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CONTENTS

ACRONYMS 3

1 EXECUTIVE SUMMARY 5

2 NATIONAL AND REGIONAL INNOVATION POLICY AND THE CONTRIBUTION OF ERDF 6

2.1 NATIONAL AND REGIONAL INNOVATION POLICY 6

2.2 ERDF CONTRIBUTION ACROSS POLICY AREAS 11

3 EVIDENCE AVAILABLE ON THE PERFORMANCE OF INNOVATION MEASURES CO-FINANCED BY ERDF 13

3.1 ACHIEVEMENTS UNDER THE CONVERGENCE OBJECTIVE 17

3.2 ACHIEVEMENTS UNDER THE COMPETITIVENESS OBJECTIVE 19

3.3 ACHIVEMENTS UNDER THE TERRITORIAL COOPERATION OBJECTIVE 21

4 CONCLUSION: MAIN CHALLENGES FACED BY COHESION POLICY PROGRAMMES 21

REFERENCES 24

ACKNOWLEDGEMENTS 26

ANNEX A – BACKGROUND DATA ON EU COHESION POLICY SUPPORT TO INNOVATION 26

ANNEX B – INTERVIEWS 29

ANNEX C – REGIONAL RESEARCH AND INNOVATION PLANS IN SPAIN 31

ANNEX D – INNOVATION PERFORMANCE AND RDI EFFORT IN SPAIN 32

ANNEX E – EVALUATION EVIDENCE 35

ANNEX F – CLASSIFICATION OF INNOVATION POLICY AREAS, INSTRUMENTS AND BENEFICIARIES 37

ANNEX G – CATEGORISATION OF EXPENDITURE TO BE USED FOR CALCULATING EU COHESION POLICY RESOURCES DEVOTED TO INNOVATION 38

ACRONYMS

AEI	Spanish acronym for Innovative Business Groups
AGE	Spanish acronym for Central Administration
AIR	Annual Implementation Report
CCAA	Spanish acronym for Autonomous Communities
CDTI	Spanish acronym for Technological Development Centre for the Industry
CENIT	Spanish acronym for National Strategic Consortia for Technical Research
CIEMAT	Spanish acronym for Research Centre for Energy, Environment and Technology
CEDER	Spanish acronym for Development Centre for Renewable Energy
CREA	Spanish acronym Consolidation and Creation of Technological Centers Programme
ENCYT	Spanish acronym for Science and Technology National Strategy
ERDF	European Regional Development Fund
EU	European Union
GDP	Gross Domestic Product
I+D+I	Spanish acronym for Research, Development and Innovation
ICO	Spanish acronym for Official Credit Institute
ICT	Informatics and Communication Technologies
ISFOC	Institute for Photovoltaic Systems
KBE OP	Knowledge Based Economy Operational Programme
LEs	Large Enterprises
MICINN	Spanish acronym for Ministry of Research, Science and Innovation
MITC	Spanish acronym for Ministry of Industry, Tourism and Commerce
OTRI	Office for Transfer Results of Research
PETRI	Programme of Stimulus for Transfer of Research Results
RDIP	Spanish acronym for National Research, Development and Innovation Plan
NRP	Spanish acronym for Spanish National Reform Programme
RTD+i	Research, Technology Development and Innovation
RDI	Research, Development and Innovation

RED.ES	Spanish acronym for Public Entrepreneurial Body ruled MITC
RETA	Spanish acronym for Andalusian Technological Network
ROPs	Regional Operational Programmes
RTD	Research and Technological Development
SGI	Spanish acronym for Secretary General for Innovation
SMEs	Small and Medium Enterprises
TF OP	Technological Found Operational Programme

1 EXECUTIVE SUMMARY

Spanish innovation policy involves cooperation between national and regional governments. The National Strategy of Science and Technology provides the main guidelines for central and regional governments for the coordinated formulation of National and Regional RDI (research, development and innovation) plans. Moreover central and regional governments maintain a constant dialogue on issues concerning large, specific scientific facilities and technology centres. Regional governments have their own RDI plans and their own policy instruments, launching public calls for tender specific to their own regions.

ERDF programmes contribute to national innovation policy through two large national operational programmes (OPs) which are principally targeted at Convergence regions: The Technological Fund OP, aimed at the business sector, and the Knowledge Based Economy OP, which focuses on boosting research, knowledge and technology transfer, essentially through grants and loans to research groups in public bodies and research centres (public or non profit organisations), some of which are delivered by the central government to Competitiveness regions through their regional operational programmes (ROPs). The ERDF contribution to regional innovation policy is principally carried out by funding regional RDI activities in the regional operational programmes.

There is a high quality report on the economic impact of reimbursable aid provided by the Centre for Technological Industrial Development (CDTI). The report shows that the aid provided increases RDI expenditure in firms by 32%. A high standard report was also produced to assess the INNOEMPRESA programme. In overall terms, the programme was judged to be in line with policy aims and managers of the SMEs supported assessed the results to be positive. The Madrid government has commissioned evaluations of the aid targeted at RDI projects in specific sectors: aerospace, biotech and ICT. In general, they provide evidence of the strategic coherence of the measures and their positive effects on SMEs and other firms in the sectors concerned, though in some cases (biotech sector) it is still too early to obtain evidence on the impact of the support

The main challenges faced by ERDF programmes include: a) Speeding up verification and certification processes, b) Implementing a coherent system of indicators, c) Overcoming the imbalance from the excessive centralisation of ERDF RDI measures aimed at Convergence regions and d) In Convergence regions ERDF funding for RDI activities is overwhelmingly concentrated in central government programmes (74% as against 55% in competitiveness and phasing-in regions). Specifically, with respect to the Technological Fund OP, all aid to business RDI projects is managed by the central government agency (CDTI) without any direct participation of regional authorities.

2 NATIONAL AND REGIONAL INNOVATION POLICY AND THE CONTRIBUTION OF ERDF

During the last decade Spain has done much to develop its innovation systems. ERDF funding has substantially contributed to this process (see annex D for further details). During the 2003-2008 period, the performance of Spain relative to other EU27 members with regard to non RD innovation expenditure, new-to-market sales and RD business expenditure improved, but the country lost ground in terms of the number of PhDs and in the flows of the technological balance of payments. Spain still underperforms when compared to its European counterparts, and remains within the group of moderate innovators.

2.1 NATIONAL AND REGIONAL INNOVATION POLICY

In line with the reinforced Lisbon Strategy the Spanish National Reform Programme[1] (NRP) has made a concerted effort to boost RDI activity through the INGENIO 2010 program[2], and to foment entrepreneurial activity and innovation in the business sector[3].

The RDI National Plans (RDIP), a series of four-year plans established by the central government, in place since 1988, are the main planning instruments for the Spanish innovation policy. However, regional governments (the Spanish Autonomous Communities) have wide-ranging powers in the fields of education (including higher education) and entrepreneurial and industrial policy, research and innovation. They are important players in Spanish RDI policy and all of them have their own regional RDI plans[4]. While the central government continues to be the key coordinator of innovation policy, the role of regional governments is highly significant.

Regional innovation policies have their own policy instruments and launch public calls which are specific for their respective territory. Regional ministries (education, economy, industry and innovation) and regional agencies (regional development agencies and other research and innovation-oriented bodies) are in charge of the implementation and delivery of regional innovation policies.

The configuration of the Spanish science, technology and innovation system raises coherence problems both "vertically" (the two-tier structure of central and regional innovation policies) and "horizontally" (17 regional innovation policies). The elaboration of the National Strategy of Science

[1] See Ordaz and Melgar (2009) for a more comprehensive description of PNR

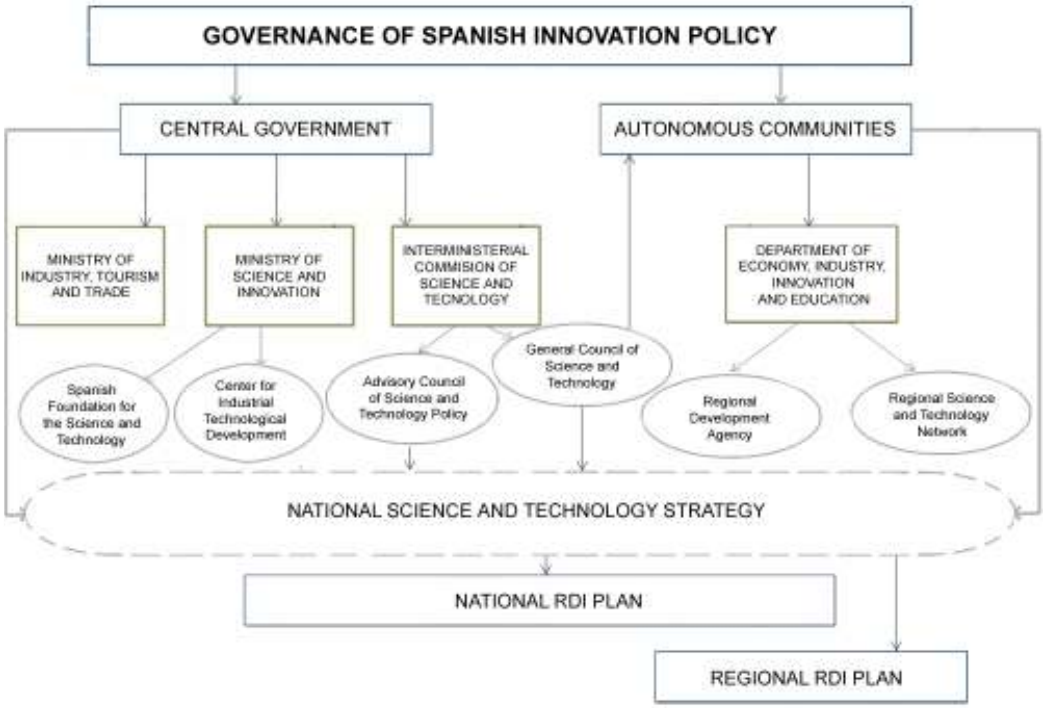
[2] INGENIO 2010 comes under axis 4 of PNR, "I+D+I". This program is broken down into three main sub programmes: CENIT (Innovative consortia), CONSOLIDER (top research team partnerships) and AVANZA (ICTs).

[3] Axis 7 of NRP includes an enterprise plan to promote innovation within firms and partnerships. Important measures include grants to firms for innovation activities (INNOEMPRESA), grants and reimbursable aid to boost innovative entrepreneurial partnerships (IEP) and other grants and reimbursable aid to strengthen the network of Spanish technological centres.

[4] See Annex C for the list of Spanish RDI Regional Plans.

and Technology (NSST) approved in 2007[5] establishes a cooperative framework for the central and regional governments setting out the main guidelines for the elaboration of National and Regional RDI plans.

Graph 1: Governance of Spanish Innovation Policy



SOURCE: Own elaboration based on Inno-Policy Trendchart, Progress Report Spain, 2009

Spain has recently undergone far-reaching institutional changes (university reforms, new "science" law) in order to facilitate the implementation and delivery of RDI policies and the governance of the system. Many of the powers and responsibilities with regard to innovation, previously held by disparate government bodies, have been brought together under the newly created Ministry for Research, Science and Innovation (MICIN). The ministry is responsible for international cooperation, institutional relations and RDI, the national planning of RDI, and technological transfers and entrepreneurial development.

The most important agency with regard to business orientated innovation policy in Spain is the Centre for Industrial Technology Development (CDTI), currently under the auspices of the Ministry of Research (MICIN). CDTI is a highly specialized centre for techno-economic evaluation and funding of business oriented RDI projects, including collaborative RDI projects to facilitate technological innovation and technology transfers to the business sector, as well as the promotion

[5] NSST was approved by the 3rd Conference of Regional Presidents (Chaired by the Ministry of Research and Innovation) on January 11th 2007. The current NSST, with a temporal working horizon until 2015, covers the 2008-2011 and the 2012-2015 RDIP.

of enterprise participation in international programs and the creation of technology based enterprises.

The Ministry of Industry (MITC) has retained its powers with respect to RDI policy in the fields of industrial development, trade, energy, SME innovation and entrepreneurial development, tourism, telecommunications and the information society. Higher education and research carried out at university centres now comes under the auspices of the ministry of education (ME).

The National Strategy for Science and Technology (NSST) gives an important role to the interplay between central and regional governments in the design of RDI policies. There are two councils linked to the central government inter-ministerial commission of science and technology (IMCST): the General Council of Science and Technology (GCST), in charge of the coordination of RDI national and regional policies, and the Advisory Council of Science and Technology Policy (ACSTP), which gathers opinions and advice from experts and main stakeholders (see Graph 1). National and regional RDI plans are coordinated through the guidelines contained in the National Science and Technology Strategy (NSTS). The main stakeholders take part in the process and the NSTS has been formally approved in a joint meeting with the heads of regional governments. The NSTS really plays a crucial role in the governance of Spanish innovation policy. However, as it will be explained below, an implementation problem arises in convergence regions because of the huge concentration of ERDF allocations on ambitious and high profile projects concerning business RDI, despite a substantial part of the entrepreneurial fabric in those regions still needs specific measures to stimulate the demand for this type of projects.

The national RDI plan establishes the actions to be undertaken by the central government and its agencies and applies to the whole of Spain. Regional governments carry out their RDI policies delivered and funded by their own resources, the European structural funds and other funding based on specific agreements with the central government. With regard to the task division logic between central and regional authorities, it should be stressed that, both in competitiveness and convergence regions, regional government RDI-related policies are put into practice through regional RDI plans that apply only to their own territories. Regional RDI plans take into account the national RDI Plan (and the policy measures delivered by central authorities). The regional plans are intended to deliver additional, specifically adapted policy measures for regional stakeholders, universities, research and technological centres and firms located in the region. Their main aims are to foment regional innovation systems by means of developing regional innovation networks (research and technological centres linked to universities, public bodies or non-profit institutions). They also aim to encourage research projects and innovation activities in research centres and the business sector and to foster returns from competitive RDI projects submitted by firms and research teams to national RDI programmes and European Framework programmes.

In the field of institutional relations, the experts reported that there was a constant dialogue between national and regional authorities regarding decisions on scientific and technological

infrastructure. Within the NSTS, an agreement between central and regional governments sets out the development of 24 new, large scientific infrastructures[6] which establishes the "map" of large-scale Spanish Scientific facilities covering a wide range of areas (from renewable energy and supercomputing centres to molecular imaging, proteomic and structural biology)[7].

Regional governments and regional RDI plans also play a very important role in defining the sectoral and technological priorities of regional innovation systems. National policy measures regarding research and technological centres and other infrastructures are implemented by means of agreements (covenants) with the regional government and the institutions involved (foundations, universities, etc.). Both in convergence and competitiveness regions, a series of agreements have been reached to set up technological and research centres (fire research centre, hydrogen and fuel piles, concentrated photovoltaic solar energy, grid technologies, several advanced study institutes for energy, food, social sciences etc.) technological campuses/parks (innovation and food technology park in Andalusia, technological city on the university campus of Vigo –Galicia–, a new engineering and innovation campus in Catalonia and so on).

Regional RDI plans draw up programmes specifically addressing regional universities and research centres to develop and consolidate research teams and fundamental and applied research potential. These programmes prioritize technological areas and sectors according to the technological needs and productive structure of the regional economy. They are implemented within a competitive framework by means of public calls and external expert assessments; however, competition is not as intensive as in the larger nationwide programmes targeting top research teams.

Regional RDI plans also deploy programmes which are specifically adapted to the needs and capacities of their innovation and business networks. They are aimed at those firms in the region that have the facilities to undertake RDI projects or enter into partnership or collaborative projects with research and technological centres or with other firms. There are many differences among the different programmes due to their regional features, but they all are intended to be accessible to small and medium sized regional firms and to encourage them to design and apply for new projects. The large-scale national programmes for RDI business projects require important minimum budgets; 250,000€ per firm and 5,000,000€[8] for integrated projects. The regional programmes, on the other hand, generally have much smaller minimum budget requirements (50,000€ for SMEs and 90,000€ for large firms in Galicia; 20,000€ in Madrid) or no minimum

[6] jointly financed by the central government and the government of the region in which they are located.

[7] For a detailed description of these facilities (many of which are aligned with the aims of the current national RDI plan and the European Framework Program for RD) see "the Spanish Roadmap for Unique Scientific and Technological Infrastructures" (MICINN, 2010).

[8] Recently this amount has been reduced to 3,000,000 to encourage applications from convergence regions in the Technological Fund OP.

budget requirement at all (Andalusia, Basque Country). The strategic sector of innovation in ICT is another good example: the national programme (Avanza, competitiveness RDI) requires a minimum project budget of 300,000€, while the regional ICT programme in Madrid requires only a minimum project budget of 50,000€.

The Spanish structure of innovation policy is consistent with the programming structure of the 2007-2013 Spanish National Strategic Reference Framework (NSRF). ERDF funding for regional RDI activities is embedded in the Regional Ops and covers a wide range of actions[9]. These actions are carried out by regional governments through public calls launched by their own branches (principally regional ministries of economy, industry and RDI and education, and regional development agencies).

The ERDF interventions carried out by the central government in Regional OPs under the convergence objective are grants to firms (SMEs), normally within the INNOEMPRESA program which aims to boost ICT technologies and innovative practices in SMEs (e-commerce, innovative management systems -Enterprise Resource Planning-, quality and environmental management systems, information safety, etc.). The ERDF actions carried out by the central government (Ministry of Research, Science and Innovation) under the Regional OPs in the competitiveness objective are grants for technological and research centres, technological parks and projects for knowledge transference.

The main ERDF funded actions carried out by central authorities come under the auspices of two large-scale national programmes:

a) The interventions of the Knowledge Based Economy OP (KBE) normally focus on research, knowledge and technology transfers mainly through grants and reimbursable aid to research groups in public bodies and research centres (public or non profit). Most of these activities come under the umbrella of the Ministry of Research, Science and Innovation (MICINN). This programme

[9] The main RDI measures carried out by regional governments with ERDF funding come under the following headings: 1) Innovation-friendly environment: a) grants to public bodies to improve public and social services in the fields of e-administration (in regional governments), e-health (regional health services), and e-learning (in the regional education system), b) grants to firms to incorporate ICTs in SMEs through public calls launched by regional governments, c) financial engineering (venture capital and participative loans) loans and interest rate bonuses to innovative firms, technological start-ups and spin-offs 2) Knowledge transfers and boost of innovation poles and clusters: a) support to research and technological centres (building or upgrading facilities, acquisition of scientific and technological infrastructures, projects to develop new knowledge and technology), grants to research groups to set up and operate cooperation networks, b) firms incentives to develop partnership projects, and/or to develop projects that use new or already existing knowledge, c) support to regional innovation agents (Business innovation centres, technological centres, etc.) to provide services to facilitate innovative activities in firms, and 3) fomenting applied research and product development: a) funding to research groups in universities and other research centres to carry out RDI projects, b) incentives to technological centres and other regional innovation agents for RDI projects (usually linked to specific regional problems and the development of strategic areas, covering a wide range of fields like environment and natural resources, biological problems affecting agricultural and fish production, photovoltaic energy, industrial technology, biotechnology, nanotechnology, c) grants to firms to undertake innovative activities and improve competitiveness, d) expert advice and funding for launching technological based enterprises.

is entirely devoted to convergence regions and to innovation policy. The biggest portion of the allotted amounts for innovation goes towards actions in the field of Knowledge transfers and as support for innovation poles and clusters (44.7%). The main interventions are in the form of grants and reimbursable aid to RD projects and research centres.

b) The Technological Fund OP is the main programme aimed at boosting RDI activity in the business sector. Most of TF funding goes to convergence regions in the field of knowledge transfers and support to innovation poles and clusters (80.8%). The main actions are in the form of reimbursable aid to firms for developing cooperative RDI projects and to technological and research centres for projects in partnership with firms. One tenth of the Technological Fund is devoted to competitiveness regions with more or less the same weight across policy areas.

ERDF funding for RDI policy measures in convergence regions is highly concentrated within the two large national Technological Fund and Knowledge Based Economy OPs. However, they do not take into consideration the specific regional needs of convergence regions (to which they are overwhelmingly targeted) and, with the exception of the measures implemented by means of covenants with regional bodies, they do not deploy operational coordinating devices to reinforce synergies with regional government RDI measures included in the ERDF Regional OPs for the convergence objective.

There is a certain imbalance based on the fact that a substantial portion of RDI policy funding for convergence regions is entirely managed by central government branches and agencies through two large national OPs. In convergence regions, ERDF funding for RDI activities is largely concentrated in the central authorities' administrative areas (74.25%, versus 54.78% in competitiveness and phasing-in regions). Particularly in the Technological Fund OP all aid to business RDI projects are managed by the central government agency (CDTI) without any explicit participation of the regional authorities. The RDI projects which can apply for CDTI aid under the Technological Fund OP are ambitious, high profile undertakings and designed to foster entrepreneurial excellence, so it is important that regional firms are encouraged to aspire to CDTI aid. However, the national and regional shares of ERDF funding for RDI policy in convergence regions certainly looks disproportionate given that the majority of firms in these areas still need prior preparation to acquire a realistic chance to access CDTI project funding on a large scale.

2.2 ERDF CONTRIBUTION ACROSS POLICY AREAS

Table 2.2.1 shows the amount of funding allocated within the two national OPs to innovation policy and to the policy areas in the convergence and competitiveness regions.

Table 2.2.1. - National Ops

	KBE	TF OP		TOTAL
	CONVERG.	CONVERG.	COMPETIT.	CONVERG.
TOTAL ERDF	1.465	2.024	225	3.489

INNO/ERDF	94,8%	98,7%	98,7%	97,1%
PA 1	25,3%	5,9%	4,2%	13,8%
PA 2	44,7%	80,8%	82,5%	66,0%
PA 3	30,0%	13,4%	13,4%	20,2%
INNO/ERDF = % Innovation on the Total ERDF				
PA = % Innovation in Policy Area				
PA 1 -> Innovation friendly environment				
PA 2 -> Knowledge transfer and support to innovation poles and clusters				
PA 3 -> Boosting applied research and product development				

With regard to regional Ops, the greatest proportion of funding is devoted to the convergence regions. In this type of region, central government interventions ("national" interventions in Table 2.2.2) are fully devoted to 'boosting applied research and product development'. The main instruments consist in grants to firms to develop innovative organizational practices and advanced management to develop systems of environmental and quality-management and to security management systems (INNOEMPRESA PROGRAM) and to invest in ICTs to develop e-business (AVANZA PYME). Actions undertaken by Regional governments have prioritized the same policy area (40.7%) and consist chiefly of grants to research groups in universities and public or non-profit research centres to carry out RDI projects, grants to firms to set up RDI units or undertake innovative investments and grants to SMEs to develop projects which improve products, processes and services.

Table 2.2.2. - Regional Ops

	ROPs					
	CONVERGENCE		COMPETITIVENESS		TOTAL	
	NATIONAL	REGIONAL	NATIONAL	REGIONAL	CONV.	COMPETIT.
TOTAL ERDF	5.573	10.654	316	1.379	16.227	1.696
INNO/ERDF	4,2%	15,1%	83,3%	51,6%	11,4%	57,5%
PA 1	0,0%	30,8%		23,4%	26,9%	17,1%
PA 2	0,0%	28,5%	60,4%	44,4%	24,9%	48,7%
PA 3	100,0%	40,7%	39,6%	32,2%	48,3%	34,2%
INNO/ERDF = % Innovation on the Total ERDF						
PA = % Innovation in Policy Area						

With regard to OPs in competitiveness regions, both central and regional government actions, principally address knowledge transfers and support for innovation poles and clusters with respective shares of 60.4 and 44.4%. Central government actions in the former policy area mainly consist of reimbursable aid to build and develop technological centres and grants to research centres to acquire scientific and technological equipment. The Central government also gives grants to develop technological parks and grants to universities and research centres to develop and operate offices for the transfer of research results (OTRIs). In turn regional governments give grants to build and equip technological and research centres, and grants to firms to undertake RDI and innovative projects in cooperation with other firms and technological centres and they also give grants to firms for projects that incorporate new-to-sector technologies.

Table 2.2.3. - National and Regional Ops

	TOTAL		
	CONVERGENCE	COMPETITIVENESS	TOTAL

	NATIONAL	REGIONAL	NATIONAL	REGIONAL	CONV.	COMPETIT.
TOTAL ERDF	9.062	10.654	541	1.379	19.716	1.921
INNO/ERDF	40,0%	15,1%	89,7%	51,6%	26,5%	62,3%
PA 1	12,9%	30,8%	1,9%	23,4%	18,4%	14,7%
PA 2	61,7%	28,5%	70,5%	44,4%	51,5%	55,0%
PA 3	25,4%	40,7%	27,6%	32,2%	30,1%	30,3%
INNO/ERDF = % Innovation on the Total ERDF						
PA = % Innovation in Policy Area						

Finally table 2.2.3 synthesises the information in the previous two tables summing up ERDF funds for innovation in national and regional OPs and breaking them down into convergence and competitive objectives.

It is worth mentioning that an important portion of infrastructures for technological and research centres, as well as services to facilitate RDI and innovation services to SMEs, are included under the policy area of knowledge transfers (they aim to do so in the short or medium run). However knowledge transfers (in the strict sense of Field of Intervention code 2) are considerably lower, particularly in convergence regions.

The Iberian Nanotechnology Lab (INL) under construction in Braga in the Region Norte of Portugal represents a singular case of inter-regional cooperation with respect to innovation policy co-financed by ERDF under the territorial cooperation objective (Territorial Cooperation Spain-Portugal OP).

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

ERDF programme managers have prepared the information for the 2009 Annual Implementation Reports (AIRs) which were submitted to the monitoring Committees in June, but are still pending approval. Hence, the evidence available with respect to the performance of innovation measures co-financed by ERDF in the present report is based on the programming documents, the selection criteria for operations and the 2008 AIRs. However when possible information from 2009 AIRs was used to complete this part of the report.

The influence of European policy guidelines and ERDF funding on the rapid increase of RDI expenditure in Spain (See Annex D for further details) should be mentioned. This is basically due to: a) the awareness and sensitization with respect to the RDI priority targets highlighted by European programming guidelines and benchmarks, and b) The "wealth effect" derived from the budgetary enlargement provided by EU co-financing. The latter can be estimated by looking at the share of ERDF funding in the RDI expenditure of the central government. Taking into account the annual ERDF funding for innovation (around 940.8 million €, 515.4 in multiregional programmes), ERDF funding for innovation ranges between 24.8% (2007) and 26.3% (2010)[10] of R&D expenditure in the Spanish central government budget. ERDF funding has had a positive impact on reinforcing

[10] These figures are respectively 13.6% (2007) and 14.4% (2010) if we consider ERDF funding for innovation of multiregional programmes only.

RDI investments in Spain reflected by the rapid increases in RDI public expenditure (see Graph D2) and the rapid growth of its ratio to the Spanish GDP (Graph D1). This process has taken place throughout Spain (see Map D1) and most convergence regions have experienced important increases in R&D levels, even though there is still an important gap with respect to European benchmarks and the most advanced Spanish regions.

With regard to the evaluation of the impact of the programmes, it is still too early to undertake an accurate analysis. However, some general comments based on the evaluations and benchmarking processes launched under the Lisbon strategy can be made.

The Lisbon strategy has fostered evaluation practices in Spain. In order to carry out these evaluations monitoring and evaluation system (SISE) was set up within the Spanish system of science and technology[11]. It focuses on the evaluation of the national RDI plan and the main magnitudes and indicators of the Spanish RDI system. The Spanish observatory for knowledge and innovation (ICONO)[12] furnishes detailed monitoring information concerning the budgetary implementation of the national RDI plan. It provides useful information on the implementation of the measures but does not provide results and impact indicators and does not undertake any assessment and evaluation of measures.

In the current programming period Spanish ERDF managers realize that intermediate evaluations will only be required for measures with activated alert indicators. However, the ongoing monitoring system has not yet been put into practice. So, at present the scheduled evaluations are mainly the strategic and thematic ones. To this end, the ongoing strategic report on the national strategic reference framework (NSRF Strategic Report, 2009) has already been written. The report is of a high standard, but focuses principally on the strategic aspects of regional disparities and on the coherence of the strategy, concluding that ERDF strategy and objectives are sufficiently coherent to address the main problems of innovation policy in Spain and, in addition, are quite able to deal with the effects of the present economic downturn. However, it does not cover the evaluation of measures in innovation policy and implementation or indicators are insufficient to carry out an accurate evaluation.

There is a good evaluation report on the national RDI Operational Programme for Objective 1 (Convergence) regions in the previous programming period 2000-2006 (Infyde, 2005)[13]. The report refers to the operational programme as a whole and does not undertake any sophisticated, in-depth analysis of any particular action, but expresses sensible, sound conclusions. It assesses

[11] See Informe SISE 2008, Fundación Española para la Ciencia y la Tecnología (FECYT)

[12] Balance del Plan Nacional de I+D+I en 2008 y prioridades de gasto público en 2009, ICONO, FECYT, Ministerio de Ciencia e Innovación. (Assessment of the national I+D+I plan for 2008 and public spending priorities in 2009, Ministry of Science and Innovation).

[13] "Actualización de la Evaluación Intermedia del PO integrado FEDER-FSE de I+D+I (Objetivo 1) 2000-2006", Infyde, 2005.

most of the RDI measures deployed in the current programming period under the two large national RDI OPs (Infyde, 2005, pag. 70-74) positively and rightly highlights one of the main challenges/flaws of these programmes for Objective 1 (Convergence) regions: little attention is paid to the specific needs of these regions and the participation of regional authorities in insufficient (Infyde, 2005, pag. 122-125).

The evaluation culture within Spanish administrative bodies still has to assert itself. However some evaluation reports on the interventions undertaken under the national and regional RDI plans are of good quality. The following are directly related to innovation measures financed by ERDF in the current programming period (see Annex E for further details)[14]:

1. Policy measure: reimbursable aid for business RDI projects, awarded by the Centre for Industrial Technological Development (CDTI). This action was included in the 2000-2006 national RDI OP for Objective 1 (under the measure 2.2, RDI Projects) and remains one of the core instruments in the current Technological Fund OP. This measure was considered very positive by the upgrade progress evaluation of the 2000-2006 national RDI OP for Objective 1 (Infyde, 2005 pag. 71). In the context of the ex-post evaluation of the 2000-2006 period, work package 4 on Structural Change and Globalization, contains a Case Study Report for the Basque Country in which some RDI projects, carried out by SMEs and large firms with the cooperation of technological centres, are analyzed in order to obtain evidence on the effects of CDTI reimbursable aid. The evaluation showed that the combination of technological partnerships (mostly with centres integrated within the

[14] The references to the evaluation studies mentioned below are in order of appearance in the main text the following ones: Faíña, J.A., López-Rodríguez, J., and Montes-Solla, P., (2009), "Work Package 4 - Structural Change and Globalisation: Case Study Basque Country (ES)", European Commission; . Huergo, E., Trenado, M. y Ubierna, A., (2008), "Impacto de los créditos blandos en el gasto en I+D+i empresarial. La empresa española y el apoyo del CDTI a la I+D+i", Working Paper, Dpto. de Estudios, CDTI; Huergo, E., Trenado, M. and Ubierna, A., (2009), "The impact of soft credits on business R&D expenditures: Spanish firms and CDTI loans for R&D projects", Working Papers no.07; CDTI (2009), "Impacto de la I+D+i en el sector productivo español", Ministerio Ciencia e Innovación; MITC (2009) "Evaluación de impacto del programa INNOEMPRESA en las Pymes españolas", Report made by for Avantia XXI for DG PYME, Ministerio de Industria, Turismo y Comercio; DG Innovación Tecnológica (2008 a), Comunidad Autónoma de Madrid, "Estudio de la incidencia e Impacto de las Ayudas Dirigidas al Fomento de la Innovación Tecnológica del Sector Aeroespacial de la Comunidad de Madrid", Report made by Innovaygana S.L. for DG Technological Innovation, Madrid Autonomous Community; DG Innovación Tecnológica (2008 b), Comunidad Autónoma de Madrid, "Estudio del Impacto de las Ayudas Dirigidas al Sector de la Biotecnología de la Comunidad de Madrid", Report made by Altran cis for DG Technological Innovation, Madrid Autonomous Community; DG Innovación Tecnológica (2008 c), Comunidad Autónoma de Madrid, "Informe de Evaluación de las Convocatorias TIC", Report made by NOvadays S.L. for DG Technological Innovation, Madrid Autonomous Community.

Basque innovation network) and CDTI loans allowed SMEs to carry out RDI projects successfully. Moreover the CDTI research department has commissioned some sophisticated econometric studies in order to evaluate the impact of its aid on business RDI projects. They use a counterfactual methodology consisting of comparing the relative performance of the set firms receiving aid with a control group of non-aided firms with similar features, in order to disentangle the effects that CDTI reimbursable aids have had on the propensity to carry out innovative investments by firms. The control group of non-aided firms have been built upon the micro-data from the Technological Innovation Survey of the Spanish Statistical Institute (INE). The results of the study provide robust evidence on the effects of CDTI reimbursable aid, namely that the aids increased the probability of firms undertaking internal RDI expenditure by 32.4%. Some of these results have been published in leading academic journals and were compiled and published in a high quality report (See annex E on the CDTI report for further details).

2. Policy measure: Grants to SMEs to develop innovative organizational practices and advanced management (principally by outsourcing experts) awarded through the INNOEMPRESA action included in axis 2, FOI code 9, of the Regional OPs for the convergence objective. The evaluation was commissioned by the beneficiary body: DG for SMEs, Ministry of Industry, Tourism and Commerce. The methodology of the evaluation was based on a questionnaire sent to a sample of beneficiary firms (107, being the error margin 11% with confidence intervals of 90%) aimed to analyze the qualitative impact of firms' participation in the programme. The questionnaire was made of 16 questions broken down into three blocks (description of the participants profile, results and impact in the different business areas, and assessment of intermediary body and the access to the program). All in all, the intervention has been consistently carried out in line with its aims and, the most relevant results for SMEs (knowledge, technology and productivity improvements) were given a positive evaluation by the managers of beneficiary firms. However, the limited managerial capabilities of small enterprises in Spain seem to be an important factor preventing the actions to achieve a positive impact on sales and markets. The quality of the report was good.

3. Policy measure: Grants to viability studies, industrial research and experimental developments in the Aerospace, Biotechnology and ICT sectors. These actions were included in the 2000-2006 ROP of objective 2 for Madrid (under the axis 1, measure 1, support to firms) and are included in the current ROP of Madrid (competitiveness objective) under the axis 1, FOI code 07, investments in firms which are directly linked to research and innovation. The actions are delivered by the DG for Technological Innovation of the Madrid regional government which has commissioned three evaluation reports, one for each of the above sectors for the period 2005-2007. They are high quality evaluations and their methodology is based on the corresponding databases of beneficiary firms,

surveys and questionnaires given to their managers. All in all, they provide evidence on the strategic coherence of the actions and the positive effects on SMEs and other firms in these sectors, though in some cases, in the biotech sector for example, it is still too early to obtain evidence on the impact of the actions (for further details seen Annex E).

3.1 ACHIEVEMENTS UNDER THE CONVERGENCE OBJECTIVE

A manual containing a full set of indicators has been elaborated. However, so far the information available on result indicators is still very scarce and is intended to be released at axis level, which makes it very difficult to combine with other information in the report particularly with the "achievements" of the various interventions undertaken. The main problem regarding to indicators is the lack of data collection. The collection system has not yet been put into practice. Another problem we have found arises from the fact that in some cases, when indicators are aggregated at the axis level can include heterogeneous items.

The implementation levels of the Knowledge Based Economy OP, as a proportion of output of expected targets in 2010, range from 1.28% to 65.12% (after eliminating the maximum and minimum values), although many indicators have void values (0.00). Moreover, indicators in some instances add together heterogeneous actions, as it is the case of beneficiary centres which involve a heterogeneous group of centres, ranging from tele-centres and social integration centres to university research centres. Apparently 9 new projects to build research centres were granted, 8 of which are for universities in Andalusia (6) and Galicia (2) and a remaining project for the Extremadura regional government, but there is little information about current states of execution.

A total number of 2401 research projects have been granted to university and public research centres by the DG for Research and Management of the National RDI Plan. In addition, 24 cooperation agreements were signed for building and equipping a variety of research centres, specializing in agro-technologies, information technology, mathematics, nanosciences, molecular materials and biomedicine. The implementation of 146 RD projects in biomedicine, health sciences and telemedicine and 206 approved proposals for the acquisition of scientific and technical infrastructure for RD agrifood centres are worth mentioning.

Map 3: Digitalization of clinical records co-financed by ERDF: Implementation status in Spanish convergence, Phasing out and Phasing in regions

Map 4: Implementation status in Spanish convergence, Phasing out and Phasing in regions

Source: KBE OP, AIR 2008.

Source: KBE OP, AIR 2008.

Important achievements have been reported in promoting e-services in public administrations such as: a) e-learning in primary and secondary school under the formula of "internet en el aula" (internet in the classroom) and by boosting didactic contents in educational centre networks; b) e-health by means of digitalization of patient clinical records, appointment delivery systems and the electronic implementation of medical prescriptions; c) digitalization of civilian registry offices. The following maps reflect the progress made in e-health and civilian registry offices up to 2008.

In the Technological Fund OP output indicators are very low with respect to their targets for 2010[15], ranging from 0.98 to 8.38%. Moreover, the information captured by the indicators is not consistent with the number of projects and operations reported. The analysis of the operations included in the AIRs shows that the number always exceeds the values assigned to the corresponding output indicators. With regard to employment, this estimation was not feasible since the reports do not provide any information about employment.

At present, the delay in the launching of the projects and also the delay in the setting up of the processes to gather the information on the outputs and results achieved by ERDF aid managed by CDTI make it difficult to evaluate implementation. Nonetheless CDTI started to approve projects at the end of 2008 (14 projects approved). During 2009 and the first quarter of 2010, the CDTI portfolio rose to 1,081 approved projects. These projects amount 1,090 million € of expected investment of which 222 million € is the ERDF funding involved. The financial weigh of the CDTI project portfolio is evenly distributed between convergence (including phasing-out) and competitiveness regions (including phasing-in).

Information in the AIRS regarding Regional Ops in convergence regions is scarce and fragmented. This makes coherent and intelligible grouping and summarizing of information about achievements difficult. For example, in the reports of the 4 convergence communities we can

[15] Data for the indicators refer to convergence regions, phasing-out and phasing-in because, as the reports do not include disaggregated data, it was not possible to separate the data corresponding to the phasing-in regions.

gather information about interest rate bonuses but only one of them specifies the number of beneficiary firms. On the other hand, under the heading of priority implementation, there are many actions with no information about the number of projects or beneficiary firms. Moreover, for similar actions in different autonomous communities, the information specifies the number of projects in some regions, whereas in others the information is about beneficiaries, thus making it impossible to tie the results together. Another difficulty arises from the fact that apart from those actions implemented by the same bodies within the central government or with nation-wide activities, actions differ greatly across regions.

Moreover, most of the information reported in AIRs is of a bureaucratic nature and looks at technicalities and administrative procedures (text of the public calls, information about files that have already been opened, foreseen expenditure and commitments, etc.).

In spite of these problems, an effort has been made to collect some disconnected information about some expected outputs in different fields.

The regional operational programmes contain 5 projects that involve the building and upgrading of technological centres in the regional operational programs (in the Castilla-La Mancha, for instance, the centre for hydrogen and fuels has a 30 Million € budget). However, it is important to bear in mind that in some instances the partnership agreement has already been signed but the construction work has not yet begun, in others the construction has started and in others still there are delays due to land expropriation problems. Also in the TF OP report it is mentioned a number of loans to carry out viability studies for technological centres linked to specific sectors (Metal in Castilla-La Mancha, book editing sector in Galicia and so on) and also for a handful of enterprise associations of SMEs (association for innovation and entrepreneurial development, AIDECA, in Castilla-La Mancha) have been granted.

Setting up of campuses and technological parks: so far, 5 have being reported in the fields of food technology (PITA, SA in Almería, 2.2 million € budget), Guadalajara scientific and technological park and the Guadalajara campus (with a budget around 130 million €), "Cidade do mar" scientific campus and the technological city in the Vigo university campus (foreseen expenditure 2007-2009 reaches around 4.9 million €).

The Andalusia regional development agency, IDEA has constituted a JEREMIE fund with an assignment of 164.5 million € of ERDF funding.

3.2 ACHIEVEMENTS UNDER THE COMPETITIVENESS OBJECTIVE

The Knowledge Economy OP includes phasing-in regions but does not cover competitiveness regions. Within this OP, 68 RD projects have been carried out in the fields of biomedicine, health sciences and telemedicine (verified expenditure up 2009 reaches almost 1 million €). Furthermore, DG for Research and Management of RDI National Plan carried out 907 R&D projects (116.3 million € have been granted). With regard to research infrastructure, in 2009 a collaboration agreement was signed for the building of the Renewable Energy Development Centre in Castilla y León (3.2

million € budget). In addition, the National Institute of Agricultural and Food Research approved 62 proposals for the acquisition of scientific and technical infrastructure for RD agrifood centres (0,7 million € of foreseen expenditure).

While focusing principally upon convergence regions, the TFOP is also applicable in the (pure) competitiveness regions, but for these all indicators have the value 0.00. Within the TFPO there were 31 projects for complementary actions and for the development and strengthening of the activities of the Offices for the Transfer of Research Results (2.3 million € expenditure); and also 71 projects to stimulate the transfer of research results (4.6 million €). In addition, 21 automotive companies were beneficiaries of subsidies and loans to RDI projects (12.7 million €).

Similar problems were encountered regarding Regional Ops in competitiveness objective. 2008 AIRS do not offer significant information on achievements. Again, information is fragmented and scarce. The process of setting up and equipping technological and research centres in Madrid, which is an example of key intervention in a regional innovation system, was carried out in the following way. The agreements among the central government ministry of science, the regional government and the foundations of the Madrid institute of advanced studies (IMDEA) were signed prior to the building of two technological centres (in the field of materials engineering -IMDEA Materials, 14 million € budget, 50% ERDF- and energy -IMDEA Energy, 5 million € budget, 50% ERDF-) and the renovation of the centre for social sciences (IMDEA Social Sciences, 2.6 million €, 50% ERDF). The Madrid regional government has also set up similar institutes in the fields of food (IMDEA-Alimentation) and water (IMDEA-water). In Catalonia, the national and regional governments have signed agreements to support research centres linked to universities (a budget of 43.3 million €), and the ministry of science MICIN has funded several CONSOLIDER projects (0.9 million € in 2 RD projects -at the highest level of excellence- for building biomedical research centre networks), but, once again, information is fragmented, ambiguous and refers merely to administrative procedures.

The Madrid development agency (IMADE), provides grants to firms for innovation projects (14.6 million € committed budget) and the regional government awards grants to firms for technological innovation projects in the strategic sectors of aerospace (5.3 million € advanced payments budget), biotech (5.9 million € advanced payments budget) and ICT (1 million € advanced payments budget). So far the information contained in the AIRs only refers to the public calls, the selection criteria , and the amounts that have been allotted and projected for the funding.

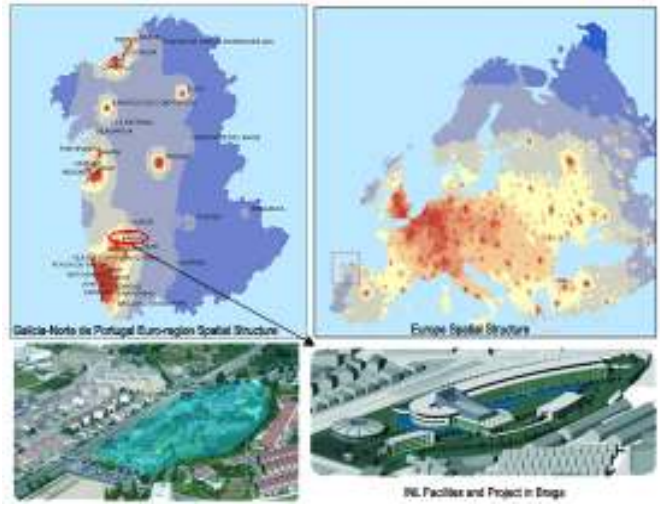
The Catalonia development agency CIDEM – ACC10 grants aid to start-ups and spin-offs and to SMEs to enhance productivity by means of ICT projects (the agency counts with a budget of 100 million € -50% ERDF- for these actions). The Catalonian Institute of Finance (ICF) has set up a JEREMIE financial instrument that deals with co-investment, warranties and micro-loans (total eligible budget 50 million €, 50% ERDF). The Regional Government awards grants for scientific equipment and infrastructure in some technological centres linked to universities, but the information contained in the AIRs is fragmented and merely bureaucratic and refers to projected expenditure (total eligible budget 64.8 million €, 50% ERDF).

It is also worth mentioning that in the Basque country several initiatives are being carried out (the building of the Automotive Intelligence Centre (42 million € for the first phase of the project), and a project providing business centre services and new technologies, as well as two strategic projects in nanotechnology (CIC Nanogune), and life sciences and biomaterials (CIC Biomagune). (foreseen expenditure for 2009 in each of these two centres is around 1.1 million €)

In Valencia many activities are run by the regional entrepreneurship development agency (IMPIVA), and some of the most important of these include the building and equipping of the Valencian Institute of Tourism Technology (4.4 million €, expected eligible expenditure up to 2009), the development of an intelligence system for the furniture sector and the urbanization for the science and technology park dedicated to innovation and technology transfer in Castellón (4.1 million € total budget).

3.3 ACHIVEMENTS UNDER THE TERRITORIAL COOPERATION OBJECTIVE

Map 2: INL location and European Spatial Structure



Source: Own Elaboration.

The construction of the International Iberian Nanotechnology Laboratory (INL) is co-financed with 30 million € of ERDF funding within the Cross-Border Cooperation Programme Spain Portugal 2007-2013. The overall objective is to build a centre of excellence in applied nanotechnology research, with a positive impact on the region's competitiveness, the promotion of skilled labour, new enterprises, and the development of the relational model Administration-INL-Company-University. The project, submitted by INL includes the construction of competitive scientific infra-structures with the goal of attracting top researchers in the field of nanotechnology. The new research facility occupies more than 47,000 square meters, 20,000 of which are exclusively dedicated to scientific activity.

4 CONCLUSION: MAIN CHALLENGES FACED BY COHESION POLICY PROGRAMMES

From the operational standpoint, the principal challenges faced by Spanish ERDF programmes include the need to speed up the processes of verification and certification, and to finish setting up the application FONDOS 2007 and the corresponding regional authority applications. From the point of view of evaluation, the main challenge is to put into practice the operational indicator

system. To this end, the elaboration of a manual[16] containing a full set of indicators is a step forward; however, so far, the information on operational indicators is still very sketchy and has been released at the axis level which gives rise to additional coherence problems with respect to the rest of the information contained in the Annual Implementation Reports.

In addition, the indicators at the axis level add together heterogeneous items that become almost nonsensical when aggregated.

The analysis of AIRs and the information on the measures that have been implemented, show that important advances must still be made to foment a culture of monitoring within Spanish management. However e-administration procedures to submit and evaluate applications are widespread and have facilitated increasing amounts of information on granting aid through public calls.

Another important challenge lies in the participation of regional authorities of convergence regions in the large national RDI programmes addressed to them. This is an important issue already raised in the evaluation report on the national RDI program of the previous 2000-2006 period (Infyde, 2005). The problem regarding delivery and implementation of ERDF in the current programming period must also be taken into account. It is important to set up and effectively put into practice the Network of Innovation and RD Policies (NIRDP) designed within the National Strategic Reference Framework (NSRF).

ERDF funding for innovation policy in convergence regions is highly concentrated within the two large national RDI OPs targeted at this kind of region (the Knowledge Based Economy and the Technological Fund OPs). However these programmes do not consider the regional-specific needs of convergence regions nor the design of accompanying measures to reinforce synergies with regional government actions in ROPs. Moreover, no pro-active operational mechanisms to coordinate the efforts by regional and central authorities effectively have been put into practice. Exceptions include the guidelines of the 2007 National Science and Technology Strategy and the Spanish road map for large scientific and technological facilities, as well as for the actions in scientific and technological centres, campus/parks and offices for knowledge transfers implemented by means of covenants with regional authorities.

With respect to RDI policy measures in the convergence objective, the Network of Innovation and RD Policies (NIRDP) is the only instrument available and is clearly insufficient to meet the coordinating needs that arise from the high concentration of ERDF funding for innovation policy in the measures exclusively designed and managed by the central government and its agencies. This is particularly important when it comes to the high share of ERDF funding for RDI in convergence regions allocated to ambitious, high profile collaborative business projects and almost exclusively

[16] DG Fondos Comunitarios (2009 b).

designed and managed by the CDTI. This problem came to light in the evaluation of the national RDI program of the previous 2000-2006 period and in the ex-ante evaluation of the Technological Fund OP.

The intensity of the concentration of funding targeted at the convergence regions in the centralized aid CDTI may involve certain implementation risks. At present, and with regard to the actions to be carried out by the CDTI, this has not only given rise to a low level of certified expenditure, but also to a delay in the launching of the projects. An important effort must be made to cope with the situation and speed up the implementation process. It is important to reinforce the participation of regional authorities in the management of the program by implementing devices which allow the regional managers in charge to actively participate in the submission processes and/or partially deliver these actions through similar kinds of projects granted under regional RDI plans.

The strategic evaluation of the NSRF in 2009 reaffirmed the strategic coherence of the RDI policy measures co-funded by the ERDF to counter the unfavourable effects of the current economic downturn. This situation has considerably reinforced the comparative advantages of financial aid provided by the measures aimed at fostering the innovation activities of firms. Comments made by the experts have confirmed that the number of applicants (firms) increased during the years 2008 and 2009. On the other hand, there have been some warnings of a reduction in the private demand for RDI investments (around 40% in 2009), although current business RDI expenditure has only shrunk by 2.4%. This is interpreted (report Cotec, 2010) as positive indication of the interest of innovative companies in maintaining their RDI policies.

The current financial situation in Spain has led to a process of radical readjustment limiting public expenditure and extraordinary measures to cut back on public spending were approved by the Spanish Parliament last May 27th. This critical juncture makes further reductions in private and public RDI investments likely. In particular, the fiscal adjustment process, recently undertaken by the Spanish government, might involve reductions in the availability of public funding to co-finance ERDF actions. While the debate surrounding these factors has barely begun, it may not be premature to review the strict criteria impeding the private co-funding of ERDF interventions.

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

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

Programmes	Total ERDF resources for innovation	Innovation support as % of total ERDF	Main initiatives* being undertaken or implemented
TF PROGRAMMES Comp+Pin Conv+Pout	2.220.280.334 555.070.085 1.665.210.249	98,75% 98,75% 98,75%	- JEREMIE fund ICO (Instituto Crédito Oficial) Cooperative entrepreneurial R&D by means of the so called "integrated projects" Grants to create and boost technological centres in the private sector Purchase and upgrade infrastructures and scientific and technical equipment Consolidation and creation of Technological centres

			Scientific and technological parks Technology transfer offices (OTRIs) Partnership consortia among firms, training centres, technological centres and public and private research units AEI programme (Entrepreneurial innovative consortia programme) Pollution prevention technologies, integration of clean technologies into the firm Boosting design and ICTs innovation in SMEs
KBE PROGRAMMES Comp+Pin Conv+Pout	1.388.876.619 215.221.549 1.173.655.070	94,79% 94,79% 94,79%	-Create and enlarge technological centres -Competitive projects for scientific-technological equipment granted to research centres -Building and equipping R&D centres -Grants for competitive research projects -Consolider-Ingenio projects -Digital an electronic procedures in public administration and e-learning
REGIONAL PROGRAMMES Comp+Pin *ROP Aragón* *ROP Baleares* *ROP C Valenciana* *ROP Cantabria* *ROP Castilla y León* *ROP Cataluña* *ROP Islas Canarias* *ROP La Rioja* *ROP Madrid* *ROP Navarra* *ROP País Vasco* Conv+Pout *ROP Andalucía* *ROP Asturias* *ROP Castilla la Mancha* *ROP Ceuta* *ROP Extremadura* *ROP Galicia* *ROP Melilla* *ROP Murcia*	2.819.932.862 1.593.353.891 113.154.984 45.318.283 382.424.101 68.088.081 84.593.118 315.904.265 151.726.743 22.841.113 210.253.038 39.659.930 159.390.235 1.226.578.971 481.268.968 47.357.667 200.437.929 643.700 110.882.957 296.700.627 3.093.015 86.194.108	15,73% 32,79% 69,38% 42,28% 28,83% 76,48% 10,34% 46,52% 14,89% 70,02% 62,40% 84,19% 66,25% 9,39% 7,03% 11,98% 13,93% 1,42% 7,02% 13,54% 7,06% 16,45%	INNOEMPRESA programme Incorporation of ICT technologies to firms RDI infrastructure in research centres Cooperation networks among SMEs Grants and bonuses for SMEs access to research and technological development services Aids for research groups Grants to SMEs for developing products and production processes cleaner and more environmentally friendly Grants and bonuses for investments related to innovative activities in firms e-services for the citizens (e-health, e-administration, e-learning) RDI infrastructure and equipment Boosting cooperation networks among SMEs, LEs and universities and research groups SME grants for RDI projects Direct support to technical viability studies for developing R&D projects Direct and indirect support to cooperation platforms, R&D internationalization Grants for RDI projects carried out by research groups Support to innovative technologies in R&D centres and firms and spin-offs
Total Convergence Obj.	4.173.809.541	24,00%	
Total Competitiveness Obj.	2.412.674.081	42,57%	
Total country	6.586.483.622	24,76%	

Source: Own elaboration based on Data provided by MEH and Core Team, Programming Documents and AIRs.

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

a - Convergence Objective (including Phasing out)

Policy area	Categorisation of expenditure (corresponding FOI codes)	Total ERFD	%	
			Reg. share	Nat. share
Innovation friendly environment	05 11 13	108.457.038 42.012.242 506.739.811	4,74% 61,67% 50,27%	95,26% 38,33% 49,73%

	14 15 SUBTOTAL	78.695.035 20.442.466 756.346.592	63,89% 100,00% 47,14%	36,11% 0,00% 52,86%
Knowledge transfer and support to innovation poles and clusters	02 03 04 SUBTOTAL	967.773.618 150.124.283 996.050.371 2.113.948.272	17,27% 22,27% 4,84% 11,77%	82,73% 77,73% 95,16% 88,23%
Boosting applied research and product development	01 06 07 09 SUBTOTAL	553.037.272 177.860.696 172.125.485 292.125.973 1.195.149.426	36,27% 28,41% 45,34% 31,58% 35,26%	63,73% 71,59% 54,66% 68,42% 64,74%
TOTAL		4.065.444.290	25,25%	74,75%

Source: Own elaboration based on Data provided by MEH and Core Team.

b - Competitiveness and Employment Objective (including Phasing in)

Policy area	Categorisation of expenditure (corresponding FOI codes)	Total ERFD	%	
			Reg. share	Nat. share
Innovation friendly environment	05 11 13 14 15 SUBTOTAL	58.399.705 61.110.378 240.781.250 18.111.637 4.545.520 382.948.490	60,19% 95,16% 80,81% 71,21% 100,00% 79,73%	39,81% 4,84% 19,19% 28,79% 0,00% 20,27%
Knowled transfer and support to innovation poles and clusters	02 03 04 SUBTOTAL	647.825.487 111.665.611 478.073.197 1.237.564.295	46,24% 59,21% 33,49% 42,49%	53,76% 40,79% 66,51% 57,51%
Boosting applied research and product development	01 06 07 09 SUBTOTAL	272.037.748 66.712.794 129.193.124 275.189.074 743.132.740	38,33% 29,34% 78,31% 86,72% 62,39%	61,67% 70,66% 21,69% 13,28% 37,61%
TOTAL		2.363.645.525	54,78%	45,22%

Source: Own elaboration based on Data provided by MEH and Core Team.

ANNEX B – INTERVIEWS

Company/Institution	Name	Position	E-mail	Type of Interview	Date
DGPYME	Gervasio Cordero	Subdirector general de crecimiento empresarial	gcordero@mityc.es	*	26/04/2010
CDTI	Carlos Durán	Departamento de Promoción de la Innovación	duran_carlosj@cdti.es	*	28/04/2010
Dirección General de Fondos Comunitarios, Ministerio de Economía y Hacienda	José Luis Kaiser	Subdirector Gral. Progr. Territorial y Evaluación de Programas Comunitarios	jkaiser@sgpg.meh.es	*	29/04/2010
Dirección General de Fondos Comunitarios, Ministerio de Economía y Hacienda	Anatolio Alonso Pardo	Subdirector General Adjunto de Administración del FEDER		*	29/04/2010
Secretaría de Estado de Comercio, Ministerio de Industria, Comercio y Turismo	David Azcárate Corcuera			*	29/04/2010
Instituto Madrileño de Desarrollo (IMADE)	Teresa González González	Subdirectora División de programas de Innovación		*	29/04/2010
Autoridad de gestión SUDOE	Jesús Bedoya	Subdirector General de Economía Cantabria		**	03/05/2010
Gobierno Vasco	José Antonio Varela Alonso	Jefe Servicio Política Regional	varelaja@ej-gv.es	**	05/05/2010
D.X. Planificación e Fondos. Xunta Galicia	F. J. Rodríguez Seijo			*	05/05/2010
D.X. Planificación e Fondos. Xunta Galicia	Juan Conde Fontao	Jefe Servicio		*	05/05/2010
D.X. Planificación e Fondos. Xunta Galicia	Antonio Linares			*	05/05/2010
Secretaria General de Innovación, MICINN	Roberto Sánchez	Jefe de Gabinete		**	06/05/2010
D.G. para el Desarrollo de la Sociedad de la Información	Luis Prieto Cuerdo	S.G.A. Economía Digital		**	07/05/2010
D.G. Economía, Gobierno Vasco	José Antonio Varela	Jefe de Fondos Europeos		**	07/05/2010
Gobierno de Asturias	Rodolfo Martín Lobeto	Gerente de Programas Comunitarios	rodolfo.martinlobeto@asturias.org	**	07/05/2010
Subsecretaría MITC	Diego Martínez Martín	Asesor Gabinete Técnico	djmartinez@mityc.es	**	10/05/2010
Junta de Andalucía	Patricia Eguilior	DG Fondos Europeos y Planificación		**	10/05/2010
D.G. de Economía, Estadística e Innovación Tecnológica, Comunidad de Madrid	Ángel Ballesteros González	Técnico	angel.ballesteros@madrid.org	**	10/05/2010
Gobierno de Valencia	Rosa Ramírez Quintana	Jefa Área de Economía y Fondos Comunitarios	ramirez_rosa@gva.es	**	14/05/2010
S.G. de Fondo Cohesión y Cooperación Territorial Europea, Ministerio de Economía y Hacienda	Ángeles Holgado Cristeto	Secretario General de Fondo Cohesión y Cooperación Territorial Europea	aholgado@sgpg.meh.es	**	17/05/2010
D.G. de Fondos Europeos, Junta de Andalucía	Adolfina Martínez Guirado	Direcc. Gral. de Fondos Europeos	adolfina.martinez@juntadeandalucia.es	**	18/05/2010
Secretaria General de Innovación, MICINN	Joaquín Fernández Dapena	Vocal asesor de la unidad de apoyo		*	20/05/2010
S.G. de Innovación, y de D.G. Transferencia de Tecnología y Desarrollo Empresarial, MICINN	Maria Paz Díaz Cremades	Asesora Gabinete Técnico		*	20/05/2010
D.G. Transferencia de Tecnología y Desarrollo Empresarial, MICINN	Bárbara Fernández Puente	Subdirección de colaboración público privada		*	20/05/2010
D.G. Transferencia de Tecnología y Desarrollo Empresarial, MICINN	Adolfo Barrios	Servicio de gestión Económica de la DG Transferencia		*	20/05/2010

D.G. para el Desarrollo de la Sociedad de la Información, MITC	Carlos Fernández Gallo	S.G.A. Economía Digital	cfernandez@mityc.es	*	20/05/2010
Red.es, MITC	Amparo Puente García	S.G. de Fondos Comunitarios	amparo.puente@red.es	*	20/05/2010
ICEX, MITC	Ángel Praderas	Jefe del Dpto. de Gestión Presupuestaria	angel.praderas@icex.es	*	20/05/2010
Invest in Spain, MITC	Manuel Pérez Castro	Coordinadores Programa FEDER	mperez@investinspain.org	*	20/05/2010
Invest in Spain, MITC	Eduardo Sánchez Vázquez	Coordinadores Programa FEDER	infofeder@investinspain.org	*	20/05/2010
DG INDUSTRIA, MITC	Juan C. Castro Caravaca	Jefe de Servicio de la Unidad de Apoyo	jccastro@mityc.es	*	20/05/2010
ENISA, MITC	Pedro Granados			*	20/05/2010
ENISA, MITC	Rafael Pérez		rperez@enisa.es	*	20/05/2010
EOI, MITC	Yolanda Sánchez	Dirección de Asuntos Económicos	yolandasanchez@eoi.org	*	20/05/2010
EOI, MITC	Javier Benito	Dirección de Asuntos Económicos	javierbenito@eoi.es	*	20/05/2010
DDI, MITC	Ángel Palazuelos		apalazuelos@ddi.es	*	20/05/2010
SUBSECRETARÍA, MITC	Diego Martínez Martín	Vocales Asesores	djmartinez@mityc.es	*	20/05/2010
SUBSECRETARÍA, MITC	Rafael Pérez Rivero	Vocales Asesores	rperezr@mityv.es	*	20/05/2010
SUBSECRETARÍA, MITC	Flora Pérez Almoguera	Vocales Asesores		*	20/05/2010
Generalitat de Catalunya	Mª Antonia Monés i Farré	Directora Gral. d'Anàlisis i Política Econòmica	dganalisi.eif@gencat.cat	*	21/05/2010
Generalitat de Catalunya	Joan Luria	Oficina Subdirector Gral. de Programació	jluria@gencat.cat	*	21/05/2010
Instruments Financers per a Empreses Innovadores, SL (IFEM)	Teresa Torres	Directora	teresat@icf.cat	*	21/05/2010
Generalitat de Catalunya	Jordi Cortina i Carreras	Director Gral. Direcció General de Planificació	dgp.cur@gencat.cat	*	21/05/2010
Generalitat de Catalunya	Oilanda Font de Rubinat García	Subdirectora general de Direcció General de Recerca	sgr.cur@gencat.cat	*	21/05/2010
Centre d'Innovació Empresarial (Acc1ó)	Xavier Ferràs i Hernàndez	Director	xferras@acc10.cat	*	21/05/2010
Centre d'Innovació Empresarial (Acc1ó)	Mariona Sanz i Ausàs	Gerent d'R+D+i Internacional	msanza@acc10.cat	*	21/05/2010
DGPYME, MITC	Gervasio Cordero	Subdirector general de crecimiento empresarial		**	26/05/2010
D.X. Planificación e Fondos. Xunta Galicia	Aurora Patiño	Responsable de indicadores		**	27/05/2010
D.X. Planificación e Fondos. Xunta Galicia	Antonio Linares	Responsable FEDER		**	27/05/2010
D.G. de Economía, Estadística e Innovación Tecnológica, Comunidad de Madrid	Ángel Ballesteros González	Técnico	angel.ballesteros@madrid.org	*	28/05/2010
D.G. de Economía, Estadística e Innovación Tecnológica, Comunidad de Madrid	Nieves Manrique Vicente	Subdirectora General de Gestión	nieves.manrique@madrid.org	*	28/05/2010
Code: * In situ interview, ** Telephonic Interview					

ANNEX C – REGIONAL RESEARCH AND INNOVATION PLANS IN SPAIN

Autonomous Community	Responsible Department	R&D Plan	Acronym	Time Span
Andalucía	Consejería de Innovación, Ciencia y Empresa	Plan Andaluz de Investigación, Desarrollo e Innovación	PAIDI	2007-2013
Aragón	Departamento de Ciencia, Tecnología y Universidad	II Plan Autonómico de Investigación, Desarrollo y Transferencia de Conocimientos de Aragón	II PAID	2005-2008
Asturias	Consejería de Educación y Ciencia / FCYT	Plan de Ciencia, Tecnología e Innovación de Asturias	PCTI	2006-2009
Baleares Islands	Consejería de Innovación, Interior y Justicia	Plan de Ciencia, Tecnología e Innovación de las Illes Balears	Plan CTI	2005-2008
Canary Islands	Agencia Canaria de Investigación, Innovación y Sociedad de la Información / Consejería de Educación y Ciencia	Plan Integral Canario de I+D+i+d	PCIDid	2007-2010
Cantabria	Consejería de Industria y Desarrollo Tecnológico	Plan Regional de Investigación, Desarrollo e Innovación	PRIDI	2006-2010
Castilla - La Mancha	Consejería de Educación y Ciencia Consejería de Industria, Energía y Medio Ambiente	Estrategia Regional de Investigación Científica, Desarrollo Tecnológico e Innovación (I+D+I)	PRINCET	2005-2010
Castilla y León	Consejería de Economía y Empleo	Plan Regional de Investigación Científica, Desarrollo Tecnológico e Innovación		2007-2013
Catalonia	Departamento de Innovación, Universidades y Empresas	Plan de Investigación e Innovación	PRI	2005-2008
Valencia	Consejería Educación / Industria, Comercio e Innovación	Plan Valenciano de Investigación Científica, Desarrollo Tecnológico e Innovación	PVIDI	2001-2006
Extremadura	Consejería de Economía, Comercio e Innovación	III Plan Regional de Investigación, Desarrollo e Innovación	III PRI+D+I	2005-2008
Galicia	Consejería de Economía e Industria	Plan Gallego de Investigación, Desarrollo e Innovación Tecnológica	IN.CI.TE.	2006-2010
Madrid	Consejería Educación / Economía e Innovación / Madrid	IV Plan Regional de Investigación Científica e Innovación Tecnológica	PRICIT	2005-2008
Murcia	Consejería de Universidades, Empresas e Investigación	II Plan de Ciencia y Tecnología		2007-2010
Navarra	Departamento de Innovación, Empresa y Empleo	2º Plan Tecnológico de Navarra		2004-2007
Basque Country	Departamento de Educación, Universidades e Investigación Departamento de Industria, Innovación, comercio y turismo	Plan de Ciencia, Tecnología e Innovación	PCTI	2010
La Rioja	Consejería de Industria, Innovación y Empleo	Plan Riojano de Investigación, Desarrollo Tecnológico e Innovación		2003-2007

ANNEX D - INNOVATION PERFORMANCE AND RDI EFFORT IN SPAIN

D1. - Recent developments in Spanish innovation performance

In the last decade Spain has made an important effort to develop its innovation system. ERDF funding has substantially contributed to this process (see annex d for further details). Spain still underperforms with regard to its European counterparts and is classified in the group of moderate innovators (in 2008 Spain ranked in 16th position in the innovation index[17]). According to the European Innovation Scoreboard Spain's main strengths lie in the fields of finance and support to RDI (see annex D) and also in economic effects (mainly new-to-firm sales and medium-tech-and-high-tech manufacturing exports). The weaknesses lie in the fields of investments (Business RDI expenditures, IT expenditures and non-RD innovation expenditures) and linkages and entrepreneurship (joint private-public publications, integration between researchers and firms).

EIS Indicators that the Spanish innovation system improved several measures of innovation performance, such as tertiary education, life-long learning, venture capital, broadband access by firms, community trademarks, new-to-firm sales and medium-tech-and-high-tech manufacturing exports. However further efforts must be made in the number of PhDs in science and engineering, investments, innovative SMEs collaborating with other firms, EPO patents and technology balance of payments flows.

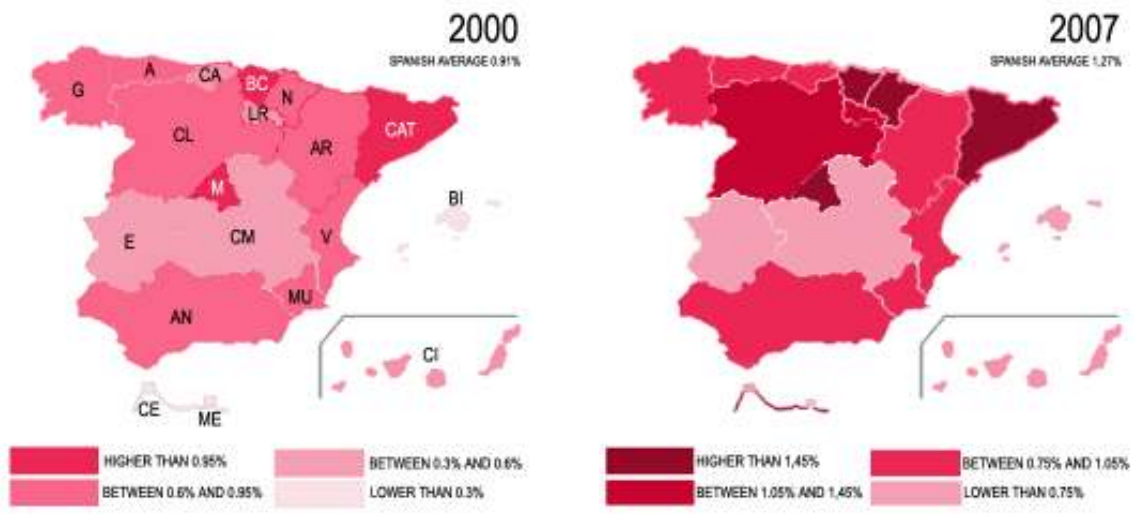
The 2009 Regional Innovation Scoreboard[18] shows that between 2004-2006 several Spanish regions have achieved medium-high level innovation performance (the Basque Country, Catalonia, Madrid and Navarra); many others report average and medium-low levels of innovation and finally, some with special difficulties low and medium-low levels (Canary Islands, Castilla-La Mancha and Extremadura).

RD expenditure is unevenly distributed across Spanish territories. Map D1 shows the ranking of Spanish regions according to their share of total RD expenditure as a proportion of regional GDP (0.91% in year 2000 to 1.27% in year 2007), convergence regions such as Andalusia and Galicia are almost 1%.

MAP D1: RD expenditure (as percentage of GDP) in Spanish Regions 2000-2007

[17] European Innovation Progress Report 2009, Pro Inno Europe, EC, DG Enterprise and Inno-policy TrendChart- Innovation Policy Progress Report. Spain. 2009.

[18] Regional Innovation Scoreboard (RIS) 2009, Pro Inno Europe Inno Metrics.



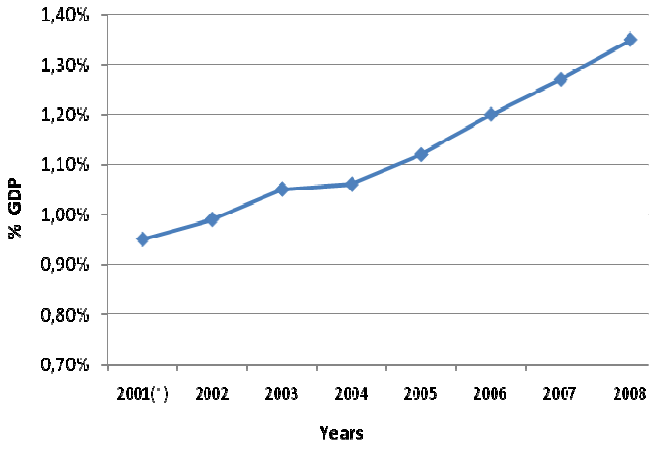
AN: Andalusia AR: Aragón A: Asturias BI: Balearic Islands CI: Canary Islands
CA: Cantabria CM: Castilla-La Mancha CL: Castilla y León CAT: Catalonia V: Valencia
E: Extremadura G: Galicia M: Madrid MU: Murcia N: Navarra
BC: Basque Country LR: La Rioja

Source: Own elaboration based on INE data.

One of the main features of the Spanish system is the concentration of RD expenditure in Madrid and Catalonia. Madrid ,Catalonia, Andalusia, the Basque Country and Valencia carried out 76.2% of R&D expenditure in 2007, 66.6% of the Spanish GDP.

D.2. - RDI Expenditure in Spain

Graph D1: RD Expenditure (% of GDP) in Spain:2001-2008

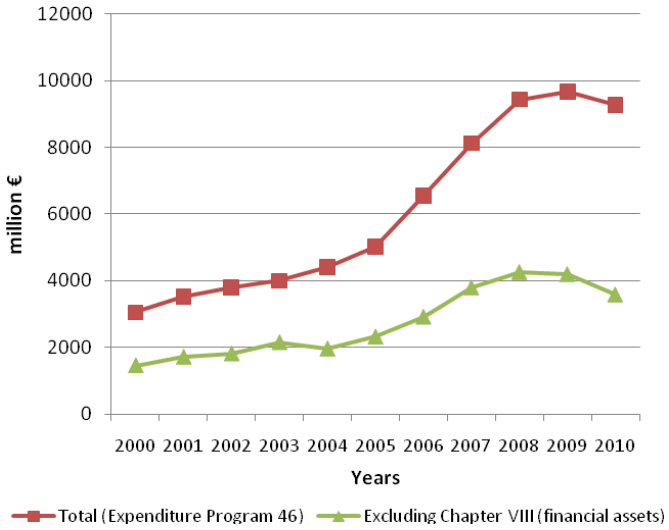


Source: Own elaboration based on INE data

Graph D1 shows the curve of R&D expenditure (%GDP) since 2001. It shows the increase in RD within the Spanish economy in the current decade, rising from 0.95% of GDP in 2001 to 1.35% in 2008 (an increase of 42%). Taking into account the rapid growth of Spanish GDP during the period, these figures underline the increases in the total amount of RD expenditure. Separating these figures into public and business RD expenditure, the former (0.67%), remains a long way behind the EU 27 average (1.12%), while the latter is much closer (0.53% Spain vs. 0.63% UE27) .

As Graph D2 shows there has been an increase in the amount devoted to RD in the Spanish central government budget (by a factor of 2.6 from 2001 to 2010). This increase would not have been possible without ERDF funds and their reallocation towards R&D activities.

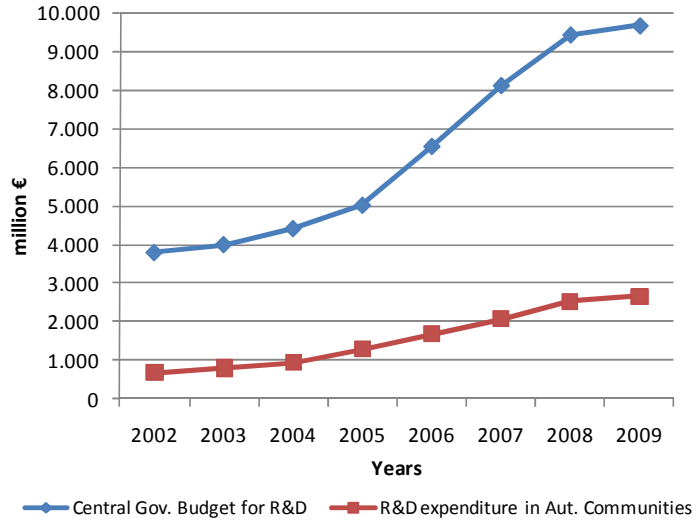
Graph D2: RD Spanish Government Budget (million €)



Source: RDIP 2008-2011 and Observatorio Español Innovación y Conocimiento

Graph D2 distinguishes between total expenditure (the upper line) and the total expenditure minus the expenses financed through variations in financial assets (the lower line). The prolonged trend in the growth in RD as a proportion of the Spanish central government budget is marked by a period of rapid acceleration, particularly from 2005 onwards. However the impact of the current crisis has slowed down this process.

Graph D3: R&D public expenditure



Source: Informe COTEC (2010)

Graph D3 looks at RD expenditure by Spanish public administrations and compares the evolution of spending by the central government and autonomous communities in the period 2002-2008. The graph reveals the weight of RD expenditure in the Spanish regions in relation to central government RD spending. The ratio of public RD expenditure in Spanish regions compared to the central government RD budget rose from 18.0% in 2002 to 27.4% in 2009.

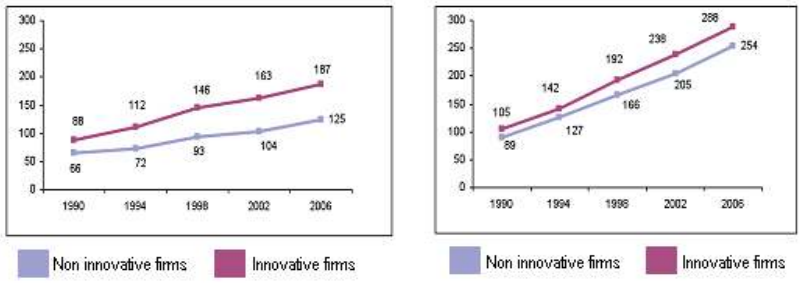
ANNEX E - EVALUATION EVIDENCE

A. - CDTI REPORT

The CDTI research department has promoted several studies on the impact of the policy measures to boost firms RDI activities. These studies have been conducted in collaboration with external researchers following the current academic research agenda on these topics. In their early stages some of these studies were published as CDTI working papers and later appeared in leading academic journals. The CDTI report "Impacto de la I+D+i en el sector productivo español" analyzes the impact that innovation activities in Spanish firms have on their economic and technological results and disentangle the effects that CDTI reimbursable aids have had on the propensity to carry out innovative investments by firms. This study was based on data from the CDTI database and the micro-data from the Technological Innovation Survey of the Spanish Statistical Institute (INE).

Graph 4: Labor Productivity (thousand €) 1990-2006

SME LE



Source: CDTI report (2009)

Graph D4 shows labour productivity from 1990-2006 and differentiates between innovative and non innovative firms broken down by size (SMEs and LE, Large Enterprises). The general trend shows that: a) irrespective of firm size, labour productivity is higher in those firms that carry out innovation activities; b) the gap in labour productivity between innovative and non innovative firms is greater for SMEs than for LE; c) Labour productivity growth rate is higher in LE than in SMEs. Apart from this purely descriptive result which echoes the empirical literature on the subject, the important question to be clarified is whether CDTI reimbursable aid can effectively overcome barriers to innovation and stimulate additional RDT activities by firms (not merely substituting private investment for public funding). An interesting result of an econometric study shows that in addition to the inertia in RDI expenditure, CDTI reimbursable aid to firms increases the probability of RDI expenditure by the firms by 32.4% .

B. - OTHER REPORTS

The INNOEMPRESA Program[19] Impact Evaluation for the years 2007-2008 concludes that the returns from the INNOEMPRESA aids have contributed 1.8 to Spanish GDP. It also concludes that the managers of aided firms highlight some positive effects of the stock of knowledge, the development/improvement of processes and technologies, improvement in the productivity and external image of the firms as well as planning innovation strategies and the use of external services during the length of the project. Even though the impact on sales and markets is very limited. The methodology of the evaluation was based on a questionnaire sent to a sample of beneficiary firms (107, being the error margin 11% with confidence intervals of 90%) aimed to analyze the qualitative impact of firms' participation in the programme. The questionnaire was made of 16 questions broken down into three blocks (description of the participants profile, results and impact in the different business areas, and assessment of intermediary body and the access to the program).

The DG Technological Innovation of the autonomous community of Madrid has commissioned a series of evaluation reports on the effects and impact of its aid schemes to incentivize technological innovation and diffusion in strategic sectors in Madrid (Air-spatial and Biotech) and in ICTs. The Air-spatial report (DG Innovación Tecnológica, 2008 a) was based on the analysis of 95 projects out of 182 projects submitted from 2005 to 2007. The report find that the results of the funded projects can be considered a success in 89% of the cases. It also concludes that aid has improved the competitive position of the firms and in 40% of the cases has led to a reorientation of the firms' strategies basically by developing new products. However, the number of registered patents is relatively low (5.6% of the projects). The Biotech report (DG Innovación Tecnológica, 2008 b) was based on the information gathered from the answers to a questionnaire sent to 42 aided firms (33 positive replays). The report shows that 91% of the firms that receive aid think that the projects have helped to improve their returns and 89% have entered partnerships with public research centres and with other firms. However due to the maturity profile of biotech projects the report cannot draw any conclusions concerning the results of the medium and long term impacts of the aid. Finally the evaluation report on ICT aid (DG Innovación Tecnológica, 2008 c) points out that small firms and micro-firms represent the biggest share of beneficiaries (68%) and that around 70% of beneficiary firms have obtained good market results: new product portfolio, new contracts and also an increase in the value added of the firms' products. The methodology used in this case was three folded: in first place a thorough analysis of the aided firm's database is carried out, in second place a questionnaire was sent to 233 participant firms during the period 2006-2007-2008 (137 positive replays) and finally several in depth interviews have been carried out in order to check the quantitative results of the previous steps.

[19] "Evaluación de impacto del programa INNOEMPRESA en las Pymes españolas", Ministerio de Industria, Turismo y Comercio, 2009.

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

Policy area	Short description
Innovation friendly environment	This category covers a range of actions which seek to improve the overall environment in which enterprises innovate, notably three sub groups: • innovation financing (in terms of establishing financial engineering schemes, etc.); • regulatory improvements and innovative approaches to public services and procurement (this category could 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. 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)
Knowledge transfer and support to innovation poles and clusters	Direct or indirect support for knowledge and technology transfer: • 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. Direct or indirect support for creation of poles (involving public and non-profit organisations as well as enterprises) and clusters of companies • 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	Funding of "Pre-competitive development" and "Industrial research" projects and related infrastructure. Policy instruments include: • 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. Any direct or indirect support for the creation of innovative enterprises (spin-offs

	and start-ups)

Instruments	Short description
Infrastructures and facilities	Building and equipping 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 G – 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