



**EXPERT EVALUATION NETWORK
DELIVERING POLICY ANALYSIS ON THE
PERFORMANCE OF COHESION POLICY 2007–2013**

TASK 1: POLICY PAPER ON INNOVATION

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1 EXECUTIVE SUMMARY

The national RDI system has evolved greatly since its beginning in the eighties with the creation of Luxinnovation (1984) and the research centres in 1987 (CRP), going through three phases of development: (1) in the first years of its implementation, it was focused on applied research and diffusion of an innovation culture within companies ; (2) then, from the mid nineties to mid 2000, great efforts were made to strengthen the research capacities of the RDI system in the CRPs and the Luxembourg University with significant participation of DOCUP 2000–2006 which supported infrastructure and equipment projects in public research labs; (3) since mid 2000, the national RDI has entered a mature phase focusing on strengthening stronger links between research organisations and enterprises, supporting valorisation of research results and innovative projects within firms. This evolution has led to a strong increase in public investments in RDI, up to 200 million in 2009. The policy mix is focused on 5 objectives: strengthening the public knowledge base, supporting all types of innovation within firms, diversifying the national economic fabric (through cluster programme), developing stronger enterprise/research collaborations, and attracting high skilled workforce.

The “Competitiveness and Employment” Operational Programme 2007–2013 dedicated 69% of ERDF funds to innovation (17 M€) consistently with the growing support to innovation at the national level. In coherence with the national innovation policy, ERDF contribution focuses mainly on knowledge transfer and poles through support to RTD infrastructures in public research organisations and support to Luxinnovation, the national agency in charge of the promotion of innovation and research (60%); and on boosting applied research (30%) through support applied research projects “end users oriented” involving (sometimes) businesses. Compared to the previous period, ERDF contribution to “soft” measures (versus infrastructures) has increased significantly. However, public innovation stakeholders continue to be the main target of ERDF support. Enterprises are not direct recipients of funding, resulting from a choice of the managing authority considering that the national RDI Aid Scheme provides sufficient funds to innovation projects within companies.

In terms of results and achievements, the ERDF co-funded projects started mostly in mid 2009 due to some delays in the starting phase of the programme. In addition, the innovation related ERDF amount (17 M€ over 7 years) represents only a very small share of the total national RDI investments (2%) making the assessment of the specific contribution of ERDF funds to the innovation performance of Luxembourg difficult. However, ERDF funds accompanied the evolution of the national RDI system towards a stronger support to technology transfer, enterprise–research collaborations, and promotion of innovation within companies. ERDF funds are also a complementary source of financing for the public research organisations and Luxinnovation and contribute to the fulfilment of their performance contract negotiated with the national ministries.

In other words, ERDF supports projects that are the core of the strategy of the public research and innovation organisation.

Main challenges for the future of the cohesion policy in relation to innovation are twofold: (i) the valorisation of the research results that will imply greater efforts to establish a valorisation and tech transfer strategy, organise sustainable enterprise–research collaborations, disseminate a valorisation culture within research organisation; (ii) the attraction and capacity to retain the high skilled workforce in a country that lacks critical mass and therefore needs to be open to international cooperation, that requires stronger synergies between ERDF and ESF programmes.

2 NATIONAL AND REGIONAL INNOVATION POLICY AND THE CONTRIBUTION OF ERDF

2.1 NATIONAL AND REGIONAL INNOVATION POLICY

National and regional innovation policy mix

Since the end of nineties, the Luxembourg national RDI system has deeply evolved with the strong increase of public investments in R&D and the development of new structures, programmes and laws.

The national innovation policy is mainly in the hands of the Ministry of Economy and Foreign Trade and the Ministry of Higher Education and Research which define the national strategy and partly implement it. For the implementation the ministry mainly rely on Luxinnovation (National innovation agency), which is in charge of the promotion of innovation aid schemes and providing assistance and services to innovation stakeholder projects (both companies and researchers), and on the National Research Fund (NRF), which provides competitive grants to public R&D projects within multi–annual thematic research programmes (e.g. CORE programme) in priority fields. The new law on RDI (June 2009) also created the National Innovation Fund providing direct grants to companies for supporting RDI activities in the broadest sense (29,3 M€ in 2010). In addition, through the “performance contracts”, the ministries provide State funding on a three–year basis (2008–2010) to national agencies¹ and research and higher education organisations². The *Société Nationale de Crédit et d’Investissement* (SNCI) provides innovation loans to R&D projects involving the launch of a new product and service or the development of new production and marketing processes.

¹ Luxinnovation: 9,6 M€, National Research Fund: 91M€ (see Ministry of Economy and Foreign Trade –Activity Report 2009 ; National Reform Programme – Annual Report 2008, page 21)

² Namely, the University of Luxembourg, and the 3 main Public Research Centre : PRC Tudor, PRC Lipmann, PRC Health (168 M€) (cf. National Reform Programme – Annual Report 2008, page 21)

Even though in recent years the Government has published various reports on innovation issues, there is still not a single national strategic framework providing measurable objectives and an action plan. However, from the different reports and policy blueprints³, the current innovation policy mix is based on the following main objectives and measures:

- **Strengthening the public knowledge base** (1% of the GDP of public investment in R&D) through the support to public research infrastructures (University of Luxembourg and Cité des Sciences) and research projects and programmes with two major aims: concentrating the public R&D investments in selected fields; establishing stronger collaboration between public research organisations and the University of Luxembourg. Such an objective mobilises the largest part of the public investment in RDI.
- **Supporting all types of innovation within firms.** The new law on RDI⁴ enlarges the possibility to support innovation within companies, namely by focusing support on SMEs, organisational innovations, access to innovation consultancy services, access to IP, etc.; and increases the dedicated budget up to 29,3 M€ in 2010 (+28% compared to 2009). In addition, a strong political emphasis has recently been put on the creation of innovative start-ups and development of an entrepreneurship culture in a Country where risk aversion is widely developed (due to high wages)⁵.
- **Diversifying the national economic fabric** through support to innovation within companies (see above) and technological clusters in “niche” markets with high added value⁶.
- **Developing stronger collaborations between public research and businesses:** since 2007, public research organisations can participate in cluster initiatives ; the performance contracts (2008–2010) signed with public research organisations include objectives and indicators that measure the number of public–private R&D projects; the new law on RDI provides higher grant rates for RDI projects involving company and public research organisations, and supports the establishment of “innovation poles”⁷.

³ See annex D Bibliography

⁴ The law adapts the new EU regime on R&D aid scheme

⁵ Support to 3 incubators (Technoport Schossgart of the CRP Henri Tudor ; Ecostart managed by Luxinnovation ; and Hosingen Relay Centre “Op der Hei”) ; the Masters Program in Entrepreneurship and Innovation (University of Luxembourg / Chamber of Commerce) ; the 1, 2, 3 Go initiative (network for entrepreneurship) ; aid scheme for young innovative companies (Law on RDI), etc.

⁶ Since 2002, 5 clusters have been supported: Surfmat (materials) ; InfoCom (ICT) ; AeroSpace (aeronautic and space) ; BioHealth (health and biotech) and EcoDev (ecotechnology). A new cluster on Logistics started on March 2009. Luxinnovation is in charge of the management of the cluster programme, and provides a Cluster Management Team to each cluster.

⁷ Defined as a group of enterprises and/or research organisations sharing knowledge and equipments for R&D purpose and contributing to technology transfer

- **Training and attracting high skilled workforce** through the support to the University of Luxembourg, aid schemes for attracting foreign researchers (2007), establishment of a new research scholarship grant system (2007), a new law on immigration (2008) making it easier for highly skilled people from third world countries to work in Luxembourg.

The Luxembourg innovation policy has **no formal regional dimension** due to the small size of the country and the lack of sub-national authorities, except municipalities (without any competence on research and innovation). However, Luxembourg used the previous DOCUP 2000–2006, that applied only to the eligible zones of the Southern and North–Eastern parts, to start the **relocation process of the main public research organisations in the South** (close to the French border) on the former industrial zone in Belval Ouest, the so called “Cité des Sciences” project, which will become effective in 2012. The project aims at creating a technological campus gathering public research organisations, incubators, tech transfer services, and private laboratories or R&D units from businesses favouring public–private partnerships. In addition, recent initiatives aim at boosting **cross-border and transnational cooperation** in the field of research and innovation, namely within the Great Region⁸.

Role of ERDF

Compared to the 2000–2006 programming period, the amount of **ERDF for 2007–2013 Objective 2** decreased significantly from 44 M€ to 25,24 M€, but with **a stronger concentration on innovation support**: 69% (17,4 M€) of the ERDF is now dedicated to innovation support⁹. However, this financial contribution to the national innovation policy is rather limited compared to the annual 200 M€ of public R&D investments (i.e. 0,57% of GDP¹⁰,) in 2009¹¹.

The ERDF interventions for innovation are concentrated in the second axis of the operational programme with two measures aimed at **strengthening the RTD investments (measure 2.1)** by developing research infrastructures and encouraging cooperation between public and private research; and at **fostering all types of innovation and R&D within businesses (measure 2.2.)**, namely by supporting clusters and cooperation networks (between enterprises, enterprises and research) to position technological sectors and niche markets. In addition, the first axis of the OP

⁸ The new law on RDI provides higher grants rate for RDI projects involving cross-border partners ; the Annual Implementation Report 2009 of the National Reform Programme stresses the Government willingness to promote the potential of a joint scientific programming structure within the Great Region, etc.

⁹ Under the previous period, the share of ERDF funding on innovation amounted from 10 to 17% of total ERDF budget, ie. from 4,5 M€ to 7,7 M€ (cf. DG REGIO, Strategic Evaluation on Innovation and the Knowledge Based Economy in relation to the Structural and Cohesion Funds for 2007–2013 – Luxembourg Report, page 20).

¹⁰ National Reform Programme – Annual Implementation Report 2009.

¹¹ Based on these figures, annual ERDF expenditures on RDI support represents only between 1 to 2% of the public R&D investments in Luxembourg.

provides supporting measure for promoting the information society and an entrepreneurship culture (e.g. incubators).

Luxembourg benefits also from ERDF within the Objective 3 Cross Border Programme “Great Region” (11,4 M€) and Transnational Programme “North West Europe” (3,3 M€) whose main innovation targeted measures concern the support to innovation through cross-border RDI projects, collaboration projects between companies, collaboration between innovative clusters involving both public and private actors; and the support to the knowledge base strengthening of the cooperation between higher education institutes and research centres.

2.2 ERDF CONTRIBUTION ACROSS POLICY AREAS

The ERDF funding on innovation are focused on two major categories of expenditure (FOI codes):

- RTD infrastructures and centres of competence (FOI 02) (37% of the total ERDF contribution). Support goes mainly to the 3 Public Research Centres and the University of Luxembourg namely for setting-up the so-called “Cité des Sciences” in the South.
- RTD activities in research centres (FOI 01) (13% of the total ERDF contribution). Under the measures 2.1. and 2.2. ERDF goes to public research centres and the University of Luxembourg;

To a lesser extent, the ERDF supports innovation within firms and entrepreneurs and innovation culture, mainly through projects managed by Luxinnovation (FOI 03, 04, 06, 07 and 09) and amounts to 14% of the total ERDF contribution

Almost **60% of ERDF contribution on innovation is concentrated on the knowledge transfer and poles** policy area. However, in financial terms, support to RTD infrastructures in public research centres and the university is overwhelmingly predominant to the detriment of soft interventions, such as support to poles, cooperation networks, direct support and aid schemes for enterprises to foster the utilisation of technology related services or cluster activities at the enterprise level.

The second major focus is on **boosting the applied research** policy area (**30% of ERDF contribution on innovation**), mainly through supporting applied research projects in public research centres. Most of these projects are “end user” oriented or involve businesses.

A lower emphasis is put on fostering **an innovation friendly environment** that relies mainly on the national innovation policy. The development of human potential in the field of research and innovation is supported through ESF, but without clear links between the innovation stakeholders depending on the Ministry of Economy and the Ministry of Research and Higher Education and the Ministry of Labour which is managing the ESF funds. However, the INTERREG IVA Great Region programme supports the establishment of a cross border venture capital fund (EUREFI) in the field of innovation financing.

By consequence, the **two major recipients** of funding are public actors: the public research centres (CRPs), namely CRP Henri Tudor, CRP Gabriel Lipmann and the University of Luxembourg¹² both for infrastructures and facilities and applied research projects; and Luxinnovation¹³.

Clearly, **the ERDF programme does not target the enterprises as direct recipients** of funding. That results from a clear choice of the managing authority considering that the RDI Aid Scheme provides sufficient funds to innovation projects within businesses. Therefore, ERDF innovation support to enterprises, namely SMEs, goes only through the support provided for **Luxinnovation** activities whose main missions are to promote innovation within SMEs, to provide assistance to SMEs for innovation projects and to bring together innovation stakeholders.

This “applied research” and “infrastructure” driven approach of ERDF contribution to innovation is **consistent with the national innovation policy goals**. It is coherent with the national focus on the strengthening of the public knowledge base in a country where the public research system is quite recent (the CRPs were created in 1987, the University of Luxembourg in 2003). Therefore the ERDF in 2000–2006 and 2007–2013 contributes to the catching up in public research infrastructures and participates in the national effort to increase R&D public investments that rises from 0,3% of GDP in 2003 to 0,6% in 2010. ERDF 2007–2013 also contributes to the strengthening of the technological competences within the public research organisations by providing a new portfolio of services and knowledge to SMEs, and establishing stronger collaborations between public research and businesses. Finally, the support to Luxinnovation is consistent with the enhanced role of the agency recognised by the new law on RDI.

3 EVIDENCE AVAILABLE ON THE PERFORMANCE OF INNOVATION MEASURES CO-FINANCED BY ERDF

There is no evaluation available at the national level on the innovation policy measures, except on the national innovation agency, Luxinnovation¹⁴. For what regards the previous period 2000–2006, the evaluation of the DOCUP 2000–2006 highlights the contribution of the ERDF programme to the diversification of the economy, by providing support to business infrastructure, particularly SMEs and start-up companies, especially in the southern eligible areas (through support to the business

¹² Respectively, from 2007, 8, 9 and 1 ERDF funded projects.

¹³ 5 projects from 2007 – 3,6 M€ of which ERDF 1,27 M€ over 2007–2013.

¹⁴ The administration board of Luxinnovation launched the evaluation of the agency in Spring 2010 for preparing the new performance contract 2011–2013 (April 2010).

incubators), and to the enhancement of the research capacities through support to research centres¹⁵.

The evidence available on the performance of co-financed innovation measures 2007–2013 are rather poor. The annual implementation report 2008 (June 2009) highlights the small progress made in implementation due mainly to the delay in the formal approval of the operational programme (end of December 2007) and the extension of the eligibility period of expenditure under the previous DOCUP 2000–2006 to June 2009.

Therefore, only 10% of the ERDF funds had been programmed by the end of 2008 (2,5 M€) exclusively on axis 2 of the OP (“the innovation axe”), showing that the programming of innovation measures had got off to a good start.

The updated list of projects approved on April 30, 2009¹⁶ shows the progress made: 19 exclusively innovation related projects for 3,9 M€ of ERDF (i.e.22% of the ERDF contribution on innovation) were approved. The latest figures of the Ministry of Economy highlight that almost 40% of the ERDF on innovation have been approved¹⁷.

Boosting applied research (5,3 M€ of planned ERDF – 3 M€ approved ERDF)

At present, a large part of the ERDF funding supports the RDT activities of the CRP Tudor and CRP Lipmann, under the measures 2.1. and 2.2. of the operational programme, contributing mainly to boosting applied research. As already stated, these are applied research projects with a stronger technology transfer or knowledge transfer dimension, than in the previous programming period. Whereas the DOCUP 2000–2006 contributed to set-up new laboratories and new equipment within the CRPs, the current ERDF programme supports the CRPs in delivering research activities and services to SMEs, in priority sectors that are consistent with the 6 thematic technological clusters (managed by Luxinnovation).

For instance, the ECO-CONCEPTION project, managed by CRP Tudor with the support of Luxinnovation (as manager of the Eco-Dev Cluster on eco-technologies) aims at introducing eco-conception processes (certified through ISO/TR 14 062 standard) within 5 “pilot” SMEs limiting the environmental impacts of the production processes or service delivery. The objective is to demonstrate and test with case studies the possibility to

¹⁵ Up-date of the mid-term evaluation of the Objective 2 ERDF programme 2000–2006, Ministry of the Economy and Trade, March 2005. See also, “Ex Post Evaluation of Cohesion Policy Programmes 2000–2006 financed by the European Regional Development Fund in Objective 1 and 2 regions – Work package 1: Coordination, analysis and synthesis – Task 4 – Luxembourg Report”, European Commission, 2009.

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http://www.feder.public.lu/programme_reconversion/competitiviteregionale_emploi/liste_des_projets/liste_projets_cre.pdf

¹⁷ Internal database – Ministry of Economy – April 16, 2010

conceive innovative products and services in an environment friendly manner, then sensitize SMEs to using the ISO standard.

CASSIS–Sécurité 2 project managed by CRP Tudor is a good example of the continuity of ERDF support between the two programming periods. The project aims at sensitizing SMEs on the IS security issue, transferring solutions and methods and providing assistance to improve the security of the IS through a network of consultants. A first project to develop the competences in the Information System (IS) of CRP Tudor was funded in the 2000–2006 programming period. Now that the methodologies developed are sufficiently mature, the ERDF 2007–2013 supports the transfer of these methodologies to SMEs.

In terms of results and impacts, as these two–year projects mostly started in mid–2009, there is no clear evidence on innovation performance.

However, with regards to the research organisations, the ERDF are “multiplier” fundings that complement the national funds and are fully coherent with the research strategy of the research centres. ERDF funded research is at the core of the research strategy of the research organisations and allow them to fulfil their objectives stated in their performance contracts with the Ministry of Research, namely in terms of public–private collaborations. From this point view, the increase of the average ERDF co–funding rate from 23% during the previous period to 35% during the current period strengthens the attractiveness and the added value of the ERDF programme for the research organisations.

In addition, with regard to businesses, the expected impacts of the ERDF funded applied research and tech transfer projects are to stimulate innovation processes (namely through standards, normalisation process, etc.) within the companies and to strengthen the research/enterprises partnerships. Some projects are implemented within the frame of the cluster programme: for instance the ATLAS (Assistance to Transportational Logistic by Automated System) project is managed by CRP Lipmann with the Logistic Cluster; ECO–CONCEPTION is managed by CRP Tudor with Luxinnovation as manager of the Eco–Dev Cluster.

Knowledge transfers and poles (10,3 M€ of planned ERDF – 3,3 M€ ERDF incurred)

The great project of “Cité des Sciences” in Belval (in the South) aiming at relocating the University, public research centres, incubators started was delayed, that is why at present the amount of incurred ERDF (namely on RTD infrastructures) is lower than expected. However, within the next two years, some results are expected.

Luxinnovation is the second largest beneficiary of ERDF funding, with 5 projects amounting to 1,27 M€ ERDF. The ERDF supports the implementation of the Luxinnovation missions over the period 2007–2013 as stated in its performance contract 2008–2010, along 5 projects or axis,

contributing both to the second policy area “knowledge transfer and poles” and to the first “boosting applied research”:

- Promotion of innovation through communication tools and an information management system (e.g. National Innovation and Research Portal; communication tools; events, seminars and meetings, etc.)
- Support to innovative start-ups (enterprise creation), SMEs and researchers (valorisation of research results)
- Implementation of the “Alliance for Innovation” programme aimed at providing services to SMEs, e.g. provision of external experts to support innovative projects within SMEs, innovation diagnostic analysis and innovation needs of businesses.
- Implementation of the Cluster Programme for 2008–2011 through the establishment of new clusters in the fields of eco-technologies, biotech and services
- Promotion of the national and European RDI programmes: information campaign, training sessions on the 7th RDT Framework Programme, database of key research actors, etc.

The contribution of the ERDF to Luxinnovation financing represents on average 5,6 % per year of its total annual budget¹⁸, ie. a low share of its total budget. However ERDF plays a role in the achievement of Luxinnovation goals over the period 2008–2010. At the end of 2009, Luxinnovation had already over-achieved two third of its performance indicators (18), namely it increased the number of enterprises (507 from 2008) and public research labs (59 from 2008) benefiting from the services portfolio : innovation diagnostic, support in project management, support to EU projects, networking activities. In addition, Luxinnovation’s support activities to enterprises led to an increase in the number of RDI projects submitted under the RDI Aid Scheme, demonstrating the impact of Luxinnovation on innovation capacities within firms. Promotion activities through events and seminars targeted more than 3600 innovation stakeholders¹⁹. However, the impact of Luxinnovation activities on the clustering dynamic is more difficult to assess, as no performance indicators are clearly related to its mission of cluster management²⁰.

Innovation friendly environment (1,7 M€ of planned ERDF – 0,4 M€ ERDF incurred)

¹⁸ The Luxinnovation Performance Contract provides 9,65 M€ of funding from the Ministry of Economy, Ministry of Research, Chamber of Commerce, Chamber of Métiers, and FEDIL (business organization s) for 2008–2010, ie 3,2 M€ per year in average, compared to 1,27 M€ of ERDF funding over 2007–2013 (ie. 0,18 M€ per year in average)

¹⁹ Compared to the population of Luxembourg, around 500 000 inhabitants.

²⁰ Evaluation of Luxinnovation, Ministry of Higher Education and Research, 2010.

The updated list of projects approved on April 30, 2009²¹ does not include any projects related to ICT infrastructures and services and applications. Only two projects for advanced support services for firms, namely the Luxinnovation programme towards enterprises, had been approved. Poor results in this policy area also result from the fact that the ESF fund dedicated to the development of human potential in the field of research and innovation (code 74) has not been mobilised and is little known by Luxembourg innovation stakeholders, namely by the public research organisations.

Complementing the results of the OP, INTERREG programmes are of great interest to Luxembourg innovation stakeholders, namely research organisations. As a small country without a critical mass, Luxembourg innovation policy has from the beginning been open to European and cross-border cooperation within the Great Region, which is the “natural” place for developing innovative projects (e.g. a large part of start-up companies from abroad are hosted by Luxembourg incubators). Although the innovation related projects selected under INTERREG programmes are only in a starting phase for assessing their results and achievements, some projects are promising in terms of their effects on the three policy areas.

- Boosting applied research : Cross-border Scientific Park Trilux (INTERREG IVA) aims at fostering collaboration between enterprises from the two sides of the German-Luxembourg border ;
- Knowledge transfers and poles : TIGRE project (INTERREG IVA) involves public research organizations from the four countries aimed at collaborating and exchanging technology transfer and research on economic valorization methodologies
- Innovation friendly environment : EUREFI project (INTERREG IVA) supports the cross-border venture capital EUREFI INTERREG fund fostering the financial access of regional SMEs and the coordination of the investment policy of the different regions.

4 CONCLUSION: MAIN CHALLENGES FACED BY COHESION POLICY PROGRAMMES

The national RDI system has evolved greatly since its beginning in the eighties with the creation of Luxinnovation (1984) and CRPs (1987), going through three phases of development: (1) in the first years of its implementation, it was focused on applied research (CRPs were created as applied research organisation to support enterprises) and diffusion of an innovation culture within companies (Luxinnovation); (2) then, from the mid nineties to mid 2000, great efforts were made to strengthen the research capacities of the RDI system in the CRPs and the Luxembourg University with significant participation of DOCUP 2000-2006 which supported infrastructure and

²¹ Ibid.

equipment projects in public research labs; (3) since mid 2000, the national RDI has entered a mature phase focusing on strengthening stronger links between research organisations and enterprises, supporting valorisation of research results and innovative projects within firms. This evolution has led to a strong increase in public investments in RDI, up to 200 million in 2009.

ERDF support accompanied this evolution. Whereas ERDF support over 2000–2006 was mainly focused on research infrastructure and equipment in public research labs to strengthen their research capacities and their level of scientific excellence in order to compete at the European level, over 2007–2013 ERDF support is more balanced between continued finance to research infrastructures and providing funds for soft interventions. Two achievements can be highlighted: (i) firstly, **innovation related measures have the highest programming rate** which is encouraging; (ii) secondly, even if there is no evidence on concrete outcomes and results from ERDF co-financed projects (too early), **the main achievement of the ERDF programme is to better focus its support on applied and tech-transfer projects, promotion of innovation within firms, development of enterprise/research collaborations**, etc. Projects, such as Cassis-Sécurité, clearly demonstrate this evolution between the two periods, and the potential impact of the projects on innovation capacities within firms.

In addition, the growing support of ERDF funds to innovation over the period 2007–2013 (69% of ERDF total support) is also perfectly consistent with the increase in national investments in RDI. **However, the innovation related ERDF amount (17 M€ over 7 years) represents only a very small share of these investments (2%)** making it difficult to assess the specific contribution of ERDF funds to the innovation performance of Luxembourg. That explains also the choice of the programme management to focus the support on research organisations and Luxinnovation, rather than on direct support to SMEs, that do not necessarily have the internal capacity of managing the complexity of ERDF procedures, emphasised by the different actors²².

Therefore, **ERDF funds are a complementary source** of financing for the national projects managed by the public innovation stakeholders (CRPs, University, Luxinnovation)²³, and contribute to the fulfilment of their performance contract negotiated with the national ministries, that obliged the CRPs to get 45% of their total annual budget from other sources than the ministries (ie. private sector, competitive funds from NRF, competitive funds from EU – FP7 and ERDF). On the other hand, INTERREG programmes have a stronger leverage effect in a country where international cooperation is a necessity to overcome the lack of critical mass and to attract new competences.

²² For the innovation stakeholders interviewed, the complexity of ERDF process regards the reporting procedure, the calculation methods of the overheads.

²³ By consequence, there is no « pure » ERDF projects.

In the future, major challenges for improving the contribution of the cohesion policy to innovation regard:

- The **valorisation of research results**, namely from the public research organisation, that implies making greater efforts to organise sustainable collaboration between enterprises and research organisation, to disseminate a valorisation culture within research organisation and to attract high level expertise for the valorisation of research results. Until now, valorisation results in terms of patents, academic spin-offs, and licence exploitation are rather poor. Some initiatives have already been implemented. Luxinnovation is currently carrying out a study on building a national valorisation system (e.g. network of tech transfer officers in the CRP, University and Luxinnovation). Cluster governance has been changed to improve cluster animation and detect collaborative projects among cluster members. Stronger focus on valorisation through the ERDF programme will certainly oblige the managing authority to put a greater emphasis on the IP²⁴ rights issue in project selection. It will also imply stronger collaboration between the public research organisations and Luxinnovation.
- **Attracting and retaining a high skilled workforce** in Luxembourg is the second key challenge. Several initiatives have already been implemented for that purpose. For instance, the National Research Fund has set up the programs PEARL and ATTRACT to attract high level senior and young researchers. In addition, axis 3 “Strengthening the Human Potential” of the ESF program aims at bringing higher education, research centers and enterprises into the fields of innovation and research. However, until now, the possibility of using ESF funds for supporting post graduate studies, training of researchers, and networking activities between universities, research centers and business (complementing the ERDF program) has not been fully used²⁵. Promotion of ESF support towards public research organizations and stronger collaboration between the managing authorities and innovation stakeholders is essential for exploiting the synergies between ERDF and ESF on innovation.

²⁴ Intellectual Property

²⁵ One project managed by the International University Institute of Luxembourg carrying out research activities for assessing the impact of the lifelong learning in the enterprises.

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- Luxinnovation, Activity Reports 2008 & 2009
- Powerpoint presentation of the Luxinnovation performance contract (2008)
(http://www.eco.public.lu/salle_de_presse/com_presse_et_art_actu/2008/10/16_Luxinnovation/081007_xf02_cperf_confprese2008.pdf)

Evaluations and studies:

- INNO–Policy TrendChart report on Luxembourg 2009;
- OECD Reviews of Innovation Policy – Luxembourg 2005 and 2007;
- Ex–post Evaluation of DOCUP 2000–2006, DG REGIO, WP1, Task 4, European Commission²⁶ (2009)
- Mid Term Evaluation of DOCUP 2000–2006 and Up–date of the Mid Term Evaluation, Ministry of Economy and Trade (2003, and 2005)

The OECD Policy Review 2007 is the only document that integrates an evaluation dimension of the whole national innovation system. That is the key document for understanding the national innovation system and the current evolution that are still in progress. The main conclusions of the report have had a strong impact on the innovation policy and led to the implantation of performance contracts between the ministries and the RDI organisations (CRPs, University, and Luxinnovation).

The Ministry of Research and Higher Education and the administration board of Luxinnovation have carried out the external evaluation of Luxinnovation to prepare the next performance contract 2011–2013. ITD–Eu was in charge of the evaluation, mainly based on three methodological tools: workshops with beneficiaries and peers from other national and regional innovation agencies in Europe (Tekes, NL Agency and Transferts LR), interviews with research organisations and innovation stakeholders, and a self assessment report provided by Luxinnovation. The evaluation was focused on the review of the services portfolio and the effectiveness of the services provided for enterprises and researchers; the impact of the performance contract on the management of Luxinnovation; and the design of a new set of performance indicators.

In addition the “Competitiveness Observatory” provides statistics and policy papers on competitiveness issues in Luxembourg (<http://www.odc.public.lu/>)

²⁶ http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2006/wp1_tsk4_luxembourg.pdf

INTERVIEWS

Organisation	Position	Name
Ministère de l'Economie et du Commerce extérieur	Direction de la politique régionale – Conseiller de direction adjoint	Romain WEISEN
	Direction générale de la compétitivité, de la recherche et de l'innovation – Conseiller de direction 1ère classe	Marco WALENTINY
Ministère de la Recherche et de l'Enseignement Supérieur	Direction de la Recherche – Conseiller de Gouvernement adjoint	Léon DIEDERICH
	Direction de la Recherche – Activités nationales de recherche, évaluation, statistiques, relations avec l'OCDE	Robert KERGER
Fonds National de la Recherche	Secrétaire Général	Raymond BAUSCH
Luxinnovation	Directeur	Gilles SCHLESSER
	Project manager	Lionel KARAMATA
CRP Henri Tudor	Directeur général	Dr Marc LEMMERS
	Responsable du contrôle de gestion	Patrick BRAUN
	Project officer	Mme CAVALADE
Chambre de commerce	Directeur de la Luxembourg School for Commerce	Paul EMERING
FEDIL	Président du Groupe de travail « recherche, développement et innovation » de la FEDIL, membre du CA de la FEDIL	Hubert Jacobs VAN MERLEN
CRP Gabriel Lipmann	Directeur	Fernand REINIG

ANNEX A – BACKGROUND DATA ON EU COHESION POLICY SUPPORT TO INNOVATION

Table 1 – Total ERDF resources allocated per programme (2007–2013)

Programmes	Total ERDF	Innovation support	Main initiatives implemented
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	resources for innovation	as % of total ERDF	
Objective 2 Competitiveness Operational Programme	17 418 130 €	69%	02 - RTD infrastructures and centres of competence in a specific technology (9,3 M€ - 37% of ERDF) Support to "Cit� des Sciences" the future technological campus which will gather 3 CRP, the University of Luxembourg, the incubator, and private research labs 01 – RTD activities in research centres (3,28 M€ - 13% of ERDF) Applied research projects of CRP Henri Tudor and CRP Gabriel Lipmann, some of them rely on a partnership with businesses 03, 04, 06, 07 and 09 – Support to innovation in SMEs (14% of ERDF) Support to Luxinnovation as national innovation agency in charge of promoting innovation within businesses
Objective 3 Cross-border Programme (IVA) Great Region	23 533 984 €	22,2 %	Measure 1.1. Innovation Support (code 01, 03, 04, 09) e.g. project of a Cross-Border Scientific Park TRILUX ; project of a research cooperation network CORENA on the valorisation of natural plants Measure 1.2. Support to collective actions (code 05, 09) e.g. NANODATA project (nanotechnology database on new products, patents, technologies) ; EUREFI project (cross border venture capital fund) Measure 1.3. Support to cross border economic infrastructures (code 12, 13, 14) No project at present

Source: core team on EC data.

Table 2 – ERDF contribution to innovation by policy area (2007–2013)

Policy Area	Categorisation of Expenditure (FOI codes)	Total ERDF	% of ERDF on innovation
Objective 2			
Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)	06	757 310	30,4%
Investment in firms directly linked to research and innovation (...)	07	252 437	
Other measures to stimulate research and innovation and entrepreneurship in SMEs	09	1 009 747	
R&TD activities in research centres	01	3 281 677	
Boosting applied research Total		5 301 171	
Advanced support services for firms and groups of firms	05	504 873	10,1%
Developing human potential in the field of research and innovation, in particular through post-graduate studies ...	74	(FSE)	
Information and communication technologies (...)	11	504 873	
Information and communication technologies (TEN-ICT)	12	252 437	
Other measures for improving access to and efficient use of ICT by SMEs	15	252 437	
Services and applications for citizens (e-health, e-government, e-learning, e-inclusion, etc.)	13		
Services and applications for SMEs (e-commerce, education and training, networking, etc.)	14	252 437	

Innovation friendly environment Total		1 767 057	
Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)	04	504 873	59,4%
R&TD infrastructure and centres of competence in a specific technology	02	9 340 156	
Technology transfer and improvement of cooperation networks ...	03	504 873	
Knowledge transfers and poles Total		10 349 902	
Total Objective 2		17 418 130	100,0%

ANNEX B – CLASSIFICATION OF INNOVATION POLICY AREAS, INSTRUMENTS AND BENEFICIARIES

Policy area	Short description
Innovation friendly environment	<p>This category covers a range of actions which seek to improve the overall environment in which enterprises innovate, and notably three sub groups:</p> <ul style="list-style-type: none"> • innovation financing (in terms of establishing financial engineering schemes, etc.); • regulatory improvements and innovative approaches to public services and procurement (this category could notably capture certain e-government investments related to provision of services to enterprises); • Developing human capital for the knowledge economy. This category will be limited to projects in higher education aimed at developing industry orientated courses and post-graduate courses; training of researchers in enterprises or research centres. <p>The category also covers initiatives geared towards improving governance capacities for innovation and knowledge policies (e.g. specific technical assistance funding, support for regional foresight)</p>
Knowledge transfer and support to innovation poles and clusters	<p>Direct or indirect support for knowledge and technology transfer:</p> <ul style="list-style-type: none"> • direct support: aid scheme for utilising technology-related services or for implementing technology transfer projects, notably environmentally friendly technologies and ITC; • indirect support: delivered through funding of infrastructure and services of technology parks, innovation centres, university liaison and transfer offices, etc. <p>Direct or indirect support for creation of poles (involving public and non-profit organisations as well as enterprises) and clusters of companies</p> <ul style="list-style-type: none"> • direct support: funding for enterprise level cluster activities, etc. • indirect support through funding for regrouping R&D infrastructure in poles, infrastructure for clusters, etc.

Boosting applied research and product development	<p>Funding of “Pre-competitive development” and “Industrial research” projects and related infrastructure. Policy instruments include:</p> <ul style="list-style-type: none"> • aid schemes for single beneficiary or groups of beneficiaries (including IPR protection and exploitation); • research infrastructures for non-profit/public organisations and higher education sector directly related to universities. <p>Any direct or indirect support for the creation of innovative enterprises (spin-offs and start-ups)</p>
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Instruments	Short description
Infrastructures and facilities	Building and equipment for laboratories or facilities for university or research centres, Telecommunication infrastructures, Building and equipment for incubators and parks for innovative enterprises
Aid schemes	Grants and loans for RTDI projects Innovative finance (venture capital, equity finance, special bonds, etc.) for innovative enterprises
Education and training	Graduate and post-graduate University courses Training of researchers

Beneficiaries	Short description
Public sectors	Universities National research institutions and other national and local public bodies (innovation agencies, BIC, Chambers of Commerce, etc..) Public companies
Private sectors	Enterprises Private research centres
Others	NGOs
Networks	cooperation between research, universities and businesses cooperation between businesses (clusters of SMEs) other forms of cooperation among different actors

ANNEX C – CATEGORISATION OF EXPENDITURE TO BE USED FOR CALCULATING EU COHESION POLICY RESOURCES DEVOTED TO INNOVATION

FOI Code	Priority Theme
	Research and technological development (RTD), innovation and entrepreneurship
01	R&TD activities in research centres
02	R&TD infrastructure (including physical plant, instrumentation and high-speed computer networks linking research centres) and centres of competence in a specific technology
03	Technology transfer and improvement of cooperation networks between small businesses (SMEs), between these and other businesses and universities, postsecondary education establishments of all kinds, regional authorities, research centres and scientific and technological poles (scientific and technological parks, technopoles, etc.)
04	Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)
05	Advanced support services for firms and groups of firms
06	Assistance to SMEs for the promotion of environmentally-friendly products and production processes (introduction of effective environment managing system, adoption and use of pollution prevention technologies, integration of clean technologies into firm production)
07	Investment in firms directly linked to research and innovation (innovative technologies, establishment of new firms by universities, existing R&TD centres and firms, etc.)
09	Other measures to stimulate research and innovation and entrepreneurship in SMEs
	Information society
11	Information and communication technologies (access, security, interoperability, risk-prevention, research, innovation, e-content, etc.)
12	Information and communication technologies (TEN-ICT)
13	Services and applications for the citizen (e-health, e-government, e-learning, e-inclusion, etc.)
14	Services and applications for SMEs (e-commerce, education and training, networking, etc.)
15	Other measures for improving access to and efficient use of ICT by SMEs
	Human capital
74	Developing human potential in the field of research and innovation, in particular through post-graduate studies and training of researchers, and networking activities between universities, research centres and businesses