2008 and first half 2009 were institutional funding, FP7 and a diminishing number of projects from the previous programming period.

Implementation of the reforms introduced in previous years affecting the organisation of funding has not been without its problems. Implementation of the new law (3653/2008) on research governance (Maroulis, 2009) has been postponed until 2010; thus, the changes in the research funding system introduced by the law have also been postponed. Implementation of a new law (3549/2007) governing HEIs, introducing long term planning at the base of four-year development plans started in 2008.

From the portfolio of measures designed to tackle the barriers to business R&D only one has been launched since 2008; three others are under public consultation and their launch is expected in early June 2009. The measures are aimed at stimulating private R&D investment by promoting the establishment of spin-offs and spin-outs, funding collaborative research networks and networks of SMEs and promoting subcontracting of research to HEIs and public research and technology organisations. More detailed analysis of the measures is presented in section 3.3.2.
Changes in National Reform Programme regarding the role of research in the broader economic growth strategy

The role of research in the broader economic growth strategy is more visible in the 2008-10 National Reform Programme compared to the previous one. Development of the Strategic Plan for Research, Technology and Innovation in 2007 provided the necessary background for further elaboration of the national strategy for research and development.

The new NRP shifts the target of 1.5% from 2010 to 2015 and provides clearer objectives, connecting research and innovation to the broader goal of moving towards the knowledge society. According to the NRP, research and innovation will contribute to the “restructuring of the Greek economy towards the production of high value added goods and services, the faster increase the productivity and the improvement of the competitiveness of the Greek economy”

The design of measures to support the development of human research resources is still underway and only one measure supporting PhD students has been launched so far, in December 2008. Although all possible research areas are supported, the allocation of funding across areas aims at contributing to the alignment of supply and demand for researchers. Other measures are expected to follow in the second half of 2009.

Table 2: Main policy changes in the resource mobilisation domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justifying resource provision for research activities</td>
<td>No changes</td>
</tr>
<tr>
<td>Securing long term investments in research</td>
<td>• Implementation of the new funding mechanisms in Law 3653/2008 postponed until 2010</td>
</tr>
<tr>
<td></td>
<td>• HEIs prepared their first four-year development plan according to the provisions in the new law on HEIs</td>
</tr>
<tr>
<td></td>
<td>• Implementation of the research related measures in the NSRF significantly delayed</td>
</tr>
<tr>
<td>Dealing with uncertain returns and other barriers</td>
<td>Implementation of new measures delayed. Only one is running and three others are under public consultation.</td>
</tr>
<tr>
<td>Providing qualified human resources</td>
<td>A new programme for the support of PhD students has been launched.</td>
</tr>
</tbody>
</table>

2.3.2 Knowledge demand

The significant reforms in research governance that were expected to directly affect the way policy making understands and responds to knowledge demand and monitors the demand fulfilment (Maroulis, 2009), has been postponed until 2010.

Co-ordination with other European countries on policy setting and policy implementation is continuing through participation in ten ERA-NETs.
Table 3: Main policy changes in the knowledge demand domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-ordinating and channelling knowledge demands</td>
<td>• Application of the new mechanisms for the coordination of priority setting and the allocation of funding set in Law 3653/2008 postponed until 2010</td>
</tr>
</tbody>
</table>

2.3.3 Knowledge production

The evaluation system for HEIs, which was established in 2005, started in 2008 with the evaluation of the universities and TEIs. The first results are already available. However, it is not clear yet how the results of the evaluation will be used.

Table 4: Main policy changes in the knowledge production domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving quality and excellence of knowledge production</td>
<td>Evaluation system for HEIs now fully operational.</td>
</tr>
<tr>
<td>Ensuring exploitability of knowledge production</td>
<td>No changes</td>
</tr>
</tbody>
</table>

2.3.4 Knowledge circulation

The policy portfolio designed to enhance and strengthen collaboration between research organisations and enterprises has still not been implemented. Since mid 2009 only one measure providing innovation vouchers for SMEs has been launched, with two other programmes supporting research networking and subcontracting due to be launched soon (see section 3.3.2 for more details).

Access to international knowledge remains a priority. The opening-up of research programmes will start with the two programmes currently under preparation. These programmes allow for the participation of non-nationals, but do not provide financial support.

In addition, participation in European research infrastructures is supported through the ESFRI initiative.

Table 5: Main policy changes in the knowledge circulation domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitating knowledge circulation between university, PRO and business sectors</td>
<td>• A new “voucher” programme launched and two other programmes supporting research collaboration and subcontracting entered public consultation.</td>
</tr>
<tr>
<td>Profiting from access to international knowledge</td>
<td>• The new research programmes allow for participation of non-national research teams, but no financial support.</td>
</tr>
<tr>
<td></td>
<td>• Participation in ESFRI promoted.</td>
</tr>
<tr>
<td>Absorptive capacity of knowledge users</td>
<td>No change</td>
</tr>
</tbody>
</table>
2.4 Policy opportunities and risks related to knowledge demand and knowledge production: an assessment

Following the analysis in the previous section, this section assesses whether the recent policy changes respond to identified system weaknesses and take into account identified strengths.

No significant progress has been made since the beginning of 2008 in the implementation of the research strategy. However, the first steps implemented have generated opportunities for tackling some of the weaknesses in the system. The most important opportunity is related to the evaluation of HEIs, which, despite some initial objections from the academic community, has spread to most institutions. However, the impact on the system will be visible only in the long run and efforts could be negatively affected by lack of clarity regarding the use of results by government.

The opening of programmes to foreign participants is a breakthrough. However, there is expected to be low uptake since the incentives for non-nationals (especially financial) are almost non-existent.

Postponement of the reforms of research governance introduced by law 3653/2008 and the significant delays in the implementation of the research strategy are hindering exploitation of the opportunities identified in the 2008 Country Reports for Greece (Maroulis, 2009). Thus, many significant weaknesses persist, such as the inefficiency of the system to secure long term public R&D investment and the consequent dependence on Structural Funds. Few improvements are expected in the coordination across policy domains, and the identification and channelling of knowledge demand continue to be addressed on an ad hoc basis.

In addition to the risks generated by delays in the reform of the governance system, other significant delays in launching new programmes will keep overall R&D investments in the private and public sectors low.

Table 6: Summary of main policy related opportunities and risks

<table>
<thead>
<tr>
<th>Domain</th>
<th>Main policy related opportunities</th>
<th>Main policy related risks</th>
</tr>
</thead>
</table>
| Resource mobilisation | • New measures will increase the number of firms performing R&D, and stimulate greater R&D investments in R&D performing firms.  
                        | • Increasing supply of PhD graduates.                                                            | • Further delays in the implementation of the measures will stagnate private and public investments.  
                        | • Research funding is directed to areas of national priority facilitating the creation of critical mass of competences in these areas. | • Postponement of the new funding mechanisms will continue dependence on Structural Funds.  
<pre><code>                    |                                                                                                 | • If knowledge demand from the private sector remains low there will be an excess supply of researchers. |
</code></pre>
<p>| Knowledge demand      |                                                                                                 | Postponement of the governance reforms mean continuation of the current ineffective priority setting and policy implementation structures and mechanisms. |</p>
<table>
<thead>
<tr>
<th>Domain</th>
<th>Main policy related opportunities</th>
<th>Main policy related risks</th>
</tr>
</thead>
</table>
| Knowledge production      | Introduction of reforms in universities and especially implementation of an evaluation system are expected to improve the effectiveness and quality of the knowledge production system | • Despite improvements in the quality of the knowledge produced, its exploitation is being hindered by low demand for knowledge from the business sector.  
• The effectiveness of HEI evaluation is undermined by lack of a specific approach and consensus between the stakeholders on linking evaluation results with decision making in HEIs development. |
| Knowledge circulation     | Access to international knowledge is improving as cross-border cooperation is supported.          | • Despite the opening-up of programmes, incentives are insufficient to attract non-nationals.  
• Delays in launching the whole portfolio of measures are hampering the efficiency of piecemeal efforts.  
• Efforts to improve knowledge circulation are being hampered by low absorptive capacity in the business sector and the pursuit of low tech business strategies. |

### 3 National policy mixes towards R&D investment goals

The aim of this chapter is to deepen the analysis of national policy mixes with a focus on public and in particular **private R&D investment**. The Lisbon strategy emphasises an EU overall **resource mobilisation objective** for 2010 of 3% of GDP of which two thirds should come from private investment. R&D investment is seen as important yardstick for the capacity of an economy to turn the results of science and research into the commercially viable production of goods and services and hence knowledge into growth. Corresponding investment policies are mainly pursued at national level and determined with a national focus.

The chapter is structured around five questions:

1. **What are the specific barriers in the country that prevent reaching the Lisbon goal?** What barriers exist in the country to prevent reaching the specific targets, particularly related to the private sector R&D investments?

2. **Given the above, what are the policy objectives and goals of the government that aim to tackle these barriers?**

3. **What Policy Mix routes are chosen to address the barriers and which specific instruments and programmes are in operation to implement these policies?**

4. **What have been the achievements in reaching the above mentioned R&D investment objectives and goals?**

5. **What are the reasons for not reaching the objectives, adaptation of the goals?**

The chapter aims to capture the main dimensions of the national policies with an emphasis on private R&D investment. The chosen perspective of looking at investments in R&D is the concept of Policy Mixes. The analysis and assessment follows a stepwise approach following the five questions mentioned above.
3.1 Barriers in the research system for the achievement of R&D investment objectives

Greece’s poor performance in R&D investment can be attributed to both demand and supply side deficiencies.

Despite the policy rhetoric on the significance of research for the country’s transition to knowledge based economy, mobilisation of public resources remains low. Government funded research as a percentage of total government expenditure was 0.68% in 2007, while the EU-27 aggregate was more than double this at 1.55%.

Greece has faced significant fiscal constraints for several years with government debt-to-GDP ratio among the highest in the euro area exceeding the ceiling of 3% of GDP. Pressure from the European Commission to reduce the deficit below 3% by 2010 reduces government’s flexibility and ability to increase spending on research. In the current economic crisis the pressure to reduce spending further will increase as tax revenues are expected to be further reduced and borrowing will become more expensive.

Mechanisms for securing long-term investment in R&D have been in place since 1985. However, due to fiscal constraints they have become heavily dependent on Structural Funds, which represent approximately 10% of GERD. If general university funds (GUF) are excluded, funding from the Structural Funds amounts to 42% of the direct government funding of R&D (ERAWATCH Network, 2009). Dependence on Structural Funds resulted in fragmentation of the planning and of funding budgets, which now are distributed across various sectoral or regional Operational Programmes (OPs). In addition, a complex and rigid management structure has been developed to manage construction and simple subsidy type measures that cannot cope with the complexity and variety of the research support measures. Plan and the budget have to be negotiated with the European Commission through a complicated and lengthy process that enables little flexibility in terms of budget amendments.

On the demand side, mobilisation of resources by the private sector is very low. Business sector’s funding of GERD as a percentage of GDP is among the lowest in the EU at only 0.18% in 2005 compared to the EU-27 aggregate of 0.99%. Funding of R&D by the business sector is lower only in Cyprus and Bulgaria and (marginally) in Poland. The low investment in research by the private sector is a result of the very poor demand for research based knowledge, reflecting the structural characteristics of the Greek economy, which is oriented towards less knowledge intensive and low added value segments of the economy. Despite high growth rates over the last 15 years, expansion of the economy is not innovation driven and the contribution of technology intensive sectors to value added is marginal. A combination of structural characteristics and significant institutional and bureaucratic obstacles together with a volatile policy environment, lead business to invest in activities with either high rates of return in the short-term, or very low risk (Bartzokas, 2007).

R&D investment is also hindered by reluctance on the part of the financial system to finance innovation; traditionally, the focus has been on low risk investment. Greece ranks 18th in the EU-25 for availability of venture capital investment in new, high-risk companies (GSRT, 2007).

Low absorptive capacity in the business sector is one of the factors hindering an increased demand for knowledge. The number of scientists and engineers in the active population, aged between 25 and 64 years, was 18.1% in 2007, lower than the EU-27 aggregate (21.0%) and comparable only to some of the new member states.
The high increase (24.1%) in the share of scientists and engineers in 2000 to 2007 compared to 11.5% in the EU-27 is an indication of a trend towards reducing the gap. However, production of S&T graduates is not sufficient on its own to improve absorptive capacity in the business sector; efficient alignment of supply and demand is also required. According to Lianos (2007), the existence of overeducation\(^5\) i.e. an abundance of highly educated individuals relative to overall demand, is a strong signal of misalignment between supply and demand for university graduates. The fact that overeducation is 10 percentage points lower for Greek graduates from foreign universities, indicates that apart from the problem of demand the supply orientation in the Greek higher education system is also important.

Also the country’s performance in lifelong learning, which is a mechanism for improving absorptive capacity, is very weak and is worsening (TrendChart, 2008). Policy efforts to encourage demand for research based knowledge are being hindered by the limited ability and willingness of the public research system to respond to economic needs, and the failure of intermediary organisations to efficiently facilitate knowledge circulation (Maroulis, 2009).

### 3.2 Policy objectives addressing R&D investment and barriers

As a response to the Lisbon strategy the Greek Government set a target to increase spending on R&D to 1.5% by 2015, and to increase the contribution of private sector in GERD to 40%. Increased public and private R&D investment is regarded by public policy as directly related to the restructuring of the national economy. As stated in the National Reform Programme 2008-2010 the main goal of the national RTDI policy is the:

> “... restructuring of the Greek economy towards the production of high value added goods and services, the faster increase of productivity and the improvement of competitiveness of the economy.”

Increased research investment by enterprises is at the heart of Greece’s research policy, which includes a portfolio of measures addressing business groups and networks and promoting collaboration with universities and public research organisations. Measures are being put in place to increase technological innovation capabilities in an effort to stimulate innovation driven research.

Within this context the Strategic Development Plan for Research, Technology and Innovation (SDP) and the OP “Competitiveness and Entrepreneurship” set the goal of increasing and improving investment in knowledge and excellence aimed at sustainable development. More specifically, the following objectives addressing R&D investments have been set:

- Catching-up with Europe in terms of research investments;
- Increased private investment in R&D and effective linking of the research and business sectors;
- Support for research in areas that will contribute to a reorganisation of the Greek economy and strengthening of the country's competitive advantage, improving quality of life and the environment;

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\(^5\) "An individual is overeducated if his or her level of education exceeds that which is required for the performance of their job” (Lianos, 2007).
• Exploit economies of scale in research by creating a critical mass of research capabilities in selected areas of economic interest;

• Improved quality and quantity of human resources, especially those related to research and technology and increased mobility between research organisations and companies;

• Promote integrated interventions for the development of innovation in (geographical or thematic) areas combining business and public research agglomerations.

These objectives address the main barriers identified in section 3.1. However, they are still in the development stage and initial implementations are not expected before June 2009.

3.3 Characteristics of the policy mix to foster R&D investment

This section is about the characterisation and governance of the national policy and instrument mix chosen to foster public and private R&D investment. While policy goals are often stated at a general level, the policy mix has a focus on how these policy goals are implemented in practice. The question is what tools and instruments have been set up and are in operation to achieve the policy goals? The following sections will each try to tackle a number of these dimensions.

3.3.1 Overall funding mechanisms

Funding of R&D is in a transition phase with the research programmes for the period 2000-2006 having ended and the new programming period 2007-2013 not yet begun with the exception of some measures promoting international research collaboration and innovation. Therefore, we can provide only a provisional picture which may change in the future.

Institutional funding increased from 46.3% of government budget appropriations in 2005, to 62.8% in 2007, due mainly to the gradual reduction in programme based funding following the end of the programming period 2000-2006. All competitive funding is allocated through the OPs. The overall budget expected to be allocated to research and innovation competitive actions is €1.3bn for the period of 2007-2013. According to the initial provisions in the OP it is estimated that 43.8% will be directed to public R&D including the development of research infrastructures (11%), 30% will be directed to research and innovation in the business sector (around 9% will allocated to SMEs), and approximately 8% will go to research and innovation collaboration between business and research sectors including clusters and R&D and innovation poles (ERAWATCH Inventory, 2009).

As set out in the OP “Competitiveness and Entrepreneurship” most funding for non-academic research will focus on the technological and sectoral areas identified in the SDP (see also ERAWATCH Inventory, 2009). The priorities combine areas of economic specialisation (agrofood, textiles, construction) with low to medium research intensity, areas of research specialisation (e.g. Health, ICT) as well as emerging areas (e.g. electronics, nanotechnology, biotechnology).

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6 Logotech’s calculations based on OP data.
7 Due to a 2 year delay in the implementation of the programmes it is expected that the programming period will be extended to 2015.
3.3.2 Policy Mix Routes

The “Policy Mix Project” identified the following six ‘routes’ to stimulate R&D investment:

1. promoting the establishment of new indigenous R&D performing firms;
2. stimulating greater R&D investment in R&D performing firms;
3. stimulating firms that do not perform R&D yet;
4. attracting R&D-performing firms from abroad;
5. increasing extramural R&D carried out in cooperation with the public sector or other firms;
6. increasing R&D in the public sector.

The routes cover the major ways of increasing public and private R&D expenditures in a country. Each route is associated with a different target group, though there are overlaps across routes. The routes are not mutually exclusive as, for example, competitiveness poles of cluster strategies aim to act on several routes at a time. Within one ‘route’, the policy portfolio varies from country to country and region to region depending to policy traditions, specific needs of the system etc.

**Route 1: Promoting the establishment of new indigenous R&D performing firms**

Establishment of new indigenous R&D performing firms first became a policy priority in the programming period 2000-2006 with a number of complementary measures designed specifically to achieve this goal. These include, PRAXE which supports the creation of spin-offs by providing pre-seed capital and first stage financing, and was the most innovative for Greece. Total public funding for the period 2000-2008 was €72m. Support of spin-offs was combined with ELEFTHO which supports incubators and technology parks with a total amount of €67m. The measure was also designed to stimulate the creation of funds within incubators for providing first-stage-financing. In addition, the existing programme for industrial research, PAVET, (running since 1985) has been modified and a special action within this programme with a budget of €13.4m was devoted to supporting research in new firms.

Youth entrepreneurship was supported via grants (total of €91m) for young people to start businesses. However, the focus was not on R&D intensive or innovative activities. Similar support was provided to female entrepreneurs (total grant funding of €36m).

A network of 13 regional Centres of Entrepreneurial and Technological Development was established to raise awareness about entrepreneurial issues, and provide information and consultancy to new and established firms. The budget for setting up and operating this network was €36m.

The framework conditions for the establishment of new firms were addressed in a specific measure focusing on improvement to the financial environment. Within this framework, the most important activity was TANEO, a fund of funds established in 2001 with a budget of €150m. TANEO aims at developing and shaping the under developed venture capital sector by providing funding to Venture Capital Funds providing that a share of their investments is directed to new technology based firms. Law 2238/94 provides tax incentives for R&D performing firms.
The route retains its importance in the new programming period 2007-2013 with interventions addressing the same objectives as in the previous period. Some of the measures, such as TANE and the tax incentives, will remain in place, while others are being replaced by new measures. Some of the new measures entered the public consultation phase in April 2009; others are still in preparation. Among them, the “New Innovative Enterprises” measure supports not only spin-offs (as the previous programme PRAXE) but new firms spinning-out from established companies and new innovative companies as well. The budget for 2009-2010 amounts to €25m. Support for industrial research for new companies has been redesigned and now the new measure “Support for new firms and SMEs” is aimed only at national priority areas. Some of the above measures are part of intergraded initiatives such as innovation and R&D poles.

**Route 2: Stimulating greater R&D investment in R&D performing firms**

Stimulation of R&D investments in R&D performing firms is the most important among the six routes in terms of number of measures and overall budget. The approach is to facilitate companies’ access to high quality research facilities and groups through collaborative research and development of intramural research. The R&D measures will be accompanied by measures from the innovation policy domain supporting technical change and investment in research infrastructures in companies. International cooperation is also a dimension that is growing in importance.

During the period 2000-2006 *Joint ventures for research and technological development in sectors of national priority* was the most important measure, providing public funding of €123m for the support of large research consortia comprised of firms and public research organisations. International research collaboration was supported by *bilateral research agreements*, although the participation of business was rather limited. Collaboration on industrial research was supported by the *“International Co-operation in Industrial R&D activities”* which provided national co-funding of €21m for EUREKA projects. Less ambitious industrial research projects were supported by *PAVET* and focused mainly on development of intramural research, while collaborations were eligible only through subcontracting. Total public funding for the period 2005-2007 amounted to €28m.

At the regional level the “Regional Innovation Poles” were launched in 2005. They are integrated initiatives focusing on up to three technological and research areas. The aim is to create a critical mass of research and technological capabilities in the region and strong business and research agglomerations.

The tax incentives for R&D performing firms provided by Law 2238/94 are also relevant within this policy route.

Increasing the absorptive and research capacity of firms is addressed by *HERON* which supported firms for hiring new researchers by covering 50% of their salary costs. Public funding for the period 2005-2007 amounted to €2m.

Finally, TANE provides access to capital for research related investments.

In the new programming period major changes are expected, with a greater focus on big projects and networks of firms and public research organisations, either within autonomous programmes or as part of large regional or national framework initiatives. Research will focus on the national research priorities identified in the SDP. The main measures, which are expected to start soon, are: the research...
programme “Collaboration” with a budget of €74m which will replace the former “Joint ventures for R&D”; the national thematic poles for R&D, each covering one or more research areas; support for the existing regional innovation poles and the creation of new ones; and development of research activities within knowledge intensive clusters. An important integrated initiative which includes many of the above measures is the Thessaloniki Innovation Zone.

Support for research in R&D performing SMEs is provided by the new measure “Support for new firms and SMEs” which replaces PAVET. This measure, which is now under public consultation, aims at developing intramural R&D in SMEs by providing funding to networks of SMEs. Part of this research will be subcontracted to public research organisations or HEIs.

Route 3: Stimulating firms that do not perform R&D yet

The first industrial research programme in Greece in 1985, was aimed at stimulating research mainly in companies with no R&D activities. Gradually, as the number of R&D performing firms grew, the priority changed. PAVET, which replaced the existing programme for industrial research, in practice supported R&D performing firms with one of its appraisal criteria being the research experience of firms.

The emphasis in the 2000-2006 period was on developing the absorptive and innovative capacity of firms. The portfolio included horizontal measures addressing more than one route:

- improvement of the support for technical and research personnel of in firms was supported by from HERON, however no distinction between R&D performing firms and firms performing R&D for the first time was made;
- technology transfer, production capacity building and process innovations supported by investment law, and the programme for integrated business plans of SMEs and micro enterprises,
- development collaboration for innovation through clustering and subcontracting; and
- development of consulting infrastructures through a network of regional Centres of Entrepreneurial and Technological Development.

In the new programming period the new measure “Support for new firms and SMEs” is addressing this goal by supporting firms, of any size, which have not been supported by any national or European research programmes in the past. In addition Innovation Voucher for SMEs provides €7,000 for subcontracting small R&D and innovation tasks to research and innovation organisations. The development of human resources (training) will continue to be supported under other new schemes.

Route 4: Attracting R&D-performing firms from abroad

For several years the focus has been on attracting FDI through tax incentives and other forms of funding. The Hellenic Centre for Investments made some unsuccessful and uncoordinated efforts to attract R&D investments from abroad by promoting the research capabilities and achievements of the country.

The first effort dedicated to attracting research intensive FDIs is a mini policy mix initiative the Innovation Zone in Thessaloniki. The objective of this initiative is to develop the necessary enabling conditions for the establishment of knowledge and research intensive firms including FDI in a specific area in Thessaloniki. The
Innovation Zone will integrate existing and new research and innovation infrastructures and launch initiatives to support research and innovation. The business plan was completed in December 2008 and implementation is expected to start in early 2009.

**Route 5: Increasing extramural R&D carried out in cooperation with the public sector**

The priority of the route is high although its goal to some extent is also addressed by mechanisms focusing on more than one route. The policies in Route 5 include mechanisms for developing both supply and demand for R&D and innovation services and the creation of and improvement to mechanisms for bridging between supply and demand.

According to the latest available data (for 2005), 8.9% of HERD and 1.3% of GOVERD were financed by industry (6.6% and 6.0% respectively) in the EU27. Also 14.6% of the business research funding went to extramural research mainly performed in universities ([ERAWATCH Research Inventory, 2009](#)).

One of the main instruments during the period 2000-2006 was the industrial research programme PAVET which among others provided incentives to firms to subcontract parts of their research to research organisations.

PEND was a programme supporting doctoral research in universities and public research organisations, which indirectly supported extramural R&D since co-funding by firms was compulsory. The total public grant was €75m, while the private contribution amounted to approximately €9m.

Regional Innovation Poles contribute to this route’s goal by developing user oriented research infrastructures and providing support for research and innovation subcontracting.

**AKMON** was more directly aimed at increasing extramural R&D by supporting the development of research and innovation infrastructures in HEIs and public research centres that could be used to provide research and technological services to enterprises. Total funding was €23.6m.

In addition liaison with HEIs was supported through the network of Centres of Entrepreneurial and Technological Development to bridge the gap between business and public research.

The importance of this route is higher in the current programming period as the objective to increase extramural R&D is given higher priority. In the new industrial research programme “Support for new firms and SMEs” subcontracting to public research and technological development organisations is compulsory, while the new measure “Innovation Vouchers for SMEs” explicitly supports subcontracting of research and innovation activities. This was launched in March 2009.

It is expected that Regional Innovation Poles will continue to support extramural research.

**Route 6: Increasing R&D in the public sector**

Increasing R&D in the public sector is supported through three sub-routes, namely development of research infrastructures; direct competitive research funding; and support of collaboration with the business sector.
Development of research infrastructures during 2000-2006 was aimed at promoting excellence and expanding the research base by establishing new public research centres. However, in practice of the €36m\(^8\) budgeted for infrastructure approximately €26m was directed to AKMON, which supported research infrastructures but based on economic relevance and the existence of a market for research services, rather than on excellence. More details on various aspects of the policy for developing research infrastructures are discussed in Section 4.2.

Direct funding for academic research was provided by three measures which supported research conducted in PhD programmes and research groups (within individual institutions or across institutions) in universities and TEI. PENED contributed by supporting PhD-related research. Total funding for these four programmes during the period 2000-2006 amounted to €115m.

Collaborative research was mainly supported by instruments designed to serve more than one route, such as “Joint Ventures for R&D” and Bilateral Agreements.

The importance of this route has been increased in the current programming period. The new Ministry of Educations’ programmes to support academic research will increase funding to approximately €380m (from €115m in the previous period). Also, support for research infrastructures is related directly to excellence in two dimensions. The existing public research infrastructure supervised by GSRT is being restructured on the basis of an evaluation and funding will be directly related to the outcome of the evaluation. The Thematic Networks of Advanced R&D will promote excellence in priority areas, while the infrastructures are required to create critical mass in research areas of strategic importance will be supported by instruments such as the Regional Innovation Poles and the Thematic National R&D Poles. These instruments will support collaborative research together with measures, such as “Collaboration”, which overlaps with other routes.

**The importance of education and innovation policies**

Innovation policy is a strong component of the “knowledge triangle” aimed at reducing risk averseness in the business sector and encouraging firms to shift activities towards more knowledge intensive and higher added value segments in their sectors. The objective of measures promoting youth and women’s entrepreneurship is to increase the number of dynamic firms in the more knowledge intensive areas. It is expected that measures, such as SME clustering, support for SME business plans and the provisions of the investment law, will improve innovation dynamics and encourage, especially non-R&D performing firms, to move up the value chain towards more knowledge intensive activities.\(^9\) Research and innovation policy are the responsibilities of the Ministry of Development and are implemented through the same OP, resulting in good coordination.

In the education policy domain significant changes have been introduced since 2005 following the Bologna process, aimed at improving the quality of knowledge provision, increasing the autonomy of HEIs and improving and professionalising their management. The main policy initiatives include the introduction of institutional evaluation and a four year development planning process for HEIs along with

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\(^8\) Logotech’s estimate of the budget for the Greek 3\(^{rd}\) Community Support Framework under code 183 Research and Innovation Infrastructures.

increased autonomy of HEIs in the recruitment and promotion of personnel. Institutional funding will be allocated to HEIs on the basis of a four year plan; it is not certain however, whether it will also be connected to evaluation results.

Despite these changes, no improvements have been made to the mechanisms affecting alignment of supply of undergraduates and PhD graduates to demand. Decisions on numbers of students are the responsibility of the Ministry of Education and are based on the number of candidates and the existing capacity of HEIs with no consideration of or input from the demand side. In addition, the HEIs decide about PhD programmes based on their particular research needs, with no consideration for the fact that their decisions will directly affect the supply of research personnel.

Lifelong learning will receive a considerably increased share (approximately 29.5%) of public funding under the new OP for education. Funding will support the creation of Institutes for Lifelong Learning within universities and the development of appropriate curricula. Despite efforts on the supply side, development of demand has been overlooked by policy so far, resulting on oversupply of any kind of training programmes (INNO-Policy TrendChart, 2008).

Despite the importance of education in the structure of the research and innovation system, coordination between education and research and innovation policies is poor.

In addition to “knowledge triangle policy”, financial policy is important to overcome failures in the financial market to support innovative and high risk investments. In addition to TANEO, the loan guarantee fund (TEMPE) aims to facilitate access to funding by newly established and small and very small enterprises. Despite high demand from the companies it is not expected to have structural effects within the financial market.

**Assessment of the importance of policy mix routes and their balance**

The six routes are not equally important within the policy mix. Attracting R&D performing firms from abroad is given low importance with the main emphasis on increasing R&D in firms that already have research activities, setting up new research intensive firms and increasing competitive R&D in the public sector. Encouraging more firms to undertake R&D has increased in importance through the new measure targeting SMEs.
Table 7: Importance of routes in the national policy and recent changes

<table>
<thead>
<tr>
<th>Route</th>
<th>Short assessment of the importance of the route in the national policy</th>
<th>Main policy changes since 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It is important. Systematic intervention started in the previous programming period. In the current programming period its importance has increased as it contributes to the main goal of restructuring the economy towards more knowledge intensive activities.</td>
<td>Most measures have been redesigned in order to increase their scope and improve the focus on innovative and R&amp;D intensive activities. The scope of measures providing first stage and early financing has increased with the inclusion of spin-outs and innovative new firms.</td>
</tr>
<tr>
<td>2</td>
<td>Retains its high importance. The emphasis is on developing firms’ research capabilities in national priority areas, through research collaborations with the public research sector.</td>
<td>Major changes are expected, as the tendency is to focus on big projects and networks of firms with public research organisations. Support will be provided either through autonomous programmes or as part of large framework initiatives such as thematic research poles, regional innovation poles, Innovation Zone in Thessaloniki, or knowledge intensive clusters. The industrial research programme is replaced by a new scheme supporting networks of SMEs in priority areas.</td>
</tr>
<tr>
<td>3</td>
<td>Less important, although its visibility increases within the policy mix. The emphasis is on developing human resources, technology transfer and innovative capabilities which will drive research.</td>
<td>The new industrial research programme provides financial support to firms not supported in the past by national or European programmes. New human resource development programmes focus on increasing absorptive capacity.</td>
</tr>
<tr>
<td>4</td>
<td>Low importance. The focus is on attracting FDI without any specific focus on research intensive investments. Only one initiative of a local character focuses on attracting research intensive FDI.</td>
<td>A mini policy mix initiative the Thessaloniki Innovation Zone has been initiated aiming to create the necessary enabling conditions for establishment knowledge and research intensive firms including FDI in Thessaloniki.</td>
</tr>
</tbody>
</table>
| 5     | High importance although its goals are served to some extent by measures focusing on more than one route. Policies focus on developing both supply and demand for R&D and innovation services and mechanisms for bridging between supply and demand. | The objective is to increase extramural R&D and make it more visible:  
• Subcontracting to public research and innovation organisations is compulsory in the new industrial research programme.  
• Innovation vouchers for SMEs to support directly purchase of R&D and innovation services from research and innovation service providers. |
| 6     | The importance of the route is increased in terms of budget and the emphasis is on research excellence. | The budget for the development of academic research has been doubled for the period 2009-2013. Regional Innovation Poles, National Thematic R&D Poles and Thematic Networks of Advanced Research will support infrastructures and collaborative research for public research organisations and companies. |

No substantial changes to the policy mix balance have been occurred in the last five years, although the policy mix is currently better able to cope with barriers in the system. The most prominent changes include strengthening of the importance of the route aimed at promoting establishment of new indigenous R&D performing firms, which is directly related to the main policy goal for restructuring the Greek economy, and the stimulation of research in non-R&D performing firms.
Increasing R&D in the public sector is linked to excellence with an emphasis on creating critical mass in priority areas rather than expanding the public research base. In this respect coordination with European research policies has become more important due to expected synergies.

3.4 Progress towards national R&D investment targets

Increased R&D investment in absolute terms, in the last 10 years has followed the rate of growth of GDP and therefore the share in GDP has been stagnant (or fluctuated only slightly) at close to 0.6%. The business sector shows a similar trend with R&D investments below 0.2% of GDP over the whole period. In the last three years (2005-2007) both total and business R&D investments as a percentage of GDP have decreased to 0.57% and 0.15% respectively, diverging from the national target of 1.5% and 0.6% of GDP respectively.

Table 8: Basic indicators on R&D investments for Greece

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>EU-27 (latest year)</th>
<th>Average</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERD (euro million)</td>
<td>1154</td>
<td>1223</td>
<td>1311</td>
<td>226120</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>R&amp;D intensity (GERD as % of GDP)</td>
<td>0.58</td>
<td>0.57</td>
<td>0.57</td>
<td>1.83</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>GERD financed by government as % of total GERD</td>
<td>46.8</td>
<td>na</td>
<td>na</td>
<td>34.2</td>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>GERD financed by business enterprise as % of total GERD</td>
<td>31.1</td>
<td>na</td>
<td>na</td>
<td>54.5</td>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>GERD financed by abroad as % of total GERD</td>
<td>19.0</td>
<td>na</td>
<td>na</td>
<td>9.0</td>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>GBAORD (euro million)</td>
<td>635</td>
<td>685</td>
<td>673</td>
<td>87639</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>GBAORD as % of general government expenditure</td>
<td>0.74</td>
<td>0.76</td>
<td>0.67</td>
<td>1.55</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>BERD (euro million)</td>
<td>357</td>
<td>367</td>
<td>353</td>
<td>144089</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>Business sector R&amp;D intensity (BERD as % of GDP)</td>
<td>0.18</td>
<td>0.17</td>
<td>0.15</td>
<td>1.17</td>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>BERD financed by government as % of total BERD</td>
<td>5.6</td>
<td>na</td>
<td>na</td>
<td>7.2</td>
<td>2005</td>
<td></td>
</tr>
</tbody>
</table>

Data Source: Eurostat 2009

Comparing trends with the EU-27 average (see Table 8) we can make three observations:

- the gap between Greece and the EU-27 is persisting and perhaps even increasing;
- business sector investments are well below the European average and investments overall investments are driven by the public sector;
- although public funding of GERD in relative terms is higher than the EU-27 average it is far from optimum as the share of GBAORD in general government expenditures and the percentage of BERD financed by government are significantly below the European average.

Therefore, meeting the R&D investment target will require balanced mobilisation of both private and public investments across all six routes.

Table 9 presents an overview of the main barriers to R&D investment identified in Section 3.1 and the effectiveness of the policy mix designed to address them.
### Table 9: Main barriers to R&D investments and respective policy opportunities and risks

<table>
<thead>
<tr>
<th>Barriers to R&amp;D investment</th>
<th>Opportunities and Risks generated by the policy mix</th>
</tr>
</thead>
</table>
| High debt-to-GDP ratio and public deficit reduce flexibility of government to mobilise sufficient resources. | • The pressures to increase the public deficit in the context of the current economic crisis will probably further restrict public funding.  
• Dependence on Structural Funds will mean that management rigidity and complexity persist. |
| Demand for research based knowledge from the private sector is low due to its orientation towards less knowledge intensive and lower value added segments of the economy. | • Emphasis on establishing new R&D performing firms contributes to shifting the economy towards more knowledge intensive segments, although the unfavourable business environment is hampering the prosperity and sustainability of new firms.  
• Increased emphasis on non R&D-performing firms and on supporting extramural R&D and technological services to SMEs addresses a significant drawback.  
• Attracting foreign R&D performing firms is not addressed properly by the policy mix. |
| The characteristics of the business environment encourage short-sighted and risk-averse behaviour of the business sector discouraging investment in research. | Innovation related policies aimed at improving innovation dynamics and entrepreneurship contributes to a changing business culture. However, progress in the domain is hindered by the insufficient improvements in the business environment. |
| Low absorptive capacity, which is both a supply and demand problem, is further hindering demand for knowledge. | • Measures for the support of both research and non-research human resources will improve absorptive capacity.  
• Reforms to the HE sector would contribute to improving quality in graduate and postgraduate studies. However, the misalignment of supply with demand persists.  
• Increased funding for life long learning and development of relevant infrastructures is expected to improve supply. However, overlooking the demand side will reduce performance, focus and quality. |
| Limited interaction between public research institutions and firms. | Measures supporting subcontracting and research collaboration between business and public research organisation (including HEIs) could contribute to increased interaction. However, the low demand for knowledge and the significant inefficiencies of intermediary organisations could reduce the effectiveness of these efforts. |
| Limited access to capital due to the risk averseness of the financial system and the high cost of capital compared to other European countries | Public co-funding of investments in both R&D and non-R&D performing firms counter-balances to some extent the restricted access to capital. Furthermore, operation of TANEO encourages VCs to be less risk averse. However, the measures have little structural impact which is necessary to address the problem effectively. |

Since 2000, research policy mix is addressing most of the major deficiencies in the research system which are relevant to research policy domain. The recent changes are further improving the balance, although the route of stimulating R&D investments by attracting foreign R&D performing firms remains overlooked as FDI is regarded an issue of industrial policy, and therefore, it remains out of the scope of research policy. Despite the efforts, the effectiveness of the policy adopted in terms of meeting targets is low, for three main reasons. Table 9 shows that significant barriers in the research system are related to domains that are beyond the scope of research policy or even knowledge triangle policies and that the scope of policy mix needs to go beyond the research policy domain. Second there is a lack of critical mass due to insufficient resources (both financial and human) for the high number of measures.
and initiatives addressing all kinds of problems and deficiencies in the system (Bartzokas, 2007). Third there are significant deficiencies experienced in the implementation of the policies due to staffing shortcomings in terms of both quality and quantity, complex implementation procedures and lack of learning and knowledge accumulation mechanisms in the implementing authorities (see also TrendChart, 2008).

Almost seven years since the target of 1.5% was set, this goal seems unrealistic. The economic recession is magnifying the main deficiencies in the system preventing increases in both public and private investment in the near future. Pressure from the European Commission for government to reduce the public deficit from 5% of GDP in 2008 to below 3% in 2010 is expected to negatively affect public investment. Structural Funds will cover 100% of public funding for the research programmes during 2009, but in future years their contribution will be reduced in order to balance advance payments. The private sector is expected also to slash investment which will affect both innovation and research. Analysts\(^{10}\) estimate that manufacturing firms will reduce their investments by 38% in 2009, which will be the biggest reduction since 1984.

### 4 Contributions of national policies to the European Research Area

ERAWATCH country reports 2008 provide succinct and concise analysis of the ERA dimension in the national R&D system of the country. This Chapter further develops this analysis and provides a more thorough discussion of the national contributions to the realisation of the European Research Area (ERA). An important background policy document for the definition of ERA policies is the Green paper on ERA\(^{11}\) which comprises six policy dimensions, the so-called six pillars of ERA. Based on the Green Paper and complementing other ongoing studies and activities, this chapter investigates the main national policy activities contributing to the following four dimensions/pillars of ERA:

- Developing a European labour market of researchers facilitating mobility and promoting researcher careers
- Building world-class infrastructures accessible to research teams from across Europe and the world
- Modernising research organisations, in particular universities, with the aim to promote scientific excellence and effective knowledge sharing
- Opening up and co-ordination of national research programmes

In the ERA dimension, the *wider context of internationalisation of R&D policies* is also an issue related to all ERA policy pillars and is normally present in the dynamics of national ERA-relevant policies in many countries.

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\(^{10}\) Article of D. Kadda in Eleftherotipia 3 May 2009, Economy section p.4

4.1 Towards a European labour market for researchers

R&D personnel in the business sector increased by 5% during the period 2003-2005, from 12,259 to 12,896. During the same period the share of PhDs in R&D personnel increased from 7% in 2003 to 10% in 2005. This increase represents a yearly average increase of 203 PhD, while in all the R&D performing sectors the increase was approximately 992 PhD graduates. Thus, 20% of the doctoral graduates hired as R&D personnel are working in the business sector. The share of business sector in the PhDs hired annually as R&D personnel by all sectors is more than three times higher than the share of Business sector in the stock of R&D personnel with PhD, indicating that business sector demand is increasing rapidly in relation to the other sectors. However, despite this increased demand, absorption of PhD holders by the business sector in Greece is among the lowest in the EU and is comparable only to the level in some of the new member states. The share of business sector employed PhD graduates in the total number of PhD graduates working as research personnel in Greece was 6.9% in 2005, while in Latvia it was 5.9%, Hungary 5.7%, Slovakia 5.5% and Poland 2.7%. And in Ireland the number was 12.7%, Romania 16% and in the Czech Republic 12.4%.

Limited absorption by the private sector in Greece can be attributed mainly to relatively low demand due to the orientation of the Greek economy towards low- and low-to-medium technology sectors and less knowledge intensive services.

This low demand from the private sector results in the majority of PhD graduates pursuing academic careers. The working conditions for academics and researchers in the government sector, such as civil servant status, work flexibility and relatively higher average salaries compared to the private sector which are around 74% on average of the salaries in universities (CARSA 2007, p166), are also a factor in the increased demand for positions in the public research system.

The surplus of doctoral graduates tends to take up non-research jobs or leave the country. Data on international mobility of researchers are scarce, making it difficult to estimate brain drain effects. However, some figures provide indications of the size of brain drain. According to Moguérou and Di Pietrogiacomo (2008) 605 scholars in US were of Greek origin in 2005/2006, thus, bringing Greece 10th among the EU member states. In relative terms Greece is ranked again 10th among the EU Member States, as the US scholars with Greek origin represented approximately 2.5% of the researchers in the HE and government sector.

Despite the low level of demand for researchers in the private and public sectors, demand for postgraduate and especially doctoral courses has increased significantly. Between 2004 and 2007 the number of PhD graduates increased by 157% from 949 in 2004 to 2,436 in 2007. This number has been augmented by an annual inflow of approximately 600 PhD graduates from abroad.

The attractiveness of the research sector, in terms of remuneration, is low in Greece compared to other west European countries. After adapting to take account of the cost of living in Greece, average gross yearly salaries in universities and public research centres are €32,045 and €39,452 respectively (CARSA, 2007). These levels are similar to those in Hungary, Spain and Finland, and much lower than in Cyprus, Malta, Austria, Belgium, France, Denmark, Ireland and the Netherlands. Within Greece, the government sector is the most attractive in terms of remuneration.

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12 Data from the National Statistical Service of Greece.
13 Greek students studying abroad.
while the private sector is the least attractive (€29,276). This situation does not change with seniority, and researchers' remuneration is ranked 23rd among the EU27 and associated countries, at all career levels.

4.1.1 Policies for opening up the national labour market for researchers

The Greek government is gradually opening the labour market to researchers through the introduction supply and demand side reforms.

The new law 3549/2007, reforming the higher education system, provides a framework for provision of undergraduate and postgraduate studies, including PhD programmes, in languages other than Greek. It also allows for masters dissertations or PhD theses to be submitted in another language not only in Greek anymore.

In 2008 law 3685/2008 provided for improvements to the existing legislative framework regulating the organisation of joint postgraduate and doctoral programmes with foreign universities including both other EU and third countries.

In addition to the above efforts for opening up the higher education system to non-nationals, the International Hellenic University was established in 2005, to teach exclusively in English with the aim of attracting students from the Balkans and third countries.

Despite the rapid increase of research collaborations of Greek universities with European counterparts, higher education activities remain mainly inward looking. TEIs, which have struggled to establish a position within the higher education system in Greece, have become very active in developing collaborations with European universities mainly under the Erasmus scheme. On the contrary, universities are more reluctant to collaborate for joint postgraduate studies. The main obstacle is the reluctance of universities to recognise degrees of three years undergraduate studies. Up to 2008, eleven universities have signed bilateral agreements with European (mainly French) and US universities to offer 15 joint Masters and PhD programmes; this compares with 465 postgraduates programmes currently offered in Greece. In addition, there are some ad-hoc PhD programme offerings within the framework of the Marie Curie training networks.

Participation in the Marie Curie and Erasmus schemes is encouraged by government (GSRT and Ministry of Education). Participation in Marie Curie represents 5% of the scheme’s projects which is much higher than Greece’s share in number of European researchers (2%).

Mobility of researchers is hindered by the need for foreign degrees to be formally recognised by the National Academic Recognition and Information Centre (NARIC) in order to be regarded as equivalent to degrees obtained from Greek universities. This certification is obligatory in order to sign up for a postgraduate course or be employed in a permanent position as a researcher in the Greek higher education and research system. However, individuals that have already held similar professional positions in another country are excluded from this requirement.

Short term outward mobility is high, especially for study purposes. Despite the problems related to degrees obtained in foreign countries, the number of Greeks that go in another Member State for their PhD study compared to the PhD candidates in

14 For more details see the ERAWATCH Country Report 2008 for Greece
the country, is the second highest in EU after Ireland\textsuperscript{16} (Moguérou and Di Pietrogiacomo, 2008). In 2005 the number of PhD students studying in other EU Member States amounted to 4,000 representing 17.8\% of the total number of PhD students in Greece. The same year, the share of Greeks pursuing a PhD in US represented 8\% of the PhD students in Greece\textsuperscript{17}. The figure is the second highest after Bulgaria, among each EU Member States. In terms of PhD graduates the numbers are higher. Approximately 33\% of Greek PhD graduates in 2005 and 50\% in 2006 obtained their PhD in a foreign university\textsuperscript{18}. Short term outward mobility of researchers is encouraged either within the framework of bilateral agreements,\textsuperscript{19} or to work within European infrastructures, e.g. the ESA.

Contrary to the short term mobility, long term departure from Greece is not encouraged by the public policies.

Inward mobility of researchers is encouraged by government, especially for well qualified and internationally recognised individuals. During the programming period 2000-2006 inward mobility of researchers (of Greek origin or not) to conduct research in Greece for a short period of time was supported financially. In the current programming period, this support has been replaced by incentives for participation by non-nationals in national research programmes.

Researchers and academics with permanent positions in the public sector are civil servants and, therefore, only Greek citizens or citizens of the EU are eligible for such positions. EU citizens can be hired providing that they are proficient in the Greek language which itself is an important barrier. Researchers who are citizens of non-EU countries are only hired under short term contracts, for the completion of specific research projects. Law 3386/2005 provides that a “scientific visa” should be obtained. In 2008 the legislation was adapted to Council directive 2005/71 which sets the conditions for residence permits for third-country researchers.

Social security is compulsory for all employees in Greece regardless of their origin, citizenship or work status. Universities are responsible for providing social security coverage for PhD students while the social insurance package and benefits for professional researchers is dependent on a combination of type of contract (self-employed, employed, fix-term-contract, long-term-contract) and their profession.

Council regulation 1408/71 has been adopted in national legislation; however, no distinction is made for researchers.

Despite the favourable public policy and the lack of legal restrictions for researchers from EU member states to work in Greece, the number of non-national researchers working in Greek universities or public research centres is very small\textsuperscript{20}. There are very few foreign researchers in public research centres such as ‘Dimokritos” and almost none in the universities. The very low inward mobility could be attributed to existing barriers. A barrier for both research and academic positions is the requirement of fluency in Greek. In addition competition for a university position is

\textsuperscript{16} Ireland has the highest share of 25.7\%
\textsuperscript{17} Ibid
\textsuperscript{18} Data on foreign PhD degrees is from NARIC. NARIC reports the applications for PhD recognition, not the actual graduations.
\textsuperscript{19} E.g. every year short visits (1-2 weeks) for educational purposes by research, teaching and support staff and PhD students to 14 EU member states and 8 third countries are supported by the Ministry of Education within the framework of bilateral agreements. Also research bilateral agreements encourage very short visits.
\textsuperscript{20} There are no data in Eurostat or National Statistical Service of Greece.
high and often the influence of social networks is strong; thus, even Greeks academics working abroad are often discouraged from applying for these positions. Furthermore, the academic community often feels competitive towards incoming non-nationals due to the limited resources that are available.

4.1.2 Policies enhancing the attractiveness of research careers in Europe

Enhancing the attractiveness of research careers is a *sine qua non* to increase the number of researchers in Europe. Factors such as working conditions and remuneration are important determinants in making research careers more attractive.

One of the efforts being made towards this direction is the European Charter of Researchers issued by DG Research in 2005. Several public research organisations and universities in Europe have signed this charter, but in Greece only 2 out of the 16 public research organisations and none of the 23 universities or 15 technological education institutes have signed it.

Remuneration is an important parameter in attracting researchers. Remuneration levels in universities and government research organisation are defined centrally by government. The only differentiations are among levels of seniority and between universities and government research organisations. Researchers in universities can get extra rewards if they provide services (including research) to university clients or within the framework of national or European research projects, providing that university staff is eligible to receive fees. However, any additional monthly income should not exceed the gross monthly salaries of university permanent staff.

The share of women PhD graduates was 34% in 2004 and increased to 40% in 2006 and 2007. Participation of women in research professions in Greece is above the EU27 in all sectors of performance. In 2005, which is the latest year for which data are available for Greece, 36% of researchers were women compared to 30% in the EU 27. The gap between Greece and the EU27 is wider in the business sector where 28% of the researchers in Greece are women, while in EU27 the figure is 19%. However, the higher up the research hierarchy, the lower is the percentage of women. In the academic sector although 32% of the academic staff in 2007 were women, the percentage of female full professors was only 17%.

The difference in the remuneration received by men and women researchers is around 14.3% (CARSA, 2007). However, this is among the lowest in EU27 and associated countries with only Malta, Denmark, Iceland, and Norway showing better figures for women.

The need for the gap between men and women in science to be closed has been recognised by government and an effort was made during the programming period 2000-2006 to direct funding to research on gender related issues. In total 4.8% of the budget of Heraclitus, a programme funding PhDs, was used for gender research. Furthermore, the participation of women in the programme was encouraged by allowing project proposals from women researchers to receive more favourable ranking. Similarly, 10% of the budget of programme Pythagoras, a small programme promoting research networking in academia, was directed towards gender issues. In total it is estimated that €2.9m was allocated to this research area. GSRT in 2000 set

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21 National Statistical Service of Greece.
up the network Periktioni aiming at promoting gender and equality issues in the research sector in Greece through studies and awareness raising activities.

Labour legislation provides strong protection for women working in the public sector. There are no evidences that maternity leave have a negative effect on women researchers' careers in the public sector. On the contrary work in the private sector is less well protected and often maternity leave does affect research opportunities. According to a study implemented in 2007 (Quantos, 2007) 46% of Greek women researchers in the business sector believe that maternity is the most important obstacle to a successful research career. However, 12% of companies that have research activities have adopted policies to increase the participation of women. The Quantos study also shows that approximately 70% of women researchers stated that their companies ensured equal opportunities for men and women while 19% believe that there is gender discrimination in their companies.

4.2 Governing research infrastructures

The weak long term planning and coordination of public research policy discussed in chapter 222 is reflected in the absence of a national strategy for the development of research infrastructures. The efforts to develop a few large infrastructures were fragmented bottom-up initiatives by research groups and not the result of strategic planning.

Most of the existing large research infrastructures have been developed in the area of earth and space sciences, and are run by the Athens National Observatory with collaboration from other public research centres and universities across the country. The most important of these, and which attracts transnational cooperation, is Nestor which is Europe’s first collaborative effort on a deep sea high energy neutrino telescope. The National Seismic Network is a national infrastructure with 46 stations across the country and a network of telescopes, the most important being the Aristarchos telescope which is the largest observatory in the Balkan and Eastern Mediterranean area. The Oceanographic Research Vessel is a national research infrastructure in the area of Earth exploration and the environment. In lasers, the Ultraviolet Laser Facility ULF-FORTH has been in operation as a European laser research infrastructure since middle of 1990s within the public research centre FORTH. GRNET is a significant national distributed infrastructure which provides an academic and research network and information technology infrastructure for all universities and public research centres.

During 2000-2006 €36m23 was directed towards research infrastructures of all sizes representing 1% of GBAORD in that period. During the current programming period (2007-20013) it is estimated that the amount that will be made available by the National Strategic Reference Framework for research infrastructures will be increased fourfold to €144m.

In an effort to increase the outward orientation of the national research system and to increase local research capacity by tapping into the international pool of knowledge, the Greek government actively supports the participation of research teams in inter-governmental agreements. Greece is one of the 12 initial members of CERN and contributes €13m per year. About 100 Greek PhD students and many senior

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22 See also the Country Report 2008 for Greece
23 See section 3.3.2 Route 6.
researchers have worked at CERN since 1999. However, despite these efforts the returns to Greek industry in terms of subcontracting are the lowest among participating members (GSRT, 2007). In 2004 Greece joined the ESA contributing €11m per year. Greece also participates in the XFEL project, the EDCTP and the GALILEO Joint European Undertaking.

Greek public research organisations are very active in European research infrastructures. They participated in the preparatory phase of ESFRI under FP6. Also they participate in six ICT based e-infrastructures developed within the FP7 framework, and coordinate two of them. They have expressed interest in participating in 16 of the 34 infrastructures of ESFRI during the implementation phase. The involvement of research teams in ESFRI in FP6 was a bottom-up initiative supported by GSRT; however, there was no strategic plan or budget to ensure participation of Greek researchers in the implementation phase in FP7. In December 2008, GSRT launched a feasibility study to select one or more of the 16 Research Infrastructures for participating, up to a total national contribution of €2m.

4.3 Research Organisations

As argued in the Country Report 2008 for Greece (Maroulis, 2009) and in other studies (GSRT, 2007 and Bartzokas, 2007) the response of the higher education system to economic and societal needs is poor, and despite some progress, the exploitation of research results is still taboo for many members of the academic and research community. The poor performance of HEIs in this respect should not be attributed to lack of researchers' autonomy to decide on research priorities and academic directions as, traditionally, the involvement of the Ministry of Education in the shaping of research environment and activities in Universities has been limited. Academic staff at all levels has the freedom to define research priorities. This freedom is further ensured by the lack of orientation of public funding of academic research. Research funding is channelled through the “Direct Government Budget” and through the general university funds (GUF) which are directed to areas mainly defined internally by the research community. The size of the GUF is not related to the quality of the research or its outcomes, but to the size of the research community. In 2005, for which the most recent data are available, almost 71% of public funding for universities was GUF. This share is much higher than the EU27 aggregate which for the same year was 44%. Non-GUF government research funding for HEIs is channelled through competitive programmes. During the programming period 2000-2006 all the main research areas were funded by four research programmes to a total budget of €115m. In the new programming period 2007-2013 the budget for programmes supporting academic research are being increased three fold to approximately €380m. The intention of government to set quotas for allocating this funding to research areas will not affect the freedom of researchers to define their priorities, as quotas will apply to broad research areas.

The autonomy of HEI in defining research priorities is also assured by the human resource management process. Departments, which are the principal academic units in the HEI structure, have the freedom to define the specification of the scientific area for each position and to hire and promote academic staff. However, until 2008 Ministry of Education had the authority to determine the number of positions to be filled every academic year for each Department.

As a result of public debate on the future of the Greek HEI system and the Bologna process, and the 2007 reform of the higher education sector (Law 3549/2007) the
autonomy of universities and TEI has been increased in many aspects. The funding of HEIs is negotiated with the Ministry of Education on the base of a four-year development plan. The new funding framework provides HEIs with more freedom for hiring academic staff and permanent research staff as they negotiate the budget on the basis of their development plans. Allocation of the budget for new academic staff to the departments is an internal procedure, and is decided in universities by the Senate and in TEIs by the institution’s Assembly. Thus, the development plan to some extent affects the GUF through the creation of new academic positions. However, competitive research programmes remain as the only channel for allocating direct research funding.

The opening up of the HEIs to society through the participation of stakeholders in the management of education institutions began in 1982 with Law 1268. The 1982 reform introduced participation of all members of the academic community in the management of the university and the election of Rectors. The influence of student representatives in the election of Rectors is very strong as they represent 40% of the votes. However, the participation of external members in the institution’s governing body was never an issue for public policy or the subject of public debate.

The 2007 reform did not introduce many significant changes in the governance of HEIs. The main ones were both opposed by members of the academic community. First, the reform aims at professionalising the administration of HEIs by introducing the position of Secretary, recruited for four year terms through an open application process. The secretary would be responsible for the management of the financial and administration services of the HEI. Second, the influence of the student political organisations in the election of the Rectors (or Presidents in the case of TEI) is reduced through a change from voting through student representatives to direct voting by all students.

Increasing autonomy of HEIs combined with the introduction of accountability and evaluation of HEIs performance, could improve research quality and education output. However, the response of HEIs to economic needs will remain low as long as the demand for research based knowledge from the business sector continues at its current low levels. As pointed out by Bartzokas (2007) poor demand for research results does not create incentives and selection rules based on market needs. Furthermore, due to the low demand the academic community has not developed the skills and capacity required to recognise and respond to market signals (Maroulis, 2009).

4.4 Opening up national research programmes

Access to international knowledge is regarded by public policy as very important for the small Greek research system and for companies with an international orientation. EU Framework programmes and participation in intergovernmental research infrastructures are some of the main mechanisms used to create synergies, exploit economies of scales and tap into the pool of international knowledge (Maroulis, 2009).

The opening up of national research and innovation programmes was one of the priorities of the Greek presidency in 2003 (GSRT, 2003). However, non-national participation was not promoted in the national research programmes during the period 2000-2006.
The **Strategic Development Plan for Research, Technology and Innovation 2007-2013** explicitly provides for the participation in programmes of non-national researchers in the current programming period 2007-2013. Thus, it is expected that many of the research programmes within the “**Competitiveness and Entrepreneurship**” and “**Education and Life-Long Learning**” programmes, and the Regional Operational Programmes of Attica and Central Macedonia, will allow participation of nationals from the European Union and third countries although without financial support.

GSRT embraced the ERA-NET scheme from its beginnings. GSRT participated in 19 FP6 projects, and coordinated one on the development of foresight activities. In the FP7, Greek participation has extended beyond GSRT, to include local authorities and other public organisations. There is Greek organisational participation in 10 projects: ARIMNet in the area of agriculture and fisheries; ERACOBUILD in nanoscience, nanotechnology and materials, ERNEST in the area of sustainable tourism; NET-HERITAGE in the area of cultural heritage; and SMARTGRIDS related to renewable energy, NUPNET in nuclear physics, SEERA-EI for enhancing collaboration in South Europe for e-infrastructures, SEE-ERANET PLUS, BS-ERANET and ERANET-RUS developing research collaboration with countries in South East Europe, in the Black Sea region, and with Russia. GSRT wants to increase participation in the ERA-NETs by encouraging bottom-up initiatives and has established an appraisal procedure to select among the most promising ideas in line with national and regional priorities.

Greek research organisations have been actively involved in the Technology Platforms established in FP6 and continue participation in five of the six Joint Technology Initiatives in FP7.

In addition to joint programming activities under the umbrella of the European Union, Greece participated in a number of multilateral and bilateral agreements prior to the ERA. However, ERA policy has intensified these efforts. Although Greece has been a member of EUREKA since 1985, 77% of its participation began only after 2000 and approximately 40% of projects are still running. In total, Greek organisations have participated in 173 projects representing a budget of €115m.24

Greece is also active in COST with Greek institutions participating in more than 70% (around 160 projects) of the total actions in COST, ranking Greece 10th in terms of participation (COST, 2008). In addition to multilateral agreements, the Greek government has an extended programme of bilateral agreements with 25 countries including EU Member States, Turkey, USA, Japan, Korea, China, India and the Southern Mediterranean countries. Total funding during the period 2000-2006 amounted to €16m.

To conclude, joint programming and the opening up of national research programmes are priorities for GSRT. Regarding joint programming other public bodies and organisations are following GSRT’s example and beginning to participate in joint programming initiatives. Despite the obvious opportunities provided to the most advanced segments of the Greek research system, the existing level of public funding does not allow for a major increase in the budget for joint R&D activities. Regarding opening-up of research programmes, it remains to be seen whether the Ministry of Education will open up its academic research programmes following the

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example of GSRT. Despite the opening-up, financial support of the non-nationals is hindered by three factors:

- funding of non-national partners has legal and administrative implications which should be overcome.
- given that public funding of the national research system is low, funding of non-nationals will further decrease the resources channelled to the national system if additional funding will not be mobilised. Both perspectives have significant drawbacks due to the economic crisis and the pressures on government for financial consolidation in order to reduce public deficit below 3% of GDP by 2010.
- demand for research funding by the academic and public research sectors exceeds available funding. Therefore, competition is already very high and national research actors may be reluctant to share the existing funding with non-nationals. Therefore, the effectiveness of the approach will be very limited.

4.5 National ERA-related policies - a summary

The ERA concept was welcomed by government and the academic community in Greece as an opportunity to profit from international knowledge, to tap into additional sources of funding and to increase local research capacity. The ERA is also seen as important for increasing the role of Greece in the Balkans and Southeast Europe.

Although the ERA has not been prominent in the main policy documents, some of its elements have been incorporated within research policy objectives. The reference of the National Reform Programme 2008-2010 to the ERA is rather succinct:

“Special attention has been given to enhancing international cooperation in R&D, and especially for the establishment of the European Research Area within the European Union.”

Based on this goal, the Strategic Development Plan for Research, Technology and Innovation defined the following main principles: all measures will contribute to the achievement of economies of scale and scope at national and European level; international collaboration will be allowed in all measures, while specific measures will be designed to strengthen collaboration; measures will be introduced to develop synergies and complementarities with European initiatives and especially with FP7; and participation in joint RTD initiatives will be supported by efforts to promote the ERA. As part of the implementation strategy a specific action for “European RTD Collaboration” has been created to support participation in European programmes and infrastructures, joint programming initiatives and bilateral agreements.

A balanced implementation of the ERA policy mix is being hindered by problems related to coordination between GSRT and the Ministries of Education and Employment, which are involved in the development of the pillars of the ERA.

GSRT is planning specific policies to address the governance of research infrastructures, the opening-up of national research programmes and to encourage researcher mobility - mainly through participation in infrastructural facilities and bilateral agreements. The first measures that have been initiated by GSRT in the current programming period are related to the joint programming and the governance of research infrastructures, namely participation in the ERA-NETs and ESFRI. Opening up of national research programmes has been applied in two research programmes so far, however without financial support of the non-national
participants. It remains to be seen if the two programmes will be actually open in practice.

The reforms in the governance of HEIs, which are responsibility of the Ministry of Education, are driven by the Bologna process and significant shortcomings in the HEI system (Maroulis, 2009; Kyriazis, 2007; National Council for Education, 2006). The policy focus is mainly on the education pillar of the HEI system as there is significant autonomy in research.

Research labour market issues related to labour legislation, social security and health are the responsibility of the Ministry of Labour. Reforms in this area are driven by European employment legislation. Issues related to the standardisation of postgraduate programmes are among the priorities of the Ministry of Education in response to the Bologna process.

The importance of the ERA pillars in the ERA policy mix is presented in Table 10.

Table 10: Importance of the ERA pillars in the ERA policy mix and key characteristics

<table>
<thead>
<tr>
<th>Short assessment of its importance in the ERA policy mix</th>
<th>Key characteristics of policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour market for researchers</td>
<td>Opening up of the market through introduction of reforms on the supply and demand sides including:</td>
</tr>
<tr>
<td></td>
<td>• improved framework for joint postgraduate and doctoral programmes, and programmes taught in other languages.</td>
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<tr>
<td></td>
<td>• Inward mobility is encouraged through incentives and adaptations to the social security and pension legislation. Local demand for non-nationals, especially from the public sector, is limited.</td>
</tr>
<tr>
<td>Governance of research infrastructures</td>
<td>Participation in European research infrastructures has been a key element in research policy for several years. However, there is no coherent policy for the development of national infrastructures and no specific policy for their opening-up to non-nationals.</td>
</tr>
<tr>
<td></td>
<td>• Greece participates in infrastructural facilities and is actively involved in the ESFRI although the available budget is low.</td>
</tr>
<tr>
<td>Autonomy of research institutions</td>
<td>Reform of the system started in 2008 to increase the autonomy of HEIs to manage their finances, recruit academic personnel and professionalise the administration. HEI-economy links are not addressed.</td>
</tr>
<tr>
<td>Opening up of national research programmes</td>
<td>Most of the measures supporting research are at the planning stage; relevant references to their opening-up to foreign participation are included in programming documents.</td>
</tr>
</tbody>
</table>
5 Conclusions and open questions

5.1 Policy mix towards national R&D investment goals

Despite the rhetoric, public funding of R&D as a percentage of general government expenditure is half of the EU average, and public funding of private R&D is around 78% of the EU average. The high public deficit and debt constitute significant constraints which reduce the flexibility for government to increase public spending on research.

Mobilisation of resources by the business sector is also insufficient. Business expenditures for R&D is among the lowest in the EU, reflecting the low demand for research based knowledge from the business sector. A combination of factors including dominance of low-tech sectors, significant institutional and bureaucratic obstacles and a volatile policy environment are orienting business activities towards less knowledge intensive and lower value added segments of the economy. Also, the low absorptive capacity of the business sector is both a cause and effect of the low demand for knowledge.

Restricted access to capital, especially for new firms, due to the reluctance of the financial system to finance innovation and risky investments is also among the factors hindering mobilisation of resources for R&D.

Poor demand for research based knowledge is being exacerbated by the limited ability and willingness of the public research system to increase the exploitability of the knowledge produced.

The existing research Policy Mix addresses the main barriers to R&D investment by focusing on strengthening R&D performing firms, shifting existing firms towards more knowledge intensive activities and setting up R&D intensive indigenous firms. This strategy is reinforced by the strengthening collaboration between firms and the public research system which is complemented by efforts to increase both the exploitability of research results and the capacity of the firms to collaborate with public research. Increasing R&D investment in the public research sector is supported by directing funding to areas of economic and policy priority.

A route that has been relatively overlooked is attracting foreign R&D performing firms. However, given the very limited success in attracting FDI, policies in this route should go far beyond the research policy domain. Therefore, the current approach of staring addressing the issue by launching a mini policy mix combining elements from research, industrial, FDI and spatial development policies focusing on a specific geographical area, is appropriate.

Although the overall policy mix is coherent and well balanced in terms of the barriers it addresses, most of the underlying causes of these problems are related to other policy domains. Therefore, the scope of the policy mix needs to go beyond research policy. Furthermore, the large number of measures involved means that resources have to be spread across too many objectives which is preventing the accumulation of a critical mass in the most critical domains. In addition, significant inefficiencies in the implementation of these policies decrease the overall effectiveness of the policy mix. Finally, the economic recession is exacerbating the deficiencies in the system and preventing any increase in either private or public investment.
Within this context and given the lack of progress towards the target of 1.5% during the last nine years, it seems that achievement of this goal within the time frame, is unrealistic for Greece.

5.2 ERA-related policies

In terms of national research policy, ERA provides the opportunity to tap into additional sources of funding, profit from international knowledge and increase local research capacity through collaborations and use of European resource infrastructures. Furthermore, ERA is seen as the means of increasing the role of Greece in the Balkans and Southeast Europe.

The creation of a European researcher market is low priority within the ERA policy mix, due to low demand from the private sector for researchers and the orientation of universities towards the domestic market. Therefore, evolution in this pillar is being driven by European policy rather than national needs.

Similarly, developing the autonomy of universities is being driven by the Bologna process rather than national research policy and reforms are focused mainly on education issues. Research autonomy in universities is strong and links to public policy and economic needs are very weak.

Governance of the research infrastructure is the most important element in the national ERA policy mix. Bottom-up pressure to participate in European infrastructures is very strong; however no coherent policy for setting priorities for the participation and development of national infrastructures has been developed yet.

Finally, opening up national research programmes is a priority. The few research programmes published so far allow the participation of non-nationals; however, due to financial constraints and administrative complexity there is no financial support provided by these programmes.

Balanced implementation of the policy mix is being hindered by problems related to coordination among the different ministries responsible for different aspects of ERA policy mix, namely Ministries of Development, Education and Employment.
References

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Quantos (2007): The Greek research women in the Industrial Research and Innovation, December, GSRT, Athens, in Greek.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AKMON</td>
<td>Programme for developing research service capabilities of public research organisations</td>
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<td>ARIMNet</td>
<td>Coordination of Agricultural Research in the Mediterranean Area</td>
</tr>
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<td>BERD</td>
<td>Business Expenditures for Research and Development</td>
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<tr>
<td>BS-ERANET</td>
<td>Black See ERANET</td>
</tr>
<tr>
<td>CERN</td>
<td>European Organisation for Nuclear Research</td>
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<tr>
<td>COST</td>
<td>European Cooperation in Science and Technology</td>
</tr>
<tr>
<td>CSF</td>
<td>Community Support Framework</td>
</tr>
<tr>
<td>EDCTP</td>
<td>Clinical Trials for AIDS malaria and tuberculosis</td>
</tr>
<tr>
<td>ERA</td>
<td>European Research Area</td>
</tr>
<tr>
<td>ERA-NET</td>
<td>European Research Area Network</td>
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<tr>
<td>ERANET-RUS</td>
<td>ERANET for Russia</td>
</tr>
<tr>
<td>ERACOBUILD</td>
<td>Strategic Networking of RDI Programmes in Construction and Operation of Buildings</td>
</tr>
<tr>
<td>ERNEST</td>
<td>European Research Network on Sustainable Tourism</td>
</tr>
<tr>
<td>ESA</td>
<td>European Space Agency</td>
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<tr>
<td>ESFRI</td>
<td>European Strategy Forum on Research Infrastructures</td>
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<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EU-27</td>
<td>European Union including 27 Member States</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investments</td>
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<tr>
<td>FORTH</td>
<td>Foundation for Research and Technology</td>
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<tr>
<td>FP</td>
<td>Framework Programme</td>
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<tr>
<td>FP6</td>
<td>6th Framework Programme</td>
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<tr>
<td>FP7</td>
<td>7th Framework Programme</td>
</tr>
<tr>
<td>GBAORD</td>
<td>Government Budget Appropriations or Outlays on R&amp;D</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GERD</td>
<td>Gross Domestic Expenditure on R&amp;D</td>
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<tr>
<td>GOVERD</td>
<td>Government Intramural Expenditure on R&amp;D</td>
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<tr>
<td>GSRT</td>
<td>General Secretariat for Research and Technology</td>
</tr>
<tr>
<td>GUF</td>
<td>General University Funds</td>
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<tr>
<td>HEI</td>
<td>Higher Education Institution</td>
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<tr>
<td>HERD</td>
<td>Higher Education Expenditure on R&amp;D</td>
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<tr>
<td>HERON</td>
<td>Programme for the support of research human capital in enterprises</td>
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<tr>
<td>MoD</td>
<td>Ministry of Development</td>
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<tr>
<td>NARIC</td>
<td>National Academic Recognition and Information Centre</td>
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<tr>
<td>NCRT</td>
<td>National Council for Research and Development</td>
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<tr>
<td>NRP</td>
<td>National Reform Programme</td>
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<tr>
<td>NSRF</td>
<td>National Strategic Reference Framework</td>
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<tr>
<td>NUPNET</td>
<td>ERANET for Nuclear Physics Infrastructure</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>OP</td>
<td>Operational Programme</td>
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<tr>
<td>PAVET</td>
<td>Programme for the development of Industrial research</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>PAVET-NE</td>
<td>Programme for the development of Industrial research in new established enterprises</td>
</tr>
<tr>
<td>PENED</td>
<td>Programme for the support of the research human capital</td>
</tr>
<tr>
<td>PhD</td>
<td>Doctor of Philosophy, Doctorate</td>
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<tr>
<td>PM</td>
<td>Policy Mix</td>
</tr>
<tr>
<td>PRAXE</td>
<td>Programme for the commercialisation of research results</td>
</tr>
<tr>
<td>PRO</td>
<td>Public Research Organisations</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>ROP</td>
<td>Regional Operational Programme</td>
</tr>
<tr>
<td>RTDI</td>
<td>Research Technological Development and Innovation</td>
</tr>
<tr>
<td>SDP</td>
<td>Strategic Development Plan for Research, Technology and Innovation</td>
</tr>
<tr>
<td>SEERA-EI</td>
<td>South East European research area for e-infrastructures</td>
</tr>
<tr>
<td>SEE-ERANET</td>
<td>South Eastern European ERANET</td>
</tr>
<tr>
<td>SF</td>
<td>Structural Funds</td>
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<tr>
<td>SME</td>
<td>Small and Medium Sized Enterprise</td>
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<tr>
<td>TANEO</td>
<td>Funds of New Economy</td>
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<tr>
<td>TEI</td>
<td>Technological Educational Institution</td>
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<tr>
<td>TEMPE</td>
<td>Loan guarantee fund</td>
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<tr>
<td>TTO</td>
<td>Technology Transfer Office</td>
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<tr>
<td>ULF</td>
<td>Ultraviolet Laser Facility</td>
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<tr>
<td>VC</td>
<td>Venture Capital</td>
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<tr>
<td>XFEL</td>
<td>X-Ray Free-Electron Laser</td>
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</tbody>
</table>
Abstract

The main objective of the ERAWATCH Policy Mix Country reports 2009 is to characterise and assess in a structured manner the evolution of the national policy mixes in the perspective of the Lisbon goals, with a particular focus on the national R&D investments targets and on the realisation and better governance of the European Research Area. The reports were produced for all EU Member State and six Associated States to support the mutual learning process and the monitoring of Member and Associated States’ efforts by DG-RTD in the context of the Lisbon Strategy and the European Research Area. The country reports 2009 build and extend on the analysis provided by analytical country reports 2008 and on a synthesis of information from the ERAWATCH Research Inventory and other important available information sources.

This report encompasses an analysis of the research system and policies in Greece.

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