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

Latvia

Anda Adamsone-Fiskovica, Janis Kristapsons and Aija Lulle
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: Latvia

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

ERAWATCH Network – Centre for Science and Technology Studies, Latvian Academy of Sciences

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**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.

Latvia is a small country with a population of 2.3m. The country has followed a neo-liberal economic policy since early 1990s when the formerly large industrial sector was not preserved. As a result of the dismantling of the labour-intensive command economy, the emerging national economy has been mainly characterised by the predominance of a low skilled labour force and low value-added production. In 2007, GDP per capita made up 58% of the EU27 average. While the annual growth rate of GDP in 2006 was 12.2% and 10.0% in 2007, in 2008 it fell to minus 4.6%. It has been forecasted that the deepest recession of the Latvian economy is expected in 2009 when GDP could fall by 12%, while in 2010 it might decrease by 2%.

Until 2004, the political elite did not consider science an area to be developed and supported nationally. A key turn in the development of the national R&D system was marked in 2005 by the adoption of the Law on Research Activity stipulating an annual increase in the government R&D funding at least by 0.15% of GDP until it reaches 1%. The figures for GERD (as a % of GDP) have improved with a slight fluctuation since 2004 (2004 – 0.42; 2005 – 0.56; 2006 – 0.7; 2007 – 0.59), yet they are considerably lower than the EU average (1.83% in 2007). In absolute figures GERD was €73m in 2005, €112m in 2006 and €126m in 2007. In its turn, business R&D investment plays a limited role in the national research system of Latvia and there are limited signs of any recent positive developments. Since 2001, changes in BERD have been negligible (0.15% of the GDP in 2001, 0.19% - in 2007) and it is five times lower than the EU average of 1.17%. Under the economic crisis public R&D funding is expected to decrease considerably in 2009 since GBAORD has been reduced at least by 29%.

Achievement of the targets set in the Lisbon strategy has been prioritised in Latvia since 2005. Yet, on the backdrop of the economic crisis it is being less pronounced. Latvia has not submitted a new stand-alone National Reform Programme for 2008-2010, but has instead incorporated its future tasks into the progress report of the previous (2005-2008) document. For the time being it is yet unclear what the particular R&D investment goals for the new period of 2008-2010 are.
The present policy mix of Latvia has a decisive role to play towards reaching the Lisbon goals. In recent years the institutional (block) funding and thematic state research programmes have been the main mechanisms for providing R&D support at HEIs and PROs. On the part of the business enterprise sector one of the key instruments for promoting R&D activities in the private sector is represented by the state aid programmes for development of new products and technologies. There is also a range of measure promoting academia-industry linkages through market-oriented research projects, technology transfer contact points, researcher placements, etc. However, there are no tax incentives aimed at promoting business R&D and also policies for the development of clusters and competence centres are still in an initial stage.

Latvia has been heavily struck by the financial and economic crisis that currently represents the major barrier to R&D investments including ones from the business enterprise sector. Other barriers to private investment are related to the uncompetitive production profile of Latvian companies, weak academia-industry cooperation as well as limited administrative capacities of fund-managing public authorities (see Table below). On the backdrop of the crisis Latvia has an opportunity to maintain the research support and facilitate application of some of the generated knowledge in the national economy by means of immediate promotion of public-private cooperation schemes. At the same time the main risk here is related to the consideration that, provided this opportunity is not taken, Latvia can experience a relapse of public research funding at the level present in 2004 with a high likelihood of a heavy brain drain. The other policy risks and opportunities are summarised in the table below.

<table>
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<th>Barriers to R&amp;D investment</th>
<th>Opportunities and Risks generated by the policy mix</th>
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| Economic and financial crisis | Opportunity: Maintenance of research support and application of some of the generated knowledge in the national economy by means of immediate promotion of public-private cooperation schemes  
Risk: A relapse of public research funding at the level present in 2004 with a high likelihood of a heavy brain drain |
| Production of goods and services with low R&D intensity and low added value | Opportunity: Stimulation of existing R&D-intensive firms and incentives for creation of new R&D-intensive start-ups  
Risk: Insufficiency of the present policy mix to ensure long-term effects of facilitating companies to carry on with their R&D activities after termination of specific state aid schemes |
| Weak cooperation between public research institutes and universities, on the one hand, and business companies, on the other | Opportunity: Implementation of policy measures to stimulate cooperation between firms and research institutions, e.g. via competence centres and clusters  
Risk: The undefined IPR regimes within the current cooperation-promoting measures serving as a hindering factor for their efficient uptake and implementation |
| Low administrative capacity of public authorities leading to excessive bureaucratic barriers and complicated procedures to acquire funding from the EU SFs | Opportunity: Optimisation of the administrative apparatus and reduction of the number and scrutiny bureaucratic functions and procedures  
Risk: Excessive paperwork withholding potential beneficiaries from making use of the available schemes and thereby from engaging in R&D activities |

Latvia is still a catching-up country in terms of its R&D and innovation performance and both national and global economic crisis may negatively influence the degree and rate of its further progress. Nevertheless, the current policy mix has had and continues to have an important impact on the creation and strengthening of the ERA dimensions and the overall national research development. ERA-related policies are important to the national research policy and strategy and it has been particularly
significant in the overall development of human resources and encouragement of research mobility. Participation of Latvian scientists in the European level research programmes and projects supported by national co-funding contribute to the development of ERA by providing the national input of knowledge and human resources as well as providing means for profiting from access to international knowledge.

There are also various state aid programmes co-funded from the EU SFs, for example, to bring together research and business and to encourage highly skilled personnel (now also including expatriates and foreign researchers) to join business companies in Latvia. Investments from the EU SFs in research infrastructure both in the previous years and in the current programming period 2007-2013 have had a positive impact on the ESFRI initiative and potentially serve as a basis for the attraction of human resources from abroad.

However, there is still a range of serious challenges for further encouragement of ERA-related developments in the current situation present in the country. Firstly, the economic crisis might cause an intensified unbalanced outward mobility of researchers thereby presenting Latvia not only with a challenge to develop means for efficiently attracting foreign researchers but also for retaining its national research potential. Secondly, several important structural changes in the legislation governing both research and higher education are still to be approved to foster the implementation of the ERA (as well as European Higher Education Area) concept in Latvia and facilitate further internationalisation of these sectors.

| Labour market for researchers | Growing importance. Increased attention paid to researchers’ mobility within the EU. | • Predominant focus on outward mobility and repatriation of Latvian researchers with limited pull factors for the attraction of foreign researchers.  
• No specific policy for the promotion of gender equality in science (non-existence of formal barriers for academic careers of women). |
| Governance of research infrastructures | Growing importance. Increased support for upgrading and governing research infrastructures. | • Prioritisation of investments in research infrastructure in the EU SF programming periods of 2004-2006 and 2007-2013.  
• Support for the development of the ESFRI roadmap. |
| Autonomy of research institutions | High importance. Legal framework in place allowing for a great level of autonomy of research organisations. | • Autonomy of research institutions in setting their research agendas and hiring research personnel stipulated by legal provisions.  
• Established national legal framework giving autonomy of research organisations for cooperation with other institutions on a national and international level. |
| Opening up of national research programmes | Low importance. Limited incentives for opening up national programmes for foreign participants. | • National (both budget and SF funded) research programmes exclusively limited to national applicants.  
• Facilitated cross border cooperation via ERA-NET projects, COST, EUREKA, JTIs. |
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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.¹ 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 (see Kristapsons et al, 2009) 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 co-ordinated 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.

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

2.1 Structure of the national research system and its governance

Latvia is a small and catching-up country with 2.27 million inhabitants, featuring a constant decrease of population since 1990, and constitutes 0.456% of the total EU-27 population (2008). Latvia’s gross domestic product (GDP) per capita in purchasing power standards (PPS) in 2007 was 57.9% of the EU27 average with GDP having grown at an impressive rate of over 10% since 2005. However, the forecasts for 2008 and the coming years indicate a deep recession - a GDP decline by at least 12% in comparative prices and an increase in the registered average annual unemployment to 12.7% of the economically active population is envisaged in 2009 (MoF, 2009). The European Commission (EC) has criticised Latvia for its excessively large budget deficit that made up 6.3% of GDP in 2008 (0.1% in 2007).

Over recent years the gross domestic expenditure on research and development (GERD) had exhibited an overall increase in Latvia reaching 0.7% of GDP in 2006 after stagnating around 0.4% in 1996-2004 (see Table 1). The increase was particularly notable in the light of the high GDP growth rates, nevertheless these figures are still very low compared to the EU27 average of 1.84% (2006). While GERD decreased as a percentage of GDP (0.59%) in 2007, it still demonstrated an increase in absolute figures from €112m to €126m. Yet, as of 2009, a decline in both absolute and relative terms is expected due to the substantial budget cuts under the evolving economic crisis. The shares of GERD by sources of funds in 2007 include government - 55.2%, business enterprise sector - 36.4% and abroad - 7.5%, which imply that the government so far has been the major contributor.

The Summary Innovation Index of the European Innovation Scoreboard also shows a certain stagnation of Latvia in 2008 with the value (0.239) having remained unchanged since 2007 despite the upward trend demonstrated by the majority of other countries and the EU27 average reaching 0.475 (EIS, 2009:58). While Latvia is enlisted among the catching-up countries, its innovation performance is still well below the EU27 average (outweighing only Bulgaria and Turkey) even despite the promising rate of improvement (see also Adamsone-Fiskovica et al, 2008:2-4).

Main actors and institutions in research governance

The main research and development (R&D) policy-making body is the Ministry of Education and Science, which also coordinates key research programmes, and is the central financing institution of public R&D. An important role is played by the Latvian Council of Science, which provides advice for policy-making, manages research programmes and the evaluation of projects, drafts proposals for the elaboration of science and technology (S&T) policy and the state budget for research financing. Yet, in 2009, a rather profound reorganisation of institutions under the jurisdiction of the Ministry is envisaged whereby changes are expected

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2 If not referenced otherwise, all quantitative indicators are based on Eurostat data available at: http://epp.eurostat.ec.europa.eu
3 The share of the Private non-profit sector is not provided by the available statistics (included in the business enterprise sector).
also to affect the functions of the Council and the number of public research institutes. However, the details of these structural reforms are not yet clearly laid out.

The **Ministry of Economics** holds prime responsibility for innovation policy and exerts influence on the research sphere mainly through selected innovation policy measures. Several other ministries allocate funds for research in their respective policy areas. At the operational level, most of the funding for R&D is managed by the Latvian Council of Science with selected policy measures administered by the State Education Development Agency and the Latvian Investment and Development Agency (LIDA). It has to be noted that structural reforms are also planned with regard to the Knowledge and Innovation System department at LIDA. It is being closed down as of 1 July 2009 and its functions are to be primarily taken over by the newly formed Division of industry and innovation at the Ministry of Economics (incorporating also the functions of the formerly separate Innovation division).

Policy advice is provided by the **Latvian Academy of Sciences** (LAS), the Strategic Analysis Commission under the auspices of the President of Latvia (formed in 2004) and the National Development Council (established in 2007). Task forces and expert groups of these advisory bodies serve as a ground for initiating and discussing the main R&D policy documents and governance issues as well as developing strategic visions for the future development of the country including those related to S&T.

So far the sole body on the political decision making level dealing with R&D issues is the parliamentary Commission on Education, Science and Culture.

**Figure 1: Overview of the governance structure of the Latvia’s research system**

Source: [ERAWATCH Research Inventory](https://www.erawatch.org) (2009), updated.
The institutional role of the regions in research governance

Research policy in Latvia is developed, funded and implemented at the national level. The planning regions have neither the level of responsibility nor the funding capacity to develop their own research policies. However, note has to be taken of the current growth in the number of higher education institutions (HEIs) and their related research activities in these regions as well as efforts made by the planning regions to integrate R&D issues in their development strategies (for more see Adamsone-Fiskovica et al, 2007, 2008).

Main research performer groups

Over recent years there have been ongoing changes in the system of research performers, especially with respect to the legal status of university and state research institutes. As of February 2009, the Register of scientific institutions contains 131 entries with the main groups being HEIs (9) and structural units thereof (50), agencies of universities (14), commercial companies (18), derived public persons (mainly state research institutes) (11), foundations (8), and societies (7). In numerical terms HEIs (with their research units/bodies) constitute the largest group of research performers in Latvia.

In 2008, there were 34 accredited HEIs in Latvia, 19 of which are public (MoES, 2009). As stipulated by the Law on Institutions of Higher Education (1995), HEIs are obliged to ensure inseparability of education and research. In 2007, R&D expenditure by the higher education sector (HES) was 0.27% of GDP thereby continuing the gradual increase observed in 2005 (0.23%) and 2006 (0.24%) and having almost doubled since 2004 (0.15%). In absolute figures, in 2007, the total R&D expenditure in HES made up €54m (MoES, 2009). In terms of R&D personnel, in 2007, HES employed 3,744 persons (FTE) or 61% out of the total of 6,378 in the country (ibid).

Table 1: RTD data on Latvia (2005-2007)

<table>
<thead>
<tr>
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<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>EU-27 (latest year)</th>
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<tbody>
<tr>
<td><strong>GERD (euro million)</strong></td>
<td>73</td>
<td>112</td>
<td>126</td>
<td>226120</td>
</tr>
<tr>
<td><strong>R&amp;D intensity (GERD as % of GDP)</strong></td>
<td>0.56</td>
<td>0.70</td>
<td>0.59</td>
<td>1.83</td>
</tr>
<tr>
<td><strong>GERD financed by government as % of total GERD</strong></td>
<td>46.0</td>
<td>38.2</td>
<td>55.2</td>
<td>34.2</td>
</tr>
<tr>
<td><strong>GERD financed by business enterprise as % of total GERD</strong></td>
<td>34.3</td>
<td>52.7</td>
<td>36.4</td>
<td>54.5</td>
</tr>
<tr>
<td><strong>GERD financed by abroad as % of total GERD</strong></td>
<td>18.5</td>
<td>7.5</td>
<td>7.5</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>GBAORD (euro million)</strong></td>
<td>25</td>
<td>43</td>
<td>68</td>
<td>87639</td>
</tr>
<tr>
<td><strong>GBAORD as % of general government expenditure</strong></td>
<td>0.55</td>
<td>0.70</td>
<td>0.91</td>
<td>1.55</td>
</tr>
<tr>
<td><strong>BERD (euro million)</strong></td>
<td>30</td>
<td>57</td>
<td>41</td>
<td>144089</td>
</tr>
<tr>
<td><strong>Business sector R&amp;D intensity (BERD as % of GDP)</strong></td>
<td>0.23</td>
<td>0.35</td>
<td>0.19</td>
<td>1.17</td>
</tr>
<tr>
<td><strong>BERD financed by government as % of total BERD</strong></td>
<td>12.7</td>
<td>2.8</td>
<td>3.0</td>
<td>7.2</td>
</tr>
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</table>

Data Source: Eurostat (Note: Values in italics are estimated or provisional.)

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4 Amendments to the Law on Research Activity (2005) passed in 2006 provide that a research institute can be a public agency, a derived public person, a structural unit of a state HEI or a legal entity with private rights or a structural unit thereof.

The second largest R&D expenditure sector as a percentage of GDP is the business enterprise sector that over the last decade has demonstrated a gradual increase. It has climbed from 0.09% in 1997 to 0.19% (€41m) in 2007. Yet, the estimate of the EU27 average for 2007 is six times higher reaching 1.17%. In 2007, the share of GERD financed by business enterprises was 36.4% whereby the respective average percentage in EU27 in 2005 was 54.5%. Unlike Latvia, it positions the business enterprise sector as the major contributor to R&D expenditure in many EU countries. The total number of business companies undertaking R&D activities in Latvia in 2007 was 403 (CSB, 2009). In 2007, a total of 1,128 people were employed as R&D personnel (FTE) in this sector, which constitutes only 18% of the total number. In 2007, only 480 out of 3,603 PhD holders were employed in the business sector. Finally, in 2007, 0.15% of GDP was spent on R&D by the government sector, below the estimated EU27 average of 0.24%. The government sector in Latvia covers all state-founded research institutions including 11 state research institutes. In 2007, this sector employed 21% (1,371 FTE) of the total R&D personnel (MoES, 2009).

### 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 characterised and assessed the performance of the national research systems. 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 a research system has to cope with. The Analytical Country Report for the specific country can be found in the ERAWATCH web site.

While the majority of strengths and weaknesses of the national research system have remained largely unchanged in 2008/2009 (see Table 2), there have been several developments in the domain of resource mobilisation. In particular, these have affected the former strengths associated with the justification of resource provision for research activities and securing of long-term investment in research. Both of them can be called into question in the light of the developments triggered by the economic crisis. While the previous years witnessed an increasing emphasis on the role of R&D for socio-economic development both in the policy and public discourse, today there are growing concerns over the implementation of some of the provisions (especially regarding the increase in GOVERD)\(^6\) and envisaged policy measures given the governmental plans for reducing budget expenditure in response to the alarming economic recession.

In 2008, several support measures envisaged by strategic policy documents\(^7\) were still managed to be implemented. Those include state aid schemes aimed at increasing the excellence of research output and supply of human resources in S&T

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6. The Law on Research Activity envisages an annual increase in public R&D funding of at least 0.15% of GDP until it reaches 1% of GDP.

along with ones supporting research-industry co-operation and aiming to boost the innovative capacities of companies. Yet, a persisting problem concerns the involvement and integration of the business sector in the national R&D system. In terms of knowledge circulation the enhancement of the absorptive capacity of knowledge users especially in the enterprise sector remains a systematic weakness requiring particular policy attention.

There are also several deficiencies in the domain of knowledge demand in terms of still limited use made of evaluation tools in the process of policymaking (both for the purpose of identifying and monitoring knowledge demand) as well as public procurement in the field of R&D as an additional means for spurring demand for high-technology products. In its turn, on the supply side the national research system of Latvia requires more determined efforts in facilitating inward mobility of researchers thereby diversifying its competencies and profiting from international knowledge.

**Table 2: 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>
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| Resource mobilisation               | Justifying resource provision for research activities                      | **S:** Growing emphasis on the role of R&D for socio-economic development in the public discourse  
|                                     |                                                                            | **W:** Inconsistent financial prioritisation of R&D under changing economic conditions               |
|                                     | Securing long term investment in research                                  | **S:** Formal mechanisms in place to ensure a continuous increase in the government R&D funding      |
|                                     | Dealing with barriers to private R&D investment                            | **W:** Limited R&D funding of the business sector                                                     |
|                                     | Providing qualified human resources                                       | **W:** Varying attractiveness of research careers                                                    |
|                                     |                                                                            | **W:** Insufficient supply of human resources for R&D                                               |
|                                     |                                                                            | **W:** Lack of policies for researchers’ mobility                                                     |
| Knowledge demand                    | Identifying the drivers of knowledge demand                                | **W:** Low private demand for R&D                                                                    |
|                                     |                                                                            | **W:** Limited use made of public procurement in the field of R&D                                     |
|                                     | Co-ordination and channelling knowledge demands                           | **S:** Presence of multi-annual research programmes in the priority research fields                 |
|                                     | Monitoring of demand fulfilment                                           | **W:** Underdeveloped evaluation culture and tools                                                   |
| Knowledge production                | Ensuring quality and excellence of knowledge production                    | **S:** Internationally competitive fundamental research in several fields of science                  |
|                                     |                                                                            | **W:** Poor performance in terms of publications, citations and patents                              |
|                                     | Ensuring exploitability of knowledge                                       | **S:** High quality applied research with patentable results in selected fields of science          |
|                                     |                                                                            | **W:** Limited exploitability of produced knowledge in the framework of the current set-up of national economy |
| Knowledge circulation               | Facilitating circulation between university, PRO and business sectors      | **S:** A strengthening policy response for promoting knowledge and technology transfer between academia and industry |
|                                     | Profiting from international knowledge                                     | **W:** Predominance of brain drain over brain gain                                                    |
|                                     | Enhancing absorptive capacity of knowledge users                          | **S:** Increasing support for and intensity of trans-border cooperation in R&D                      |
|                                     |                                                                            | **W:** Limited absorptive capacity of R&D results by the enterprise sector                          |
|                                     |                                                                            | **W:** Shortage of skilled S&E labour force in the business sector                                 |

- **S:** Strength
- **W:** Weakness
While the domain of knowledge production can be characterised by selected institutes performing high level research and demonstrating excellence in terms of their research output, the overall level of national research capacity is not competitive enough on an international scale. Despite the measures being taken, a remaining weakness of the research system of Latvia is the lack of S&T graduates along with an accompanying insufficient supply of human resources for R&D. The recently improved attractiveness of research careers (introduction of institutional funding, substantial financial resources allocated for a range of state aid schemes supporting doctoral studies, development of research infrastructure, etc.) is being undermined by the unclear future prospects due to funding cuts for R&D. Thereby the strength that the national research system can further build on is the strategic policy orientation towards the development of a knowledge-based economy by underpinning this strategic view with corresponding resources.

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 also to 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

The domain of resource mobilisation is likely to feature the most notable policy changes in the reporting period in Latvia. The economic recession witnessed since early 2008 and having aggravated in the turn of 2008/2009 has served as an essential test for the earlier governmental commitments in providing resources and securing long term investments in research. While the aims and tasks set for the new Lisbon Strategy cycle in Latvia (CoM, 2008) have not diminished the role of R&D in economic growth (see Box 1), the considerable budgetary cuts in 2008/2009 have not left the funding earmarked for science untouched.

Already the initial version of the state budget for 2009 approved by the parliament on 14 November 2008 envisaged a 23.7% reduction in public R&D funding in comparison to 2008 resulting in a cut from €53.0m to €40.5m. Yet, the overall reduction following the amendments to the Law on State budget 2009 made in December 2008 even reached 29%. A corresponding reduction of funding in individual budget lines including those covering base funding of research institutions, fundamental and applied research projects and state research programmes has followed. Moreover, funding of research activities at HEIs that was introduced as part of the state budget for higher education in 2005 as well as state funding for market-oriented research projects have been terminated altogether in 2009. It is argued that the substantial reduction of public R&D expenditures in 2009 is also going to hinder successful implementation of several industrial studies and innovation support measures (MoE, 2008:105).

In 2009, a decrease in the inflow of EU SFs is envisaged by the same amendments stipulating a reduction of public co-funding of the SF programmes by 15%. A decision on a thorough reconsideration of a range of SF activities planned to be launched in 2009 was taken by the Cabinet of Ministers on 22 December 2008 (CoM, 2008b). A re-assessment is foreseen with regards to the potential postponement of activities for...
the attraction of highly skilled labour force in companies, the establishment of technology transfer centres, the implementation of the cluster programme, the upgrading of IT infrastructure for research activities as well as strengthening the development and administrative capacity of research and innovation policy, etc.

**Box 1: Changes in National Reform Programme regarding the role of research in the broader economic growth strategy**

Since the initial period of the national reform programme (National Lisbon Programme of Latvia for 2005-2008) has ended, along with an assessment of the measures carried out within this Lisbon Strategy cycle the annual report on progress in implementation of the Programme (CoM, 2008) also outlines the tasks and measures for the new Lisbon Strategy cycle. The main tasks set for further stimulating knowledge and innovation in 2008-2010 have generally remained the same as in 2005-2008 and are as follows:

- to increase public investment and foster private investment in R&D;
- to ensure renewal of intellectual potential in science, improving the system of doctoral grants and modernising scientific infrastructure;
- to promote innovation and new technologies;
- to promote distribution and efficient application of ICT, establish completely integrated information society.

Some of the policy measures envisaged to be launched or continued in the field of R&D and innovation as of 2009 include increased financing of scientific activity, implementation of market-oriented research, development of the project of a Science Communication Centre, raising awareness of IPR issues among entrepreneurs, elaboration and implementation of the Competence centre programme, development of Science and Technology Park of Riga, follow-up of the technology transfer contact point programme, implementation of the state aid programmes for the development, legal protection and introduction into production of new products and technologies, as well as for the attraction of highly qualified labour force.

Latvia has not submitted a new stand-alone NRP 2008-2010 document with its future tasks instead incorporated into the progress report of the previous (2005-2008) document. Some of the tasks outlined in this report cast doubts, namely with regard to the goal for GERD to reach 1.5% of GDP in 2010. In 2007, GERD in Latvia was €125.0m, which constitutes 0.59% of GDP. The earmarked funding of the EU SFs for 2007-2013 for science is €338.9m, which annually adds up around €60m in comparison to the previous years (Arhipova, 2009). This could help to improve the situation, however, taking into account the recent reduction of science funding, it is not plausible for GERD to reach the level of 1.5% of GDP in 2009-2010.

At the turn of 2008/2009, an awareness raising campaign was undertaken by scientists, advocating the vital role of higher education and research in the long term socioeconomic development of the country (e.g., Open letter, 2008; Kalviņš, 2008; Auziņš, 2009). Serious doubts have been voiced over the feasibility of implementing the legal provision stipulating a fixed annual increase in the government R&D funding in the coming years and over the prospects of reaching the targets initially set in the National Lisbon Programme of Latvia for 2005-2008 (GERD to reach 1.1% of GDP by 2008 and 1.5% by 2010). Securing long term investments is also hindered by the
postponement of the adoption of the Law on Higher Education initially drafted in 2006 and the Guidelines for Development of Science and Technology for 2008-2013\(^8\).

These developments can also be seen as a hindering factor to the challenge of dealing with barriers to private R&D investment as it had been stressed that public R&D funding should serve as a catalyst for the development of research-based activities in the business sector (Bilinskas et al, 2005). So far business R&D investment has played a minor role in the national research system and there are limited signs of any recent positive developments.

There have been recent policy initiatives aimed at providing improved access to seed and venture capital by private companies. In 2008, a pilot project of a new pre-seed support instrument for innovative, knowledge-based business ideas was. Other related measures (co-financed by ERDF) aimed at boosting private R&D investments and innovative capacities of companies include the new round of the state aid programme “Support for development of new products and technologies” (now also covering support for their industrial application and securing IPRs). In 2008, calls under the state aid programmes for operation and establishment of technology transfer contact points at HEIs and for the development of micro and small companies in specially supported territories (including projects envisaging acquisition of modern machinery and production of new products) were launched. Last but not least, in 2008 applications under the first call of the new state aid programme for the attraction of highly qualified workforce in business companies were received.

The challenge of providing qualified human resources\(^9\) in the public sector has been addressed by the EU SF activity „Attraction of human resources to science” (€53m) launched in November 2008. The main aim is to promote the attraction of additional human resources to science by means of forming new research groups and developing cooperation and to facilitate the involvement of young scientists in projects and their management, particularly in interdisciplinary research fields. Given the reduction of the research budget for 2009 this activity is seen as an important resource for the maintenance of research activities in Latvia. Moreover, submission of project proposals under the first call of the SF activity “Support for implementation of doctoral study programmes” under the same OP “Human resources and employment” for invited applicants (18 HEIs) was launched in December 2008.

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\(^8\) The last postponement of the Guidelines dates back to 9 September 2008 when the issue had been already included in the agenda of the governmental meeting. According to the new action plans the drafted documents had to be re-submitted on 16 March 2009, which was accomplished, yet the date for the revision by the Cabinet of Ministers has not been defined.

\(^9\) The number of students participating in second stage of tertiary education in S&T fields of study, as a percentage of the 20-29 year old population, in 2006 was only 0.16% (Eurostat). In 2007/2008, the share of students (out of the total of 127,760) by thematic groups was 4.8% in natural sciences, mathematics and IT and 10.95% in engineering sciences, production and construction while the majority of students (53.6%) were in social sciences, business and law (CSB, 2009).
Table 3: Main policy changes in the resource mobilisation domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
</table>
| Justifying resource provision for research activities| • Identification of tasks int. al. in the field of R&D for the new Lisbon Strategy cycle (2008-2010) in Latvia  
• Considerable cuts in budget funding for R&D in 2009                                                                                           |
| Securing long term investments in research           | • Postponed adoption of the Guidelines for Development of Science and Technology for 2008-2013                                                                                                                      |
| Dealing with uncertain returns and other barriers    | • Diversified support for venture (seed) capital financing  
• Launching of state aid schemes for the development, protection and introduction into production of new products and technologies  
• Launch of new support measures for technology transfer at HEIs and attraction of highly qualified workforce in business companies |
| Providing qualified human resources                  | • Launch of a new support measure for the attraction of human resources in science  
• Continued support for implementation of doctoral study programmes                                                                                     |

2.3.2 Knowledge demand

While in 2005 a large part of public demand as expressed in GBAORD was non-oriented research (74.6% in comparison to the EU27 average of 15.1%) (Wilén, 2008:5), the prioritisation of various sectors of the economy has emerged as one of the tools for pursuing specific knowledge demand by the Latvian government. Since the current nine programmes in priority research fields launched in 2005 and 2006\(^\text{10}\) are ending in 2008 and 2009, discussions on the potential future developments are intensifying especially with regard to the number of priorities and their fundamental vs. applied focus. The new priorities have to be approved in July 2009, yet it is not clear whether funding for the new programmes will be made available in 2010. It can be noted that in 2008 efforts to launch a debate on the need also to prioritise industrial branches with the purpose of helping the national economy to restructure to more profitable branches of production with higher export capacity have been made (SAC, 2008), yet, so far this initiative has not received any follow-up on a governmental level.

Another tool that is referred to but not yet made systematic use of in Latvia is public procurement in the field of R&D\(^\text{11}\), thereby driving it from the demand side. This instrument has been stressed by the Latvian Chamber of Commerce and Industry in their plan for the stabilisation of the Latvian economy (LCCI, 2008). It envisages establishment of a system of ministerial orders (procurement) for the development of innovative products as one of the means for promoting innovation and reaching higher export volumes based on innovative products with higher value added. The idea of the implementation of offset mechanisms for public procurement of certain type of R&D goods and services in Latvia has also been put forward by the experts of the National Development Council (NDC, 2009).

\(^{10}\) In total, nine priorities had been set and respective state research programmes have been approved on 20 July 2005 (Information technologies, Organic synthesis and biomedicine, Material science, Forestry and wood processing technology, Latvian studies) and on 30 May 2006 (Agro-biotechnology, Medical science, Energy, Environmental research).

\(^{11}\) Purchase of goods and services that do not yet exist, or need to be improved and hence require research and innovation to meet the specified user need (EC, 2005:5).
These mechanisms also have to do with the development of evaluation culture and tools that serve as a crucial input for policy-making not least in terms of defining knowledge demand in the country. Some recent efforts made to this end in Latvia include monitoring and assessment of state research programmes, evaluation studies being carried out with regards to the EU SFs\textsuperscript{12} as well as procedures of wide expert and public deliberations employed during the elaboration of the Sustainable development strategy of Latvia until 2030\textsuperscript{13} (LARS, 2008). Yet, there is still considerable room for diversification of evaluation tools and wider use made of evaluation results for further policy-making practices.

Table 4: Main policy changes in the knowledge demand domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying the drivers of knowledge demand</td>
<td>• Debate on the new round of research priorities and the need to set industrial priorities</td>
</tr>
<tr>
<td>Co-ordinating and channelling knowledge demands</td>
<td>• Elaboration of the first revised draft of the Sustainable development strategy of Latvia until 2030</td>
</tr>
<tr>
<td>Monitoring demand fulfilment</td>
<td>• Assessment of progress in implementation of state research programmes in 2008</td>
</tr>
</tbody>
</table>

2.3.3 Knowledge production

Over recent years there have been strengthening efforts in improving the quality and excellence of knowledge production in the academic institutions in Latvia. In 2008, the Latvian Council of Science continued to pursue a more thorough evaluation of research grant applications by means of taking stronger account of the previous record of scientific output of applicants and of the expected outcome (novelty) of the project. Likewise, in November/December 2008, a range of public meetings were held with the purpose of assessing the progress achieved in the nine state research programmes ending in 2008/2009. It was concluded that all the programmes fulfilled their defined aims and tasks and the results have been assessed as notable in both theoretical and practical terms (Supervisory board, 2009).

Despite the economic recession and the considerable reduction of public funding for higher education and research in 2009, the largest public university, the University of Latvia (2008), has reinforced its commitment to become a leading research university in the Baltic Sea region. Excellence, innovation and openness have been set as the main three pillars for achieving this strategic aim in the coming decade. Nevertheless, the elimination of budget funding for research activities undertaken by HEIs in 2009 strongly undermines the efforts made to this end so far.

Support for knowledge production has also been implemented by means of upgrading research infrastructure and facilities in order to ensure conditions conducive for high quality and internationally competitive research work. While it is planned to continue this kind of support also in 2007-2013 under the SF activity “Support for research infrastructure”, the programme has not been launched yet.

With regard to the challenge of ensuring exploitability of knowledge production, a share of funding for applied research projects is being allocated annually by the Latvian Council of Science and through the programme “Support for market oriented research” implemented since 1993. Yet, funding for both has been reduced in 2009 with submission of projects planned in March 2009 under the latter terminated.

\textsuperscript{12} See http://www.esfondi.lv/page.php?id=340 (in Latvian)
\textsuperscript{13} See http://www.esfondi.lv/page.php?id=340 (in Latvian)
altogether. One of the planned activities (“Support for science and research”) envisages support for applied research projects potentially facilitating the integration of science and industry along with application of research results in the priority fields defined by the state, but it has not been launched yet.

Since the patenting activity has been rather low both in respect to national (139 in 2007, slightly over 173 in 2008) and international (21 PCT filings in 2007) patent applications (Ramāns, 2008:31), policy measures are also emerging to address the issues of IPR protection (e.g. support for technology transfer, development of new products and technologies). Yet, there are still ongoing discussions on the ownership of intellectual property generated as a result of publicly funded research (Grīnuma, 2008:11). One of the recommendations made by the National Development Council (NDC, 2009) envisages an establishment of a special fund for filing international patents by PROs.

### Table 5: 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>• Increased requirements for quality assessment of research activities simultaneously undermined by the elimination of budget funding for research activities of HEIs in 2009.</td>
</tr>
<tr>
<td>Ensuring exploitability of knowledge production</td>
<td>• Envisaged support for applied research projects at PROs with a simultaneous reduction of funding for and termination of several support measures for applied research in 2009</td>
</tr>
</tbody>
</table>

#### 2.3.4 Knowledge circulation

Facilitation of knowledge sharing and circulation between university, PRO and business sectors has been addressed as one of the major challenges in the national R&D policy. Since 2005, a scheme for the establishment of technology transfer contact points at HEIs has been implemented and the programme has been continued under the new cycle of EU SFs in 2007-2013. A corresponding measure was launched in May 2008 under the OP “Entrepreneurship and innovation” which aims to promote the commercial application of scientific research results, identifying available and required research competencies at HEIs and PROs in a systematic way and pursuing their development. It has also been envisaged to launch an additional activity for the establishment of technology transfer centres. However, this initiative has been put on a waiting list due to the uncertain financial situation.

Another recent development is the launch of the state aid programme “Attraction of highly qualified workforce” (CoM, 2008c) providing support for temporary placements of engineers and scientists in companies for finding solutions to specific technological problems or development of new products. This is an initiative aimed at enhancing the absorptive capacity of knowledge users to mediate limited firm expertise and learning capabilities since the low share of scientists working in the business enterprise sector is seen as one of the major factors hindering the innovative activities of companies. Last but not least, cooperation between research institutions and the enterprise sector is planned to be promoted via competence centres with a corresponding state aid programme envisaged for 2009.

In terms of profiting from access to international knowledge during the reporting period Latvia has continued to take active part in EU FPs (2007-2013) with the success rate after the first two years reaching 17.3% (out of 375 evaluated project applications 65 projects have been retained for financing) (NCP, 2008). Likewise participation in the EU-initiated programmes COST and EUREKA has been
continued - there were around 40 COST actions and 20 EUREKA projects running with involvement of Latvian partners at the beginning of 2009. Since FP6, Latvia has also taken part in seven ERA-net scheme projects and is involved in several European Joint Technology Initiatives (JTIs). In March 2008, a special Centre of European Programmes was formed at the LAS.

Annual funding from the state budget for science is allocated by the Ministry of Education and Science providing support for participation in international S&T cooperation programmes, such as EURATOM, FP7 and COST covering both fundamental and industrial research carried out also in cooperation between companies and research organisations (CoM, 2008d). Yet, in 2009 funding for these activities has been reduced. In the EU SF planning period 2007-2013, a special activity is envisaged for providing support for international collaborative projects in S&T (including FP7, EUREKA, etc.) aiming to ensure the capacity-building of scientific institutions, to facilitate project implementation, elaboration of new collaborative projects and participation in technological platforms. Yet, for the time being drafting of project applications, which is planned to be covered under the eligible costs of this measure, is still left to the research institutions themselves.

Table 6: Main policy changes in the knowledge circulation domain

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Main Policy Changes</th>
</tr>
</thead>
</table>
| Facilitating knowledge circulation between university, PRO and business sectors | • Continued support for technology transfer initiatives  
• Prioritisation of the need to implement competence centre programme |
| Profiting from access to international knowledge | • While funding for participation in international S&T cooperation programmes has been reduced in 2009, a new support measure for international collaborative projects in S&T is envisaged under EU SF activities |
| Absorptive capacity of knowledge users         | • State aid programme for the attraction of qualified labour force to companies launched |

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. The new policies introduced and developments having taken place in Latvia during the reporting period in the four domains have opened up or alternatively reinforced a range of policy-related opportunities as well as risks.

With regards to resource mobilisation, the main policy-related opportunity is represented by the economic crisis that has the potential of serving as an accelerator for implementation of the declared policy orientation towards a knowledge-based society and for the reinforcement of national priorities so far having been defined with regards to S&T. In case this scenario is neglected or discarded altogether by the policy-makers there is a risk of a prevalence of short-term measures for cutting budget expenses over long-term (R&D-based) development prospects of the national economy that can eventually lead to a halt of the progress so far achieved in the field of R&D and a further economic recession of the country.

In the domain of knowledge demand the former policy-related opportunity of establishing a research council headed by the Prime Minster has not been yet taken advantage of with the postponement of the respective Guidelines envisaging such a high-level body. In the light of the imminent ending of the four-year period of national
priorities in the field of R&D (2005-2009) an opportunity to revise and streamline their scope and number for the next period (based on the accumulated experience and current economic set-up) has opened up. This, in turn, has the potential of addressing the formerly identified risk of support for too many R&D fields thereby not ensuring a pronounced support for excellent disciplines and researchers. Nevertheless, both in respect to this area and the broader policy-making processes there is a persisting risk of the governing bodies not making qualified use of different evaluation tools and the resulting conclusions and expert recommendations.

As for the domain of knowledge production, the former opportunity of orientation towards high quality research results with increased productivity levels that has been increasingly addressed during the reporting period has been further supplemented by an opportunity of making the utmost use of the newly obtained (through the EU SF co-funded state aid schemes) research equipment and facilities. It can be accomplished by means of a facilitated and open access to these infrastructure objects by both public and private actors thereby enabling the production of internationally competitive research results and facilitating the development of R&D-based entrepreneurship in Latvia. In its turn, a notable policy-related risk is a lack of state incentives for settling the current IPR regimes in respect to the ownership of intellectual property generated as a result of publicly funded research. The current situation considerably hinders the commercialisation efforts of individual and institutional research actors and thereby the exploitability of knowledge production.

Finally, with regard to knowledge circulation, the major potential resource in this domain is still represented by an efficient implementation and active use made of new policy measures aimed at knowledge and technology transfer between research institutions and the business enterprise sector. These have both the potential to enhance the absorptive capacity of companies and promote mobility of human resources between public and private sectors. Another opportunity is related to the facilitated participation in international collaborative S&T projects increasingly promoted by a range of policy measures. Yet, a serious policy-related risk with respect to knowledge circulation is still represented by undetermined policy actions in facilitating a more balanced inward and outward mobility of R&D staff, that could be achieved by gradually opening up both national programmes and institutions for foreigners in the field of higher education and research.

Table 7: 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>
<tbody>
<tr>
<td>Resource mobilisation</td>
<td>• Economic crisis as an accelerator for implementation of declared policy orientation towards a knowledge-based society</td>
<td>• Prevalence of short-term measures for cutting budget expenses over long-term (R&amp;D based) development prospects of the national economy</td>
</tr>
<tr>
<td>Knowledge demand</td>
<td>• Revision and streamlining of national priorities in the field of R&amp;D for the next planning period</td>
<td>• Insufficient and unqualified use made of evaluations and results thereof in the policy-making process</td>
</tr>
<tr>
<td>Knowledge production</td>
<td>• Utmost use made of recently upgraded research infrastructure by both public and private actors</td>
<td>• Uncertain IPR regimes at public research institutions</td>
</tr>
<tr>
<td>Knowledge circulation</td>
<td>• Efficient implementation of new policy measures aimed at knowledge and technology transfer</td>
<td>• Undetermined policy actions in facilitating a balanced inward and outward mobility of R&amp;D staff</td>
</tr>
<tr>
<td></td>
<td>• Facilitated participation in international collaborative S&amp;T projects</td>
<td></td>
</tr>
</tbody>
</table>
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

Similar to other East European countries, a transformation of the economic system took place in Latvia after 1990. But unlike other countries the former large industrial sector that was present prior to this change was not preserved. Furthermore, until 2004, the political elite did not consider science an area to be developed and supported nationally. As a result, the national economy was mainly characterised by the predominance of a low skilled labour force and low value-added production and a weak linkage between research undertaken at state institutes and universities, on the one hand, and entrepreneurship, on the other. Therefore, business R&D investment plays a limited role in the national research system of Latvia. In 2007, GERD financed by the business sector was 0.19% of GDP - five times lower than the EU average of 1.17% (Eurostat). Also GERD as such is rather negligible making up only 0.59% of GDP (2007), considerably lower than the EU average of 1.83%.

The major barriers in the national research system for the achievement of R&D investment objectives can be seen as related to the following four aspects.
Economic and financial crisis

The economic and financial crisis at present represents the major barrier to R&D investments including ones from the business enterprise sector. The crisis conditions exert a direct impact on the national research system of Latvia which is first and foremost represented by the sharp reduction of R&D funding in 2009. The economic and financial crisis and its impact on the field of R&D could be traced back already to the second half of 2007 when discussing R&D funding allocations from the state budget for 2008. Manifestations of the crisis became particularly notable in September-October 2008 when one of the major commercial banks in Latvia (Parex) was taken over by the government. It was accompanied by a sharp increase in the unemployment rate and a drastically declining GDP growth rate (prior to that the Latvian economy featured the most rapid growth rates in the EU).

Production of goods and services with low R&D intensity and low added value

Only 18% of firms operating in Latvia are innovative (CSB, 2006), with this fact to a large extent determining a predominance of the production of goods and services with low R&D intensity and low added value. In 2007, the share of total R&D (GERD) financed by industry was 36.4%, an increase if compared to the respective level of 17.6% in 1996, yet which is still far from the Lisbon objective of a two-thirds business enterprise financed share of GERD. According to the Community Innovation Survey (CIS), 64% of innovation expenditures are invested in the acquisition of machinery and equipment, while only 12% are allocated to R&D (CSB, 2006). More than half of innovative enterprises (53.6%) are large companies with more than 250 employees. According to the 2007 EU Industrial R&D Investment Scoreboard (EC, 2007) the only Latvian company among the top 1,000 EU R&D investors is the pharmaceutical company Grindeks ranked 974th with its €3.48m R&D investment.\footnote{In the 2008 Scoreboard (EC, 2008e) not a single company from Latvia has made it to the list.}

Weak cooperation between public research institutes and universities, on the one hand, and business companies, on the other

Efforts to establish and strengthen cooperation between academic institutions (PROs and universities) and business companies have been quite active in recent years. This cooperation has been prioritized by the government as one important step in building a knowledge-based economy, which was set as a strategic policy goal to ensure the competitiveness of the national economy, which had so far relied mainly on cheap labour and natural resources.

In recent years, the need to foster private R&D has been widely recognised in government policy documents. Thus, the government has elaborated a number of measures to foster partnerships between research organisations and businesses (e.g. support to technology transfer, establishment of competence centres, market-oriented research projects, researcher placements), to support the development of new technology-based firms (e.g. support to business incubators) as well as to facilitate private R&D activities directly (e.g. funds for development of new products and technologies). While selected measures envisaged for 2007–2013 have already been launched, there are still few left on a hold in 2008/2009.

One of essential weaknesses of the Latvian system of applied research is also the lack of specialised intermediary organisations bringing together researchers and industrial actors (including the provision of quality services for solving IPR-related...
issues). Since 2005 concrete aid schemes have been launched including financial support for the establishment of technology transfer offices at universities, yet, the whole newly developing system is only at its initial stage.

Low administrative capacity of public authorities leading to excessive bureaucratic barriers and complicated procedures to acquire funding from the EU SFs

While on the whole SFs are increasingly seen as a crucial tool for the revival of the economy and resources are still being sought to ensure the necessary budgetary co-financing\textsuperscript{15}, there are many complaints being voiced by different stakeholders on the heavy bureaucratisation of the SF activities both in terms of procedures and the oversized administrative apparatus. In its plan for the stimulation of the Latvian economy the Latvian Chamber of Commerce and Industry (LCCI, 2009) has identified the need to review and improve the EU SF aid programmes to bring those in line with the current economic situation as well as to establish an efficient, unified, simple and cheap system of EU SF management, adoption of legal regulations and supervision over their implementation.

Although the new programming period of the EU SFs is operational since 2007, almost none of the newly available funds have been mastered in 2007-2008. At the same time the number of involved authorities (21 agency) and employees (approximately 700) for the scale of Latvia make a clearly oversized bureaucratic apparatus for the management of these funds. The legal and normative regulations established by public authorities in many areas are assessed as more constraining and rigorous than demanded by the EU legislative acts, yet there are limited incentives in reducing the level of bureaucracy and demands (NDC, 2008).

3.2 Policy objectives addressing R&D investment and barriers

As outlined in the ERAWATCH Country Profile (ERAWATCH Research Inventory, 2009), the aims of research policy in Latvia are still in the process of being specified and elaborated. There is no one major, updated and officially approved national research policy document setting out the main aims of this policy domain. The aims set out in several other related recent documents – the National Lisbon Programme of Latvia for 2005-2008, the National Development Plan of Latvia for 2007-2013 – are still relevant, e.g. in respect to issues such as the development of human resources for S&T, or support for science–industry cooperation. Expert opinion on research policy goals is presented in the Guidelines for Research, Technological Development and Innovation developed by the Strategic Analysis Commission (Grens et al, 2005).

All these documents include references to achieving the strategic Lisbon targets: by 2010 the level of GERD has to reach 1.5% of GDP. For the time being these national goals have not been officially altered, though the EC assessment of progress achieved by the Member States (MSs) in the implementation of the Lisbon Strategy reforms in 2008 rightly states that „the ambitious R&D targets of 1.1% of GDP in 2008 and 1.5% in 2010 are unlikely to be met“ (EC, 2009:56) – a fact that was already obvious in 2008, but has neither been acknowledged nor analysed in the

\textsuperscript{15} The Memorandum of Understanding between the European Community and the Republic of Latvia requires Latvia to commit enough budgetary resources for implementation of the planned SF co-financed programmes within the framework of the 2009 budget law (Memorandum, 2009:10).

According to the Action plan for implementation of the programme for stabilisation of the Latvian economy and growth resumption (CoM, 2009c), the above-mentioned Guidelines had to be reviewed and approved by the government in March-April 2009. Yet, until May 2009 no respective developments have followed and no clear future prospects have been officially stated so far. According to the draft guidelines, the main aim of research policy is to develop S&T as a basis for the long-term well-being of civil society, the economy and for culture in general and in order to guarantee a knowledge-based economy and sustainable growth. In order to implement this aim, the following tasks have been set out:

- to rejuvenate and develop the current human resources and infrastructures;
- to transform universities into internationally competitive R&D centres that regional HEIs and other public and private research organisations co-operate with;
- to ensure a substantial increase in public R&D investment and develop funding mechanisms which encourage co-funding from the private sector;
- to strengthen the international competitiveness of national R&D performers and support international cooperation in S&T;
- to support knowledge and technology transfer and develop an institutional environment and support mechanisms to facilitate innovation.

The annual report on progress in implementation of the National Lisbon Programme of Latvia for 2005–2008 (CoM, 2008) also outlines the main tasks set for further stimulating knowledge and innovation in 2008-2010, which have generally remained the same as in 2005-2008 (see Box 1). A more active analytical work is undertaken within the expert groups of the National Development Council. In 2008, in the Progress Report on Implementation of the National Development Plan, experts have concluded (based on estimated increase in 2007, 2008 and 2009) that the 1% target for public R&D expenditure would only be reached by 2013 and have reset the target year accordingly (Progress Report, 2008). They emphasised the need of providing the envisaged annual increase of 0.15% of GDP from the national budget and relying less on the funding from the EU SFs. A considerable reduction of state budget in December 2009 envisages cuts in public research funding by 29%.

### 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

Research policy is predominantly developed and implemented by the Ministry of Education and Science, and includes generic as well as thematic R&D policies. While until 2004 public R&D funding was mainly project-based, since 2005 longer term investments have been introduced. There is a range of generic research policy
instruments: block funding to universities; support for R&D infrastructures; competitive grants. However, there are also thematic research policy instruments. The Law on Research Activity defines the main types of research funding, which include institutional funding for research establishments, funding for multi-annual state research programmes in priority research areas, funding for competitive grants - basic and applied research projects, and funding for market-oriented research projects. The comparative weight of the various mechanisms for the distribution of public R&D funding can be illustrated by the following figures for 2009. While the total public R&D funding makes up €40.5m (100%), the majority of that goes to institutional funding (€19.1m or 47%), with one fourth allocated for state research programmes (€9.8m or 24.2%), and the least share going to project-based funding (€5.9m or 14.5%).

There have been several attempts to introduce medium-term planning in research funding. In 2007, the Cabinet of Ministers adopted the framework for the first medium-term budget for 2008-2010. The development of a knowledge society has been declared to be one of the medium-term budget priorities. However, because of the need to restrict budget expenditures, the implementation of the medium-term budget is uncertain. Difficulties in introducing the medium-term planning are also exemplified by the so far unsuccessful attempts to adopt the Guidelines for Development of Science and Technology for 2008-2013 drafted by the Ministry of Education and Science.

Since 2004, when Latvia joined the EU, the EU SFs have become an important source of R&D funding supporting development and upgrading of research infrastructure, doctoral studies and post-doctoral research, etc. In the new SF programming period 2007-2013, €238m is budgeted for R&D and an additional €202m for innovation. Support is envisaged for applied research, international cooperation in R&D, development of human resources in R&D, academia-business co-operation, etc. Since the 1990s, an important source of funding for excellent research teams has been the EU FPs.

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.

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16 www.esfondi.lv
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\textsuperscript{17}.

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

There are two groups of measures relating to this route: policy measures oriented towards the establishment of companies and those aimed at the establishment of business support infrastructure and services (e.g. business incubators) to create favourable conditions for new start-ups.

Under the first category there are measures such as the state aid programme “\textit{Investment in development of micro and small companies in specially supported territories}” (€36.4m, 2008–2013), a policy measure under the OP “Entrepreneurship and innovation”. This aims at promoting the development of entrepreneurship in the specially assisted territories of Latvia thereby levelling out the disparities between regions and regional territories and facilitating a more balanced development of the country. Eligible activities include initial investments related to the establishment of a new company, diversification of production of an existing company with new products, a considerable change in the production process of an established company as well as purchase of software, licences and patents that are related to the afore-mentioned activities.

Other related measures include the newly launched \textit{Pre-seed support for innovative business ideas} that is a pilot project by LIDA with support made available to individuals and organisations with innovative, knowledge-based business ideas or projects with a considerable expected growth potential. The measure is aimed at the promotion of innovative entrepreneurship in Latvia, as well as the creation of a sufficient pool of potential demand for the services of the existing venture capital funds. Within the framework of the project the authors of business ideas have an opportunity to establish co-operation with mentors and potential investors, partners willing to co-operate within the idea implementation process. A somewhat similar incentive in the form of an annual competition is represented by the “Venture cup”.

The other category of measures can be illustrated by the programme “\textit{Support for development of innovation centres and business incubators}” (€25.8m, 2007-2013) promoting the upgrading of innovation infrastructures by strengthening the capacity of local governments, HEIs and national research institutes. It also supports initiatives by HEIs and national research institutes to establish new innovation centres and helps regional or local governments to develop new business incubators. The provision of services to start-ups by innovation centres and business incubators is also supported, thereby facilitating the establishment and development of new innovative companies.

Additionally, there are several more policy measures pertaining to this route, for instance, Consulting support for start-ups, \textit{Support for market-oriented research}, \textit{Support to SME venture capital}, loans provided by the Mortgage Bank of Latvia and the Latvian Guarantee Agency. However, it should be noted that not all new companies established as a direct or indirect result of these measures perform R&D. At present there are no measures that provide tax incentives for stimulating R&D.

\textsuperscript{17} An initial study on R&D policy mix routes in Latvia was carried out by Rammer et al (2007) yet with a limited set of measures used for the analysis.
activities in the enterprise sector and thereby facilitate the establishment of new technology-based companies.

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

Policy measures under this route are best illustrated by the state aid programme "Support for development of new products and technologies" (€15.4m, 2004-2006; €125m, 2007-2013). Its main tasks are to promote private sector investments in R&D activities, direct the national economy towards modern, knowledge-intensive production, promote the development of new competitive high value added products, promote the production of new technologies and products, as well as promote mutual cooperation between science and industry. In the current programming period (2007-2013) the programme has been divided into three sub-activities – one supporting development of new or significantly improved products and technologies, including goods, services and technological processes, another supporting industrial application of new products and technologies, and the third one providing support for securing industrial property rights of successfully developed new products and technologies. Financial allocations earmarked for implementation of these activities are considerable in the national context if compared to the overall funding of €440m budgeted for R&D and innovation in the SF programming period 2007-2013.

Other measures under this route include the support for international R&D cooperation (EUREKA) as well as the planned measure for the promotion of high value added investments in companies.

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

In the case of Latvia there are no special measures that would explicitly target firms that do not perform R&D. Nevertheless, implicitly the following measures could be attributed to this route: Support to modernisation of business infrastructure, Support for market-oriented research, Support to technology transfer, as well as the newly launched state aid programme for the Attraction of highly qualified workforce. The latter programme (€6.9m with an equal amount expected from private co-funding, from 2008) implemented under the OP "Human resources and employment" aims at boosting the competitiveness of companies and encouraging their research activities by attracting highly skilled labour to provide solutions to particular technological problems or developing new products. The target group of the measure is commercial companies and individual persons, namely, PhD students, research staff of academic institutions and highly skilled specialists. Last but not least, certain contribution to this route is also provided by different awareness rising measures implemented by LIDA (e.g. regional innovation days, informative seminars, etc.).

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

There have been no explicit policies for attracting R&D-performing firms from abroad (new R&D results from abroad are instead taken up through subsidiaries of foreign companies operating in Latvia).

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

There are several policy measures that can be attributed to this route: Support for market-oriented research, Support to joint research projects, Support to technology transfer, Support to international R&D collaboration (EUREKA), and Development and upgrading of applied research infrastructure. While this route has a
comparatively small budgetary weight, its importance would substantially increase upon launching the state aid programme “Competence centres” that is being delayed year by year. The programme dates back to 2006 with an ex-ante evaluation of the programme resulting in its temporary postponement, as it was in need of further refinement. It is planned to support five to six competence centres in 2009-2013 with the estimated budget of €51.68m. The programme aims to boost important R&D and innovation activities in demand by entrepreneurs, attract industrial investments to these activities, and to promote partnership of various public and private parties.

Another example under this route is represented by the policy measure providing Support to market-oriented research (€0.5m in 2009) launched in 1993. This is a special programme for applied research aiming to promote integration of science and industry, development of technologically oriented sectors, promotion of industrial research and job creation. Its goal is to encourage researchers from universities, research institutes and SMEs to develop new competitive products and facilitate the development of new start-ups. Every year the Ministry of Education and Science supports 70-90 projects, mainly carried out in PROs and universities and partly in innovative SMEs. Projects are funded if 50% of the total project costs are covered by an industrial or another partner.

Route 6: Increasing R&D in the public sector

Given the low business R&D expenditure in Latvia, this route is of crucial importance in both generally increasing R&D activities as well as indirectly boosting those in the business sector. Pertaining to this route are such programmes as Support for implementation of doctoral study programmes and postdoctoral research, Support to development or research infrastructure, Development and upgrading of applied research infrastructure, etc. It should be noted that in 2000-2002 around 6 centres of excellence were operational in Latvia that have retained their names but are no longer given any special status in the distribution of national funding.

The major programme eligible under this route is that for the Promotion of science competitiveness that actually comprises nine state research programmes that are being implemented in line with the research priorities approved by the government for a four-year period. These programmes are basically aimed at the needs of the national economy. The total annual funding for these nine programmes amounted to €14m in 2008 but in 2009 has already been reduced by 29%.

From the newly launched measures one should also mention the new state aid programme “Attraction of human resources to science” launched at the end of 2008. The programme provides funding from the European Social Fund for supporting the work of young scientists at research institutes and promoting the remigration process of Latvian scientists with the total allocations over €53m.

The importance of education and innovation policies

At the governance level, the Ministry of Education and Science is responsible for education policy, while the Ministry of Economics supervises innovation policy. Innovation policy mainly concentrates on the development of technology centres, business incubators and technology transfer points located both in Riga and in regional centres. Meantime, it should be noted that innovation policy is also within the competency of the Ministry of Education and Science, since its programme “Support to market-oriented research” was established in 1993, a long time before the Ministry of Economics was chosen as the main governing body for innovation policy. In sum,
planning and implementation of innovation policy mostly exerts impact on routes 1, 2 and 4.

Since the early 1990s, the Ministry of Education and Science has had responsibility for both higher education and science; previously higher education and science were treated separately. It could be presumed that these structural changes and, more recently, rising awareness of the role of universities in the development of science, has served as a basis for a closer integration of both sectors.

Education, research and innovation policies are in a way being brought together in the framework of the EU SF programming documents and individual activities as well as such strategic policy documents as the National Reform Programme and the draft Guidelines for Development of Science and Technology for 2008-2013. Yet, it is deemed that policy coordination in the area of R&D - also with regard to the integration of research and innovation policies – still has to be strengthened in Latvia (MoES, 2008).

Assessment of the importance of policy mix routes and their balance

A summarised assessment of the importance of the six policy mix routes in the national policy of Latvia is provided in Table 8.

Table 8: Importance of routes in the national policy and recent changes

<table>
<thead>
<tr>
<th>Route</th>
<th>Importance of the route in the national policy</th>
<th>Main policy changes since 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium importance</td>
<td>New policy measures - “Pre-seed support for innovative business ideas” and “Support for development of innovation centres and business incubators” - launched.</td>
</tr>
<tr>
<td>2</td>
<td>Medium importance</td>
<td>New policy measures - “Attraction of highly qualified workforce” and “Support to development of new products and technologies” - launched.</td>
</tr>
<tr>
<td>3</td>
<td>Medium importance</td>
<td>New policy measures - “Attraction of highly qualified workforce” and “Support to development of new products and technologies” - launched.</td>
</tr>
<tr>
<td>4</td>
<td>Very low importance</td>
<td>No changes</td>
</tr>
<tr>
<td>5</td>
<td>Low-medium importance</td>
<td>State aid programme “Competence centres” postponed; New measure “Support to technology transfer” launched.</td>
</tr>
<tr>
<td>6</td>
<td>The highest importance</td>
<td>Sharp decline of the state budget funding in 2009. Elimination of the budgetary position “Development of research activities and provision of infrastructure at HEIs”. New state aid programme “Attraction of human resources to science” launched.</td>
</tr>
</tbody>
</table>

3.4 Progress towards national R&D investment targets

For three years (2005-2007) Latvia witnessed a rather adequate increase in the public R&D funding due to the Law stipulating an annual increase in public R&D funding by 0.15% of GDP until the Lisbon goal of 1% of GDP is reached. That was the national R&D investment objective. Simultaneously a range of policy measures aimed at increasing BERD, though quite limited in their number and scope, were being elaborated and implemented.

The above-mentioned target for public R&D funding was adhered to for two subsequent years following the adoption of the law in 2005: the annual increase of GERD in both 2005 and 2006 was 0.14% thereby reaching 0.7% of GDP in 2006 (2004 – 0.42%) mainly at the expense of GBAORD. Nevertheless, in 2007, publicly
funded GERD was 0.33% of GDP, which is well below the EU average of 0.63% (Eurostat). Already the statistical data for 2007 demonstrated a decrease of GERD to 0.59% of GDP. This drop was mainly due to the GDP growth rate outpacing the respective growth of GERD since in 2007 GBAORD continued to grow in absolute figures. Yet, in 2008 this increase was rather negligible and already a substantial decline is planned for 2009. According to the state budget data, over the course of the last five years GBAORD has witnessed the following development trend: 2004 – €20.1m; 2005 – €25.4m; 2006 – €42.8m; 2007 – €68.4m; 2008 – €59.7m; 2009 (initially approved) – €53.0m; 2009 (following the amendments to the budget in December 2008) – €40.4m.

Latvia has been heavily struck by the financial and economic crisis and has substantially (by approximately 29%) reduced its public R&D funding against the backdrop of this crisis. It was already obvious in 2008 that the ambitious R&D targets are unlikely to be met, but it has neither been acknowledged nor analysed in any of the policy documents including the Report on Progress in Implementation of the National Lisbon Programme of Latvia (CoM, 2008a). It is known that upon redrafting the Guidelines for Development of Science and Technology for 2008-2013 for submission to the government in March 2009, the Ministry of Education and Science has amended those with a statement that 1% of GDP as public R&D expenditure is to be reached in 2013. Given the funding from the EU SFs earmarked for research the this target could probably be reached, yet one can hardly expect a considerable increase in the business expenditure for R&D (ibid: 8). A radical change of approach is needed in this respect yet the available information for the time being does not provide any indication of such a change.

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>
| Economic and financial crisis | **Opportunity**: Maintenance of research support and application of some of the generated knowledge in the national economy by means of immediate promotion of public-private cooperation schemes  
**Risk**: A relapse of public research funding at the level present in 2004 with a high likelihood of a heavy brain drain |
| Production of goods and services with low R&D intensity and low added value | **Opportunity**: Stimulation of existing R&D-intensive firms and incentives for creation of new R&D-intensive start-ups  
**Risk**: Insufficiency of the present policy mix to ensure long-term effects of facilitating companies to carry on with their R&D activities after termination of specific state aid schemes |
| Weak cooperation between public research institutes and universities, on the one hand, and business companies, on the other | **Opportunity**: Implementation of policy measures to stimulate cooperation between firms and research institutions, e.g. via competence centres and clusters  
**Risk**: The undefined IPR regimes within the current cooperation-promoting measures serving as a hindering factor for their efficient uptake and implementation |
| Low administrative capacity of public authorities leading to excessive bureaucratic barriers and complicated procedures to acquire funding from the EU SFs | **Opportunity**: Optimisation of the administrative apparatus and reduction of the number and scrutiny bureaucratic functions and procedures  
**Risk**: Excessive paperwork withholding potential beneficiaries from making use of the available schemes and thereby from engaging in R&D activities |
4 Contributions of national policies to the European Research Area

ERAWATCH country reports 2008 provided a 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\(^{18}\) 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 internationalization 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.

4.1 Towards a European labour market for researchers

Latvia has experienced turbulent changes in the labour market over several past years: joining the EU in 2004 marked the beginning of an impressive GDP growth of 10% on average for three consecutive years, salaries grew by 33.4% on average in 2007 (CSB, 2009). The evolving demand for workers, which was evident in practically all sectors, including a higher demand for research personnel in publicly and privately funded HEIs, ended when the sharp economic slowdown in the second half of 2008 and early 2009 led to the shrinkage of the labour market and the lay-off of employees. Consequently, unemployment rose from about 5% at the beginning of 2008 to 10.4% in March 2009 (SEA, 2009). It should be noted that unemployment grows proportionally not only among people with basic and secondary education, but also in the group with higher education (ibid.). In January 2009, 11.7% from all officially registered unemployed were with higher education, while those holding a diploma in vocational education made up 38.1% and those with general secondary education - 28.1%. According to the Law on State budget 2009 and its subsequent amendments, general funding and salary cuts are envisaged for all sectors, including higher education, science and research (with a reduction of the general funding by 29% including a 15% reduction of salaries).

The main reasons for the insufficient and declining number of researchers in Latvia prior to these changes were related to low salaries, obsolete research infrastructure and limited work opportunities outside academia. In 2006, the average yearly salary of researchers in Latvia was €10,488, which made Latvia among the least attractive countries in terms of remuneration and put the country well below the EU average of €37,947. In addition, Latvia made only half of the EU average remuneration of researchers when calculated by PPS (EC, 2008:22). At the same time it should be noted that researchers’ remuneration in 2006 was above the average yearly salary in Latvia, which was €6,540 in all sectors and €8,367 in the public sector (CSB, 2009).

By 2008 the remuneration level and research infrastructure in Latvia had improved considerably and this largely contributed to the increase in the number of researchers (FTE) from 3,282 in 2005 to 4,223 in 2007 (CSB, 2009). Improvements in career opportunities in academia also accounted for an increased number of PhDs awarded. While in 2001 only 37 PhDs were awarded in Latvia, since then the situation has gradually improved with 139 PhD theses defended in 2008 (MoES, 2009:64). However, according to the estimates of the Ministry of Education and Science, the number of PhDs awarded is still insufficient and should be increased to at least 500 new PhDs awarded annually (MoES, 2008:13). The number of defended PhD theses is also low when compared to the number of PhD students, with the latter totalling 2,025 in 2008 (MoES, 2009:5). In comparison, in 2007/2008 there were 6,561 students in graduate (academic Master) programmes and 2,602 Masters’ degrees were awarded (ibid.).

During the period of economic growth, research organisations were beginning to provide work places for qualified research staff from abroad on both short and long-term basis, although this is not yet a common practice, particularly due to the rather uncompetitive remuneration level and underdeveloped infrastructure. There is a general brain-drain with many Latvian researchers moving to work permanently in different research facilities abroad or going for study visits or short-term placements in other countries. It has been estimated that around one third of Latvian scientists work abroad (MoF, 2007b). The increased R&D funding in 2005-2007 served as an incentive for the return of those researchers who left the Latvian R&D sector during the 1990s and went to other sectors or to research institutions abroad. The current combination of an insufficient supply of human resources for R&D in the light of the economic crisis in 2009 and the ensuing wage cut has alarmed the research community about a possible new wave of researcher emigration (Auziņš et al, 2008).

4.1.1 Policies for opening up the national labour market for researchers

There are several supranational and national level policies for opening up the national labour market for researchers and for stimulating both inward and outward mobility. The most comprehensive covers the fundamental rights of free movement of people across the EU. Since its accession to the EU in 2004, Latvia does not put any restrictions for the free movement of labour to citizens from the EU and European Economic Zone. At the same time inward mobility of third country nationals is more restricted and thereby much more limited in numbers.

Official migration data show that the total number of foreigners (persons with permanent and temporary residence permits) compared to the number of inhabitants in Latvia is small – approximately 2% of the whole population, and this also includes non-citizens or long term residents, who have lived in Latvia for several decades (OCMA, 2008). Accordingly, outward migration has been more pronounced,
especially after the country joined the EU and it has been estimated that around 50,000 of Latvia’s inhabitants were working abroad in 2006 (MoE, 2006).

Latvia’s immigration system is vacancy-based, a regulation that also applies to foreign researchers. Third country nationals can be recruited for a vacancy if the position has been registered with SEA and has not been filled by a local or an EU citizen within a month since the time of its registration. All documents should be submitted by the employer, not the employee except in cases an employee wants to launch his/her own business in Latvia. A work permit is issued for a specific position in a specific company which means that an incoming worker cannot change his employer or profession under the same permit.

However, there are certain privileges granted to researchers, academic personnel and highly skilled workforce. For example, the Minister of the Interior may grant permanent residence if it is in the interest of the state – a condition usually attributed to scientists, experts and doctors. Also, apart from the two types of residence permits – temporary and permanent, after a person has resided in Latvia for at least five years, the national legislation envisages the status of long-term EU residents that are entitled to almost the same free movement rights as EU citizens. It might also be a potentially favourable option for those researchers, highly skilled third country nationals, who would like to receive a long term residence status and work freely in different EU countries.

After obtaining a permanent residence permit and/or the status of a long term EU resident, an EU researcher and a third country national may apply for any research position in Latvia. However, a major obstacle is a lack of command of the Latvian language, which represents both a legal and an informal barrier. The Official Language Law (1999), the Immigration Law (2002) and other accompanying regulations stipulate that a foreigner should prove a sufficient level of state language proficiency. The official list of various professions in both public and private sectors sets standards of the Latvian language proficiency, which has to be at the highest level for highly qualified workers (CoM, 2000).

In 2006, the share of non-national human resources in S&T in Latvia was only 1.2% in comparison to the EU average of 5.7% (Andersons, 2008). Likewise, in 2005-2008, 80% of enquiries received by the Latvian Researcher’s Mobility Centre, which provides informative support on both inward and outward mobility issues, came from young Latvian researchers interested in finding funding (scholarships, internships, etc.) abroad, while only a few requests for information came from foreign researchers (Kokorevičs, 2008). A study on foreign researchers in Latvia (Kalniņa, Šūmane, 2008), found that research institutions and companies mainly use their direct contacts with foreign counterparts to invite researchers to Latvia and do not use more formal channels to search for human resources. The same also applies to foreign researchers themselves, since they have also mainly employed personal ties to get a research position in Latvia.

Despite the rather limited attractiveness of Latvia as a destination country for researchers, there are several specific policies or policy initiatives to encourage the inward mobility of researchers. While the Law on Research Activity does not stipulate any specific advantages for researchers or easing of the bureaucratic entry procedure, related legal regulations provide some exceptions:

- The national legislation of Latvia stipulates exceptions to facilitate the entry of researchers and academic personnel for the period of work of 14 days without work permission and if longer stay expected, with facilitated application for visa
and a work permit (CoM, 2004). The regulations specifically set an annual quota for a facilitated entry of up to 100 IT specialists. However, this quota has never been filled and the interest of highly skilled IT professionals from third countries in finding a work place in Latvia has been negligible.

- Since resources of the EU SFs in 2007-2013 are made available to promote the mobility of highly skilled professionals, in 2008 a new state aid programme (CoM, 2008c) has been launched for the attraction of highly qualified workforce to companies. The programme is open also for foreign specialists being attracted by Latvian companies, with eligible costs covering also those associated with their moving to Latvia.

The internationalisation policy in the academic field in Latvia mainly comprises the following elements: participation of Latvian researchers in international research projects and individual and institutional membership in international associations, attraction of foreign guest lecturers to the Latvian HEIs, short and long term visits of the Latvian academic personnel to HEIs and research institutions aboard, participation in the EU level mobility programmes for researchers (e.g. Marie Curie) and students (e.g. ERASMUS), as well as implementation of doctoral study programmes in collaboration with foreign universities and ones provided in English.

The Law on Institutions of Higher Education (1995) envisages that all higher education programmes in public HEIs must be given in the state language (Latvian), while those in other languages can be provided if a HEI has an agreement or it has formed a franchise with another foreign HEI. Apart from the majority of study programmes given in Latvian, Latvia’s public and private HEIs also provide selected programmes or separate courses with English as the main language of instruction at bachelors’, masters’ and doctorate level. Some private HEIs provide also higher education in Russian. The present restrictions have spurred a debate in 2008 on the necessary changes in the legislation to allow universities to become more open for international students and programmes.

The draft Law (2008) on Higher education envisages the introduction of new regulations with regards to situations when higher education can be provided in foreign languages: (1) if it is needed to achieve specific goals of the programme (culture, language studies), (2) if a programme is established under the framework of the EU or international cooperation agreements, (3) if a programme is part of a common programme with another foreign HEI or is based on franchise agreement between a Latvian and a foreign HEI, (4) programmes for foreigners, if they are held in any of the official EU languages, (5) specific courses, if they are taught by foreign guest-lecturers, and (6) if a student has studied in a foreign accredited HEI, he/she can submit Master or doctorate theses in any of the EU official languages, providing its annotation is in Latvian. The draft law was not approved as it received various suggestions by different stakeholders and by the beginning of 2009 it had not yet resulted in any specific changes in the legislation.

So far the number of foreign students in Latvia has been generally very small – those coming from abroad make up less than one percent of all students (in absolute numbers 1,492 students in the academic year 2007/2008 (including 633 studying in public and 859 in private HEIs)). These figures are well below the EU average where about seven percent of tertiary students were foreigners in 2004 (Meri, 2007:4). In 2007/2008, foreign students in Latvia represented 56 countries and were studying in more than ten public and private HEIs (MoES, 2009). The majority of these students are mainly from Russia and Lithuania where some Latvian private HEIs have branch
offices. Hence some of the students mentioned in the statistics do not actually physically come to pursue their degrees in Latvia.

The trend of the inflow of full time international students at the tertiary level shows that it is rather stable (around 1,500 students) and does not indicate any substantial increase over recent years. This can be mainly explained by the rather unfavourable legislative framework, namely, difficult entry rules for third country nationals and limited programmes in English or other EU languages. Besides, according to formal regulations, citizens of EU countries should be allowed to take a state funded PhD place in Latvia, yet it is almost impossible to do in reality due to the language barrier while programmes available in English, in their turn, require personal funding.

The Bologna process is one of the main driving forces for Latvia to make changes in its national legislation with regards to the internationalisation of higher education. However, as explained above, the new draft law on higher education that would serve as a basis for a series of new regulations has not yet been approved. At the same time, joining the EU and implementation of the Bologna process have opened up more opportunities for students from Latvia to study in exchange programmes. In 2007/2008, 1,239 students from 35 Latvian HEIs were participating in exchange programmes in 42 EU HEIs (MoES, 2008). The numbers of outgoing students are higher than incoming exchange students and there is growing a trend of interest to study in exchange programmes among Latvian students.

A study on “Scientists Careers” conducted by the Central statistical bureau of Latvia (CSB, 2008) covering 2,000 PhD holders (out of the total of 3,600 degree holders in Latvia in 2007) revealed that 72% of them have obtained their degree in Latvia, while 28% did so abroad, mainly in Russia, Lithuania, the Ukraine, Estonia, Sweden and Germany. These degrees have been awarded since Soviet times, when Russian universities often were chosen for better academic prospects and also during independence since the early 1990s, when more opportunities appeared to study in Western countries.

**Researcher-friendly social security and supplementary pension systems, health insurance, scientific visa for third countries**

Social security rights for the EU nationals in Latvia are the same as for its citizens with no special tax incentives for research personnel. If a person stays in Latvia for less than five years, he/she can choose where to pay the social tax (either in Latvia or in their home country), but after the five-year period it can be paid only in Latvia as a place of permanent residence (Law on Personal income tax, 1993). The pension system in Latvia is based on so-called three pillars, where the third level implies voluntary payments in private pension funds whereby a person can choose any private fund regardless of the place of residence and can annually claim a 25% tax refund for the amount paid in these funds. Otherwise there are no special tax incentives for researchers (Euraxess Latvia, 2008).

**4.1.2 Policies enhancing the attractiveness of research careers in Europe**

The Eurostat study (Meri, 2007:3) on the mobility of human resources in S&T (HRST) shows that the share of foreign-born HRST, aged 25-64 years in Latvia, was 15.6%, above the EU-27 average of 9.7%. However, these figures should be treated with caution due to the historic situation: the majority of researchers born abroad were actually born in other republics of the former USSR. Thus, Latvia also stands out in
its relative proportion of third country nationals and those from other European countries. A breakdown by the EU and third country nationals shows that nine out of ten foreign researchers in Latvia come from third countries.

Regarding the inward mobility of researchers, a study based on 20 semi-structured interviews with foreign researchers in Latvia (Kalniņa, Šūmane, 2008) revealed that the mobility channels used are mainly based on previous contacts with researchers, institutions or companies in Latvia or alternatively a job in Latvia has been chosen due to family reasons (a spouse living in Latvia, etc.).

**Uptake of the Charter of Researchers**

One of the ways to enhance the attractiveness of research careers in Europe has been the Charter for Researchers (EC, 2008c), which has been signed by around 300 institutions in Europe. According to Euraxess, no institution in Latvia has signed the Charter as of February 2009.

**Remuneration policies**

The report of the ERA Expert Group “Realising a single labour market for researchers” (EC, 2008a) suggests that countries should not only try to avoid the barriers to the mobility of researchers, but should also try to establish competitive practices for remuneration to attract researchers from abroad (ibid: 21). The Law on Research Activity regulates the remuneration for employees of PROs, public HEIs and research institutes of public HEIs only to the extent that it defines that it is formed by (1) salary, which is granted to employees and calculated in accordance with regulatory enactments regarding the procedures for granting of institutional funding; and (2) salary, which is paid from financial resources acquired for the implementation of contracts entered into by the State or research institutes of public HEIs and the amount of which is determined in conformity with the internal work remuneration policy of the research institute, as well as on the basis of contracts entered into by the institute.

Universities and research institutions generally have a rather high degree of flexibility in setting the level of salaries for their academic staff and individual income can vary significantly according to the research projects in which they are involved, the funding source, etc. There are examples of academic institutions and individual HEIs (e.g. the University of Latvia) negotiating for increased funding to attract back talented researchers who have left the country in 1990s. Mainly it is realised by fixed salaries plus additional funding from national or international research programmes.

**Promotion of women**

The Labour law (2002) of Latvia covers equal opportunities legislation in Latvia and restricts discrimination against women in employment. Latvia has a relatively high share of women in science and this is probably one of the reasons why there is no special unit for women in science at the Latvian Council of Science or at the Ministry of Education and Science. Namely, gender equality in the field of science is not singled out as a specific challenge for the country, though generally gender equality as such is seen as an important issue with several non-governmental organisations focusing on women’s rights in Latvia.
According to Eurostat, in 2007, 46.66% of human resources in S&T in Latvia were women, which is above the EU27 average of 40.82%19. At the same time, in 2006, the percentage of females among the doctorate students in S&T fields (as a percentage of the 20-29 year old population) made up 0.13%, while the respective share of males was 0.19%. The largest percentage of women holding a doctorate degree in 2007 were in natural sciences (29.6% from all women with a doctorate degree), medical and health sciences (15.7%), social sciences (27.0%), and humanities (14.9%) (CSB, 2009).

The relative gender distribution in a typical academic career in Latvia shows that there are more women at graduate level (ISCED, 1997:85-86; grades 5, 6), but it decreases at professors' grades B and A (EC, 2008a:85)20. While 57.5% grades A-C were women (2004), a breakdown shows that women made up a higher proportion (65%) in grade C but only 37% in grade B and 26.5% in grade A (EC, 2008b:19).

Data also indicate that 72% of awarded degrees (bachelor, master and doctorate) went to women in 2008/2009. Considerably more women chose humanities, programmes related to medicine and health care and social sciences. Counting all personnel, at HEIs, the ratio of women is 54%. However, as noted above, the ratio gradually decreases at the top level, with 44% of associate professor positions being occupied by women and 30% of full professorships (MoES, 2009). Nevertheless, compared to other countries, the representation of women in science in Latvia is still among the highest in Europe.

In a retrospective comparison, there was a high share of women in science also in the Soviet period. In the 1980s, women made up around 47% and the share has not diminished substantially since then. Thus, it is argued, women in science in Latvia generally do not perceive themselves as discriminated against nowadays (Küle, 2003:131-137). According to Küle, the rather low remuneration in science and accordingly its prestige (unlike the Western countries) in both the Soviet and transition periods have served as one of the reasons for the non-presence of a direct discrimination of women in this field. Yet, while science in Latvia as a structural player so far has been incapable of participating in power and financial structures (that generally are more masculine) in the country, internal power within academia (posts of rectors, vice-rectors, presidents of the Latvian Academy of Science, vice-presidents, etc.), similarly to other European countries, is mainly held by males. In 2003, one in eight academicians at the Latvian Academy of Sciences were women. Furthermore, latent discrimination can be traced to the language level: for example, the Statutes and the Charter of LAS use only masculine pronouns. Küle (2003) concludes that full integration into the ERA with increases in remuneration and higher prestige of scientific work would also shape the ratios of women and men, in favour of the latter.

In general terms Latvia currently provides rather strong guarantees for women with permanent labour contracts after maternity leave. The Law on Social insurance (2001) stipulates that a workplace must be provided after up to three years following the leave. Besides, both women and men can apply for one year off after a child is born; the person who chooses to take care of the baby can receive both social

19 In the age group between 15-74 years.
20 According to the ISCED standard classification of education, level 5 is the first stage of tertiary education, and 6 - the second stage. Grades: A - top position, the single highest grade, B – Researchers working in less senior positions, but more senior than newly qualified PhD holders, C - The first grade/post into which a newly qualified PhD (ISCED6) graduate would normally be recruited within the institutional system.
security payments, based on previous income (70% of gross income), and can also continue working and receiving full salary. However, these regulations could be changed and payments to new parents can decrease due to the measures taken under the economic crisis and in that way influence also level of income and social security of those researchers with small children. At the same time, it should be mentioned that HEIs like the University of Latvia provide support for families with small children, granting special scholarships and providing short term day care centres for small children at the university.

### 4.2 Governing research infrastructures

One of the medium-term tasks of Latvian research policy is to foster integration in the ERA, in particular by supporting participation in technological platforms and other international initiatives as well as developing research infrastructures of interest for the European and international research communities (MoES, 2008a:22). Policy documents state that Latvia can participate in the ERA with its unique research infrastructure objects such as the Ventspils International Radio Astronomy Centre and the Liquid Metal Laboratory of the Institute of Physics of the University of Latvia, including the pilot equipment for studies of the Earth’s magnetic field (MoF, 2007b).

An important facility is provided by the Laser Centre (established in 2005), the largest laser resource in Latvia and a unique experimental facility in the Baltic States. Its researchers participate in various exchange programmes on a regular basis, also inviting foreign researchers to undertake projects in Latvia. This and other facilities are currently being identified and listed under the framework of the European Strategy Forum on Research Infrastructures initiative (ESFRI, 2008). This is coordinated nationally by the Latvian Academy of Sciences to explore common and integrated initiatives for the use of research infrastructures of European relevance. Similarly, the Innovation centre of the University of Latvia provides a database on the research equipment made available with the help of EU SF co-funded programmes.

Development and upgrading of research infrastructure has been stated as one of the priorities of the EU SF programmes in both 2004-2006 and 2007-2013 (CoM, 2009a). In the first programming period, there was a special emphasis on the development of infrastructure and the importance of investing in high quality facilities needed as a basis for research development and opening up Latvian research institutions for foreign researchers. However, certain access restrictions for firms to the facilities purchased by SF money create unfavourable conditions for science and business cooperation. The experts of the National Development Council have made a recommendation with regard to the formation of an association of PROs facilitating their operation within a unified system and ensuring exploitation of the material and technical basis for research (without applying the VAT for the usage of scientific and technical equipment purchased by the EU SFs) in the promotion of entrepreneurship (NDC, 2009). The need for a publicly accessible database on the respective scientific and technical supply of research institutions has also been stressed.

The emphasis on infrastructure is also strong in the period 2007-2013. Yet, given the economic crisis, it is not clear if all planned programmes can be launched on time and at full scope. Current planned investments from the SF 2007-2013 for the entire science and education sector are almost €338m out of which €168m are budgeted to science infrastructure (MoES, 2009). In addition, a major Latvian academic

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21 See: http://www.lu.lv/petnieciba/iekartas/
information systems project has been planned with the total EU SF funding of €47m, while €143m have been allocated for the modernisation of research infrastructure in HEIs in priority research areas from the ERDF (ibid). However, this programme has been listed among those that could be temporarily postponed in 2009.

4.3 Research organisations

The Law on Research Activity (2005) states that all scientists can freely choose directions of scientific research according to their research interests, competency and principles of humanity without any censorship and can participate in research projects either as individuals or perform collective research in Latvia or abroad. Public research organisations and HEIs have their autonomously designed research agendas and topics of research specialisation, which often comprise both the interests and capacities of a specific institution and state research priorities. Research organisations also have autonomy in hiring research personnel and providing fixed or permanent contracts according to specific circumstances of a research project. In practice, research organisations are often involved in drafting regulations on research activities, so they are also enabled to set priorities and influence the national research agenda at the policy decision making level. For instance, representatives of the Latvian Council of Science and major universities are often invited to provide expertise upon drafting new regulations regarding science, allocation of EU funds for research activities, setting research priorities, etc.

Research organisations in Latvia are increasingly engaging themselves in various partnerships with both public and private actors becoming more profoundly embedded in the social and economic life of the country. Universities and PROs are striving to ensure their responsiveness to various social and socio-economic priorities defined both nationally and internationally. This is accomplished by means of developing their ‘third mission’ or outreach activities going beyond the mere tasks of teaching and research - promoting cooperation with the business sector, developing incentives for commercialisation of research results and ensuring public accountability and engagement (Adamsone-Fiskovica et al., 2009). Yet, many of these elements are still in an initial process of development not least due to the lack of human resources available for the accomplishment of these tasks and limited incentive structures (e.g. underdeveloped policy for the protection of IPRs; lack of formal appreciation of individual initiatives in public engagement, etc.) (ibid.).

Funding of public HEIs and PROs in Latvia is split between block grants from the state budget and competitive funding, when institutions compete for the various EU funds, funding from the Latvian Council of Science and other sources. The distribution of block grants (institutional funding) is based on the calculations of salary payments for the research personnel (depending on the number of staff members, defined level of basic salary, scientific quality) and expenses related to the maintenance of the scientific institution (rent and utilities of real estate). A special coefficient is applied to specific sectors of science with higher funding provided for natural sciences, engineering and technologies, health sciences, agriculture, environmental, earth and forestry sciences (CoM, 2008e). In comparison to the previous regulations (2005), the current ones define a smaller number of sectors, where a higher coefficient of the block funding is applied. The quality of scientific work is assessed based on such indicators as the profile of executed projects, scientific publications (including citation), cooperation with commercial companies and other clients (contract research, licences, patents), participation in the
improvement of professional skills in higher education and research (newly awarded scientific degrees). At the same time it should be mentioned that with regard to public HEIs there is a trend towards attraction of more students with private funding, since public funded study places are gradually decreasing.

When it comes to the involvement of external stakeholders in the university governance, there is an ongoing discussion about the need of establishing advisory committees to bridge the gap between universities and the rest of society (Adamsone-Fiskovica et al., 2009:136-137). The idea of such bodies has been addressed by the draft law on higher education envisaging the establishment of a Council consisting of representatives of the HEI, its founders and employers. The role of such a Council would be to serve as a decision making body on strategic governance issues of HEI and to coordinate interests of HEI, its founders and society. However, universities have some reservations with regard to their openness in cooperation with social partners, since individual partners might have certain personal or political motives that could threaten their present autonomy.

The dominant trend is that the top management of HEIs (e.g. rectors or deans) are elected among peers. Nonetheless, the recruitment occurs also through tenders that are open to external stakeholders including not only HEI staff and research personnel from other national institutions, but also foreign candidates. For example, there are at least two known cases when rectors of HEIs in Latvia are foreigners (Stockholm School of Economics in Riga, Riga Graduate School of Law). Namely, the current legislation operates under conditions of free movement of labour within the EU and formally citizens of other EU countries could apply for different vacancies in Latvia. However, there are no specific statistical data on the nationality of the staff of research institutions and HEIs available probably due to the so far comparatively limited numbers of foreigners employed as well as the sensitivity status granted to this kind of a variable by the national statistical authorities. In practice most universities run their programmes in Latvian, therefore the language barrier could become the main obstacle to foreigners for entering this labour market niche.

### 4.4 Opening up national research programmes

There are limited mechanisms contributing to the openness of research organisations and national programmes to European and international researchers. National programmes are predominantly designed for local researchers and research teams with a common condition set in the terms of reference for beneficiaries to be registered in the national register of scientific institutions. This automatically excludes foreign institutional and individual participants not residing in Latvia. The Law on Research Activity also specifies that state budget funding for research activities can be allocated only to those institutions listed in the register. While the participation of individual researchers from EU countries in the scientific research projects executed by national research institutions is governed by the common framework of free movement of labour force within the EU, recent amendments (2007) include a new article on the participation of foreign researchers coming from non-EU countries. Yet, this does not imply opening up the programmes for foreign institutional participation. Considerable efforts still have to be made in respect to the openness of national research organisations and programmes to foreign researchers as an incentive for providing an additional input in terms of human resources for advancing research activities in Latvia. The main barriers for foreign researchers and HEIs staff remain to
be both economic and cultural factors: low salaries, relatively underdeveloped research infrastructure and the language barrier.

### 4.5 National ERA-related policies - a summary

In recent years Latvia has implemented several important initiatives towards ERA-related policies. This has been mainly possible due to the greater integration into the EU and the economic growth the country has enjoyed in recent years. This has resulted in a more extensive international cooperation between researchers, increased investments in research infrastructures, intensified exchange of students, opening of more study programmes in English or other European languages. This has also contributed to internationalisation at home whereby Latvian HEIs establish common degrees with foreign universities\(^22\). However, the country still has serious challenges in sustaining and widening those policies that are important for the ERA. These challenges could become further pronounced in the light of the economic recession. At greatest risk would be the funding of programmes and initiatives to improve researchers' remuneration and mobility and the continuation of steady investments in research infrastructure.

The attraction of foreign researchers is still rather low and pull factors are too weak in Latvia due to the reasons discussed above. Personal contacts dominate over formal opportunities to disseminate information about research positions and the opportunities offered by the researchers' mobility portal (Euraxess) are not fully used. At the same time there are locally specific barriers, such as the policy on language in study programmes and the language requirements for specific professions that diminish options for foreign HEI staff and researchers to participate in this labour market segment on equal terms with nationals due to the language proficiency requirements stipulated by national laws.

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

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<tr>
<th>Labour market for researchers</th>
<th>Growing importance. Increased attention paid to researchers' mobility within the EU.</th>
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| Key characteristics of policies | • Predominant focus on outward mobility and repatriation of Latvian researchers with limited pull factors for the attraction of foreign researchers.  
• No specific policy for the promotion of gender equality in science (non-existence of formal barriers for academic careers of women). |

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<th>Governance of research infrastructures</th>
<th>Growing importance. Increased support for upgrading and governing research infrastructures.</th>
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| Key characteristics of policies | • Prioritisation of investments in research infrastructure in the EU SF programming periods of 2004-2006 and 2007-2013.  
• Support for the development of the ESFRI roadmap. |

\(^{22}\) For instance, it is possible to study in Masters' programmes at the Riga International School of Economics and Business Administration (RISEBA) and, while physically residing and studying in Latvia, to receive diplomas of both RISEBA and the University of Salford. Similarly, while studying in specific programmes at the Riga Business School, one is allowed to obtain also a diploma from the Buffalo University or University of Ottawa. The University of Latvia has signed special agreements with HEIs in the other Baltic States allowing to choose PhD supervisors in humanities or social sciences not only from Latvia, but also from Estonia or Lithuania.
### Short assessment of its importance in the ERA policy mix

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<th>Key characteristics of policies</th>
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<td>Autonomy of research institutions</td>
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<td>Opening up of national research programmes</td>
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### 5 Conclusions and open questions

#### 5.1 Policy mix towards national R&D investment goals

Over the course of three years (2005-2007) the research community in Latvia experienced a period of uplift. A number of talented young scientists chose to return to Latvia from their advantageous positions in the field of research abroad. These developments were not least triggered by the adoption of the Law stipulating an annual increase in public R&D funding by 0.15% of GDP until the Lisbon goal of 1% of GDP is reached. That was the national R&D investment objective and it was nearly adhered to for two subsequent years following the adoption of the law in 2005: the annual increase of GERD in both 2005 and 2006 was 0.14% thereby reaching 0.7% of GDP in 2006 (2004 – 0.42%), which was achieved mainly at the expense of GBAORD. However, already the statistical data for 2007 demonstrated a decrease of GERD to 0.59% of GDP. This drop was mainly due to the GDP growth rate outpacing the respective growth of GERD since in 2007 GBAORD continued to grow in absolute figures. Yet, in 2008 this increase was rather negligible and already a substantial decline is planned for 2009.

Latvia has been heavily struck by the financial and economic crisis and under the given conditions has substantially (by approximately 29%) reduced its public R&D funding. Based on the above-mentioned facts and considerations one can conclude that the economic and financial crisis at present represents the major barrier to R&D investments including ones from the business enterprise sector. The other main barriers faced by Latvia, as set out in Section 3, include the production of goods and services with low R&D intensity and low added value; the weak cooperation between public research institutes and universities, on the one hand, and business companies, on the other; and the low administrative capacity of public authorities leading to excessive bureaucratic barriers and complicated procedures to acquire funding from the EU SFs.

The present policy mix of Latvia has a decisive role to play towards reaching the Lisbon goals. In recent years the institutional (block) funding and thematic state research programmes have been and still are the main mechanisms for providing R&D support at HEIs and PROs. On the part of the business enterprise sector one of the key instruments for promoting R&D activities in the private sector is represented by the state aid programmes for development of new products and technologies.
There is also a range of measure promoting academia-industry linkages through market-oriented research projects, technology transfer contact points, researcher placements, etc. However, there are no tax incentives aimed at promoting business R&D and also policies for development of clusters and competence centres are still in an initial stage.

Latvia does not yet possess its own White Paper on R&D policy, namely, a long- or medium-term R&D policy document approved by the parliament or the government. One can, though, make references to the National Development Plan (2007-2013) or the National Reform Plan (2005-2008) comprising fragmented elements of R&D policy by means of repeating the legal provision on the annual increase of public R&D funding. As far back as 2005 the task force of the Strategic Analysis Commission elaborated the first draft of the Guidelines for Development of Science and Technology for 2008-2013. Since 2006-2007, this document has been passed on to the governmental bodies but has not yet made its way to the final approval by the Cabinet of Ministers. This should take place in the near future since adoption of the Guidelines is stipulated by the Action plan of the Programme for economic stabilisation of Latvia, implementation of which, in its turn, is directly linked with the subsequent allocations from the negotiated loan of the International Monetary Fund to the State of Latvia for managing the crisis.

Revision of the above-mentioned guidelines is becoming a sort of a ‘litmus paper’ in order to understand the particular governmental policy with regard to science under the current crisis conditions and in the following post-crisis period. Since 13 March 2009, a new government is in office in Latvia, yet it is being argued by the representatives of the research community (in media and internal communications) that the declaration of the new government (CoM, 2009b) does not provide for a clearly defined policy with regard to science.

It can be presumed that the government is affected by three conditions. Firstly, the disbelief in the potential contribution of science to the national economy that no longer has its own industrial production – an attitude having originated already from the government of the early 1990ties. Secondly, an appearance that the increase in public R&D funding over the course of the last five years has not yielded clearly identifiable returns to the national economy (though scientists are of the opposite view). And, thirdly, there is an uncertainty in regard to the future fate of Latvia under the conditions of the economic crisis.

Thereby at this point one can only state that on the backdrop of crisis Latvia has an opportunity to maintain the research support and facilitate application of some of the generated knowledge in the national economy by means of immediate promotion of public-private cooperation schemes. And the main risk here is related to the consideration that provided this opportunity is not taken, Latvia can experience a relapse of public research funding at the level present in 2004 with a high likelihood of a heavy brain drain.

With regard to the other main policy risks, they are as follows:

- Insufficiency of the present policy mix to ensure long-term effects of facilitating companies to carry on with their R&D activities after termination of specific state aid schemes;
- The undefined IPR regimes within the current cooperation-promoting measures serving as a hindering factor for their efficient uptake and implementation;
• Excessive paperwork withholding potential beneficiaries from making use of the available schemes and thereby from engaging in R&D activities.

5.2 ERA-related policies

Latvia is still a catching-up country in terms of its R&D and innovation performance and both national and global economic crisis may negatively influence the degree and rate of its further progress. Nevertheless, the current policy mix has had and continues to have an important impact on the creation and strengthening of the ERA dimensions and the overall national research development. ERA-related policies are important to the national research policy and strategy and it has been particularly significant in the overall development of human resources and encouragement of research mobility. This has been promoted by means of implementing various exchange programmes for academic staff and students, opening up opportunities to obtain higher education in English in Latvia and providing informative support to both national and foreign researchers.

Participation of Latvian scientists in the European level research programmes and projects (such as FPs, EUREKA, COST, ERA-NET and JTIs) supported by national co-funding contribute to the development of ERA by providing the national input of knowledge and human resources as well as offering means for profiting from access to international knowledge.

There are also various state aid programmes co-funded from the EU SFs, for example, to bring together research and business and to encourage highly skilled personnel (now also including expatriates and foreign researchers) to join business companies in Latvia. Investments from the EU SFs in research infrastructure both in the previous years and in the current programming period 2007-2013 have had a positive impact on the ESFRI initiative and potentially serve as a basis for the attraction of human resources from abroad.

However, there is still a range of serious challenges for further encouragement of ERA-related developments in the current situation present in the country. Firstly, the economic crisis might cause an intensified unbalanced outward mobility of researchers thereby presenting Latvia not only with a challenge to develop means for efficiently attracting foreign researchers but also for retaining its national research potential. Secondly, several important structural changes in the legislation governing both research and higher education are still to be approved to foster the implementation of the ERA (as well as European Higher Education Area) concept in Latvia and facilitate further internationalisation these sectors.
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List of Abbreviations

CIS - Community Innovation Survey
CoM - Cabinet of Ministers of the Republic of Latvia
CSB - Central Statistical Bureau of the Republic of Latvia (LR Centrālā statistikas pārvalde)
CSTS - Centre for Science and Technology Studies, Latvian Academy of Sciences (LZA Zinātnes un tehnoloģijas pētniecības centrs)
EIS - European Innovation Scoreboard
<table>
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<th>Acronym</th>
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<tr>
<td>ERDF</td>
<td>European Regional Development Fund</td>
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<tr>
<td>ESF</td>
<td>European Social Fund</td>
</tr>
<tr>
<td>ESFRI</td>
<td>European Strategy Forum on Research Infrastructures</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FP</td>
<td>European Framework Programme for Research and Technology Development</td>
</tr>
<tr>
<td>FTE</td>
<td>Full time equivalent</td>
</tr>
<tr>
<td>GBAORD</td>
<td>Government budget appropriations or outlays on R&amp;D</td>
</tr>
<tr>
<td>HEI</td>
<td>Higher education institutions</td>
</tr>
<tr>
<td>HES</td>
<td>Higher education sector</td>
</tr>
<tr>
<td>IPR</td>
<td>Intellectual property rights</td>
</tr>
<tr>
<td>LARS</td>
<td>Laboratory of Analytical Research and Strategies (Analītisko pētījumu un stratēģiju laboratorija)</td>
</tr>
<tr>
<td>LAS</td>
<td>Latvian Academy of Sciences (Latvijas Zinātņu akadēmija)</td>
</tr>
<tr>
<td>LCCI</td>
<td>Latvian Chamber of Commerce and Industry (Latvijas Tirdzniecības un rūpniecības kamera)</td>
</tr>
<tr>
<td>LIDA</td>
<td>Latvian Investment and Development Agency (Latvijas Investīciju un attīstības aģentūra)</td>
</tr>
<tr>
<td>MoE</td>
<td>Ministry of Economics (Ekonomikas ministrija)</td>
</tr>
<tr>
<td>MoES</td>
<td>Ministry of Education and Science (Izglītības un zinātnes ministrija)</td>
</tr>
<tr>
<td>MoF</td>
<td>Ministry of Finance (Finanšu ministrija)</td>
</tr>
<tr>
<td>MS</td>
<td>Member State</td>
</tr>
<tr>
<td>NCP</td>
<td>National Contact Point (Latvijas Nacionālais kontaktpunkts)</td>
</tr>
<tr>
<td>NDC</td>
<td>National Development Council (Nacionālā Attīstības padome)</td>
</tr>
<tr>
<td>OCMA</td>
<td>Office of Citizenship and Migration Affairs (Pilsonības un migrāciju lietu pārvalde)</td>
</tr>
<tr>
<td>OP</td>
<td>Operational Programme</td>
</tr>
<tr>
<td>PCT</td>
<td>Patent Cooperation Treaty</td>
</tr>
<tr>
<td>PRO</td>
<td>Public Research Organisations</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>SAC</td>
<td>Strategic Analysis Commission (Stratēģiskās analīzes komisija)</td>
</tr>
<tr>
<td>SEA</td>
<td>State Employment agency (Nodarbinātības Valsts aģentūra)</td>
</tr>
<tr>
<td>SF</td>
<td>Structural Funds</td>
</tr>
<tr>
<td>SMEs</td>
<td>Small and medium-sized enterprises</td>
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<tr>
<td>S&amp;T</td>
<td>Science and technology</td>
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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 Latvia.
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