



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

TASK 1: POLICY PAPER ON INNOVATION

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ANDREA CIFFOLILLI

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1 EXECUTIVE SUMMARY

In the last decade, the public awareness as regards the importance of increasing innovation investments to deal with the loss of competitiveness of the national economy has grown substantially in Italy. This has not only led to a rise in the resources allotted to RTDI policy but also to a progressive paradigm shift in the policy approach: from generalised and less selective support to concentration on strategic priorities and excellences. Despite the good intentions, this shift is far from complete. Both, the political cycle and the recent economic crisis have represented an obstacle to the launch and implementation of several key initiatives designed between 2006–2007 (e.g. Industria 2015). Moreover much progress can still be achieved to improve skills and managing methods of the public administrations, as well as coherent medium and long term regional innovation strategies.

In Italy, there is a strong regional dimension to innovation policy. To a large extent, national and regional authorities have identical powers as regards in RTDI and this generates some problems of coordination, with overlaps and gaps. Several initiatives have been taken to improve these shortcomings (e.g. State–Regions Conference, Framework Programme Agreements to implement coherently national and regional operational programmes in the convergence objective etc.). These agreements are important steps but are still too general in their content and can be improved.

Despite the overlap problem and its effects, it can be maintained that, in general, Competitiveness regions are a protagonists of innovation policy in relation to all policy areas, given their autonomy and the down scaling of national programmes which followed the 2008 political changes and the eruption of the economic crisis. In the Convergence areas, regions also play a central role since they have significant resources and are able to influence the shaping of national initiatives. However, in terms of strategy, they seem to be mostly dragged along by national actors. In these regions, national and regional innovation policy is aimed at achieving structural change towards a knowledge-based economy by means of large research and innovation projects in key scientific and technological areas, strengthening infrastructures, boosting networking and cooperation etc. In the Competitiveness regions, innovation policy is more focused on strengthening the role of their (already developed) research and innovation systems in a globalised world. Apart from this trait, both groups have similar objectives such as reinforcing the integration of the RTDI system by fostering collaboration between research supply and innovation demand; investing on poles; supporting an innovation friendly environment through support aimed at reducing investment costs for firms, easing the purchase of advanced services, developing innovative means of finance, and improving access to and diffusion of ICT.

ERDF support is central to RTDI policy. A substantial share of ERDF is devoted to innovation policy both in Competitiveness (44% of total ERDF) and in Convergence regions (35% of the total). Overall, in the competitiveness area ERDF allotted to innovation policy represents approximately 2% of the

total RTDI effort (measured as GERD). In the Convergence area, this proportion is much higher and ERDF support for innovation represents over 40% of the total RTDI effort.

The evidence available on the performance of innovation support measures concerns mainly aid schemes for enterprises and related to the past rather than the current programming period but it is relevant insofar as it focuses on national instruments that are still widely used across the country (e.g. FAR, FIT). Evaluations and studies on the effects of R&D support show mixed results, depending on the method used, the features of the dataset and the control group as well as the specific evaluation questions. In general, the effects seem to be positive, even if temporary, at firm level in terms of higher investment propensity and patenting activity while, from a wider perspective, incentives seem to produce distortions (deadweight and crowding out) in markets which suggest a rather limited additionality. There is, however, an ongoing debate on the appropriateness of variables and control groups used in the different studies which suggest that more work is needed on this front and a common and wider information system would be necessary to produce more comparable and reliable results.

The information available on the progress of the 2007–2013 programmes is limited due to late approval and slow start of programmes, but an examination of AIRs and of websites of regional authorities show that a large number of initiatives to support innovation have been launched in all policy areas.

EU Cohesion Policy faces several challenges in relation to innovation co-financed initiatives.

To express the potential that stem from their competences, Italian regions need to improve the necessary skills and managing methods as well as developing a more coherent medium and long term regional strategy of innovation than at present.

The policy followed and the focus of ERDF support can be considered strategically appropriate in the most advanced regions where there is a broad balance between innovation friendly initiatives, knowledge transfer and support to research and product development. In the less advanced regions, the support is biased towards boosting applied research despite the lack of an innovation fertile environment and the difficulty in fostering knowledge diffusion. This seems to be due to the limited capacity of policy makers to design and implement effective and efficient sophisticated support measures and to their greater familiarity with aid schemes.

Regions have developed and launched their own initiatives to support RTDI, ICT diffusion and so on. The results of these are not clear due to the lack of critical assessment of their achievements. Providing evidence is therefore urgent especially in Convergence areas.

A final challenge which deserves mention is that both regional and national authorities need to make an effort to adapt their grant instruments to support riskier investment and leading-edge research. At the moment, many grant instruments seems capable of supporting only incremental innovation.

2 NATIONAL AND REGIONAL INNOVATION POLICY AND THE CONTRIBUTION OF ERDF

2.1 NATIONAL AND REGIONAL INNOVATION POLICY

Following the 2006 political elections, a new research and innovation policy framework was established in Italy. The concentration of support on strategic priorities¹ and territorial excellence were the main features of the new approach. Previously, innovation support was more generalised and less selective. Beside concentration, new measures such as automatic incentives (a tax bonus up to 15% of R&D expenditure) and anti-brain drain initiatives were introduced, funds were aggregated and rationalised (e.g. a National Fund for Innovation and a Risk Capital Fund for SMEs were created) and finally, new bodies were established (e.g. the National Innovation Agency and a specialised evaluation agency – ANVUR).

Due to the government change in 2008 and the economic crisis, the consolidation of the new innovation policy framework was slowed down and reoriented. In particular, less resources were made available to pursue the strategic priorities identified in 2006–2007 (e.g. national funds for underutilised areas which were expected to be utilised through the National implementation programme for research and competitiveness – PAN FAS ReC – have not been committed) or redirected towards new objectives (e.g. repayment of regional debts in public health care). In particular, some programmes such as “Industria 2015” (see below) were substantially scaled down.

Main features of the national innovation strategy

Even if these adjustments due to political change and to the economic crisis have a profound impact on the national innovation strategy, this is still mainly delineated by the following programmes:

- The National Research Plan², drafted by the Ministry of University and Research, which identifies scientific and technological priorities and has launched 10 strategic research programmes.
- “Industria 2015”, a programme launched by the Ministry of Economic Development, which supports large industrial innovation projects in key technological and productive areas such as energy efficiency, sustainable mobility, new technologies, the cultural heritage and life sciences.
- The e-government 2012 plan, focused on modernisation of the Public Administration.

¹ Key scientific areas identified by the National Research Plan of the Ministry of Research and key technological-productive areas identified by the “Industria 2015” programme of the Ministry of Economic Development.

² We mainly refer to the programme 2005–2007 which was recently updated (PNR 2010–2012).

- The Research Plan in the energy sector (2009–2011), launched by the Ministry of Economic Development which allocates resources to research in electricity saving, nuclear energy and environmental protection.

The National Strategic Reference Framework plays a central role in translating national strategies into regional policy. It pulls together, in a unified policy scheme, Cohesion Policy resources, national funds for underdeveloped areas and other regional resources. A cross-analysis of the NSRF and of the Operational Programmes enables the main objectives of innovation policy in Convergence regions to be identified. These can be summarised as follows:

- Sustaining structural change towards a knowledge-based economy by means of supporting large research and innovation projects in key scientific and technological areas, strengthening infrastructure, boosting networking and cooperation (pursued by national authorities with the NOP).
- Promoting the research and innovation system by means of aid schemes for industrial and collaborative research, supporting the creation of innovative enterprises, as well as of clusters and poles, strengthening research and ICT infrastructure (pursued mostly by regional authorities with ROPs).
- Supporting innovation by developing a “friendly” environment through diffusion of ICT, innovative finance, reconversion of industrial areas, aid schemes for technology upgrading (pursued by national authorities with the NOP and also by regional authorities).

The main objectives of innovation policy in the Competitiveness regions are to:

- Strengthen the competitiveness of the research and innovation system in a globalised world by means of supporting large research and innovation projects in key science and technology areas.
- Reinforce the integration of the RTDI system by fostering collaboration between research supply and innovation demand through the provision of grants, infrastructure and facilities.
- Strengthen an innovation friendly environment through generalised, mostly automatic, support aimed at reducing RTDI investment costs for firms, in particular promoting eco-innovation, the purchase of advanced services, innovative finance, development, access and diffusion of ICT.

Regional dimension

Regions have had autonomy in RDTI policy since the 2001 constitutional reform which established shared competences in this as well as other policy areas. There is no single model to manage and

implement innovation policy³: several regions have established specific agencies with the role of funding and implementing policy (e.g. Emilia Romagna, Sardinia, Apulia); other regions delegated innovation policy to internal departments that deal with economic development. The distinction is in most cases more formal than substantial.

The division of competences between national and regional authorities in relation to RDTI remains unclear, despite the existence of a permanent body that is supposed to improve coordination (the State–Regions Conference). An informal distribution of labour is in place: basic and long term research is decided at national level while industrial research and innovation is shared with competences supposedly be allocated on the basis of the investment size. In practice, this “tacit” division of competences is blurred and varies across regions. Grey areas, with much overall ambiguity, are technology transfer and financing of innovation.

The NOP Research and Competitiveness 2007–2013 (NOP ReC) implements national innovation policy in the Convergence (CONV) regions. It integrates in a single programme activities implemented by the Ministry of Education and Research and the Ministry of Economic Development which in the 2000–2006 period were part of two distinct programmes (NOP Research and NOP Industry). This integration is aimed at reducing crowding out of the instruments used and at increasing effectiveness as well as efficiency. The NOP ReC has been finalised with an approach geared towards linking national and regional initiatives to ensure a coherent RTDI policy strategy. Previously managed exclusively by the national government, the current NOP is managed with the support of a committee involving the regional governments as well (*Comitato di Indirizzo e Attuazione*). The NOP is closely linked to the priorities set by the National Research Plan and “Industria 2015”.

The ROPs ERDF complement the NOP ReC in the CONV regions. A “protocol of agreement” on RTDI policy, covering the triennium 2009–2012, was signed by the Ministry of Research and the CONV regions in June 2009 and represents an important step in multi–level governance. It was followed by the so called “Framework Programme Agreements” (APQ – *Accordi di Programma Quadro*) between the Ministry and individual regions. These represent the main instrument for implementing the national programme in line with regional priorities. An agreement between the Ministry of Economic Development, Convergence regions, Basilicata and Sardinia was also signed in late 2009, in relation to the NOP ReC initiatives to be carried out by the Ministry of Economic Development. All these agreement are intended to clarify the blurred partition of competences but are still too general in their contents and can be improved.

The ROPs are the most important documents pulling together Cohesion Policy and other regional resources in Competitiveness regions too, more or less in line with the national innovation framework and regional innovation strategies.

³ See for instance: Innova (2009), “Innovation Policy Progress Report – Italy”, EC DG ENTR, INNO–Policy TrendChart.

Role of ERDF

ERDF resources allocated to innovation in the current programming period amount to approximately EUR 7,556.9 million, 36% of the total (see Table 1 – Annex A). In the Convergence regions, about EUR 6,166.8 million have been allocated to innovation policy initiatives, a share (34.5%) which is slightly below the national average. In the Competitiveness regions, EUR 1,390.1 million or 44% of total ERDF has been allotted to innovation.

In the Convergence regions, the NOP Research and Competitiveness and the ROP Campania are the programmes that invest most in innovation, EUR 2,999.2 million and EUR 1,000 million respectively. In the Competitiveness regions, Sardinia, Piedmont, Lazio, Tuscany, Veneto and Lombardy allocated the largest amount of resources to innovation ranging from EUR 100 million to 300 million.

In the Convergence regions, the main measures aimed at supporting innovation are:

- Aid schemes (grants and loans) for industrial research and pre-competitive development projects (e.g. Campania, Calabria)
- Development of R&D infrastructure and networks of laboratories (e.g. Apulia, Calabria)
- Aid schemes (grants) and infrastructures (buildings and equipment) for knowledge diffusion, technology transfer (Sicily, Calabria) and creation of innovation poles (e.g. Calabria)
- Aid schemes to support innovative investment of SMEs such as the purchase of advanced services (Puglia, Sicily, Calabria) as well as their growth and clustering (e.g. Sicily)
- Innovative finance and guarantees (in all regions) and support for creation of new firms (e.g. Calabria)
- Initiatives to develop the information society (access, diffusion, advanced services, e-government) (all regions)

In the Competitiveness regions, the main planned measures to support innovation are:

- Aid schemes (grants and loans) to support industrial research and pre-competitive development projects in firms, in key sectors (e.g. Lombardy, Emilia Romagna, Tuscany, Friuli V.G., Veneto, Liguria, Piedmont, Marche, Umbria)
- Research Infrastructure and facilities (competence centres, networks of laboratories) in strategic sectors (e.g. Emilia Romagna, Lombardy, Liguria, Piedmont, Umbria, P.A. Trento, Lazio, Liguria)
- Aid schemes (e.g. grants for cooperative research) and infrastructure (buildings and equipment, innovation poles and technology districts) to support knowledge transfer and

technology diffusion (e.g. P.A. Trento, Tuscany, Lazio, Friuli V.G., Veneto, Liguria, Piedmont, Marche)

- Aid schemes to support SMEs innovative investment such as eco-innovation (P.A. Trento, Tuscany, Lazio, Friuli V.G., Veneto, Liguria, Piedmont, Marche, Umbria) and aggregation of SMEs (Tuscany, Liguria, Marche)
- Aid schemes for the purchase of advanced services (e.g. audit, patenting, business plan preparation, start ups, technology foresight) to increase innovative capacity of firms (Lombardy, Lazio, Veneto, Liguria, Marche)
- Infrastructure (e.g. incubators) and aid schemes for the creation of new innovative firms and spin-offs (P.A. Trento, Tuscany, Lazio, Friuli V.G., Veneto, Umbria)
- Innovative finance (venture capital, equity, guarantee etc. in all regions)
- Infrastructure and aid schemes to develop the information society ICT solutions research and diffusion (all regions)

2.2 ERDF CONTRIBUTION ACROSS POLICY AREAS

Convergence objective

The policy area “boosting applied research and product development” is the main focus of ERDF support in the Convergence regions (see Table 2 – Annex A). EUR 3,362.2 million, or 55% of total resources, has been allocated to this. Initiatives classified in this policy area include:

- Investment in firms directly linked to research and innovation (over EUR 1,144.2 million) mainly aid schemes for industrial research and pre-commercialisation development projects
- R&TD activities in research centres (EUR 1,097.3 million)
- Other measures to stimulate research and innovation in SMEs as well as assistance for promoting environmentally-friendly products and processes (approximately EUR 1 billion).

EUR 1,867.4 million or 30% of total ERDF has been allocated to “innovation friendly environment”. This includes:

- ICT initiatives to improve access, security, interoperability, e-content etc. (EUR 649.7 million)
- Advanced support services for firms (EUR 348.2 million) and services and applications for citizens (EUR 244.4 million)
- Development of human capital through post-graduate studies, training for researchers etc. (EUR 310.2 million).
- Other ICT initiatives for firms and citizens

EUR 937.2 or 15% of total ERDF resources has been allocated to “knowledge transfer and support to innovation poles and clusters”. This includes:

- R&TD infrastructure and centres of competence in a specific area of technology (EUR 562.1 million)
- Assistance to R&TD services, particularly for SMEs (EUR 215.3 million) and technology transfer, cooperation networks, science and technology poles (EUR 159.7 million).

The focus of ERDF support is in line with the strategic objectives of national and regional policy. The predominance of aid schemes for RTDI projects and ICT diffusion indicates a commitment to facilitate structural change in the Convergence regions but also a low capacity to implement initiatives which may require more developed RTDI governance.

Competitiveness and employment Objective

In the Competitiveness regions a similar amount of resources have been allocated to the three policy areas. The policy area “boosting applied research and product development” is set to receive EUR 490.3 million or 35% of the total. It includes:

- Investment in firms directly linked to research and innovation (EUR 160.5 million) which mainly consists of aid schemes for industrial research and pre-commercialisation development projects
- Assistance to SMEs for the promotion of environmentally-friendly products and production processes (EUR 107.4 million) and other measures to stimulate RTDI in SMEs (EUR 151.9 million)
- R&TD activities in research centres (EUR 70.6 million)

The policy area “innovation friendly environment” has been allocated EUR 483.4 millions, slightly less than 35% of total ERDF resources. This includes:

- Advanced support services for firms and groups (EUR 235.5 million)
- ICT initiatives to improve access, security, interoperability, e-content etc. (EUR 84.2 million), other ITC services and applications for SMEs (EUR 69.4 million) and citizens (EUR 62.2 million).

The policy area “Knowledge transfer and support to innovation poles and clusters” has been allocated EUR 416.4 million or 30% of total ERDF resources. It mainly includes:

- Assistance to R&TD services, particularly in SMEs (EUR 186.1 million)
- Technology transfer, cooperation networks, science and technology poles (EUR 131 million).

- R&TD infrastructure and centres of competence in a specific area of technology (EUR 99.2 million)

Territorial co-operation

There are 7 cross-border co-operation programmes concerning Italy⁴. These mostly support joint research and innovation projects, with a special focus on SMEs. The resources devoted to innovation and competitiveness range from 20% in the “Italy-France Maritime” programme to nearly 50% in the “Italy-Malta” programme. Over EUR 250 million have been allocated to these priorities.

Moreover, there are 4 trans-national programmes⁵ under the European Territorial Co-operation Objective that concern Italy. These also allocate a substantial share of resources to innovation: from 20% of total in the “Central Europe” programme to over 32% in the “Alpine Space” programme. Trans-national programmes allocate over EUR 260 million to innovation.

Finally, the interregional co-operation programme⁶ which works at pan-European level and is organised around two priorities, one of them innovation, is also worth mentioning.

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

The evidence on the performance of RTDI can only be found indirectly through the evaluation of measures used in the past which have been maintained during the present programming period. There is some continuity between programming periods which implies spending authorities have a positive view of the measures concerned. The slowdown in structural intervention in the present period on innovation activities as well as in other areas needs to be emphasised. It can be attributed mainly to administrative delays following the prolongation of the previous programming period rather than to a lack of willingness on the part of firms to carry out investment in innovation. In fact, the tenders that have been recently launched in the Convergence regions by the MIUR (533 industrial research projects submitted; with over EUR 5.8 billion of funding requested) or in Competitiveness regions by local authorities (e.g. in Emilia Romagna) have received a huge positive response from enterprises. This is a positive sign after a crisis that significantly reduced the finance available to firms for new investment.

Most of the evaluations quoted below concern the activities of the central government while much less evidence is available for regional measures, especially those consisting of ad hoc and tailor

⁴ Italy – Slovenia; Italy – Austria; Italy – Switzerland; Italy – France Alps ALCOTRA; Italy – France Maritime; Italy – Malta; Greece – Italy.

⁵ Alpine Space; Mediterranean; Central Europe; South-East Europe.

⁶ Total ERDF contribution: EUR 445 million.

made activities which characterize the regional dimension of the policy. This is a weakness of the regional dimension especially since Convergence regions tried to undertake specific interventions for the first time during the previous programming period.

3.1 ACHIEVEMENTS UNDER THE CONVERGENCE OBJECTIVE

Evidence from evaluations and studies

The available evidence focuses on **boosting applied research and product development** which received the bulk of the available resources in the previous period⁷. The national strategy in fact focused on the propensity of firms to invest in RTDI which is crucial in manufacturing exporting countries. Firms in Convergence regions, which are part of the value chain of northern regions, needed to innovate to survive. These evaluations, do not focus directly on ERDF since the instruments were widely used for national policy, however they can be considered relevant since aid schemes are still in use both at national and regional level.

The results of the various studies differ sometimes, according to the methods, the evidence collected, the composition of the control group, as well as the evaluation questions asked. However, the results emerging from these studies are positive, even if effects are sometimes judged as such only on a temporary basis. SMEs have shown an increasing propensity to invest in innovation, to patent their discoveries, to network with research establishments and to carry out some form of research to adapt existing critical new technologies to their production, in mainly traditional sectors. Results also show that in most cases financial incentives involve a large deadweight cost in the sense that firms would have carried out the investment anyway. These results have prompted a debate on the appropriateness of the variables analysed and on the control groups used in the different studies which suggests that more effort is needed to develop a common and broader information system in order to produce comparable and reliable results.

A recent study (Potì and Cerulli 2010)⁸ assessed the impact of the fund for applied research (FAR) on the investment in R&D and technological output of firms. An econometric analysis⁹ of data collected on projects carried out between 1998 and 2004 indicated a positive impact in terms of additionality of these aids on both inputs (R&D expenditure) and outputs (e.g. patents). The study also stressed the relevance of the long-term research strategy of firms in this regard. Indeed, in line with this, the MIUR new tenders require the submission of a triennial research plan. In addition

⁷ Over EUR 860 million according the estimate done as part of the "Strategic Evaluation on Innovation and the Knowledge Based Economy in relation to the Structural and Cohesion Funds, for the programming period 2007–2013" (Italian country report – Iseri Europa).

⁸ Potì, B. and Cerulli, G. (2010), "La valutazione ex-post di uno strumento di politica della ricerca industriale: modello analitico, processo di realizzazione, eterogeneità degli effetti", Ceris-CNR, Roma, (forthcoming in L'Industria).

⁹ Techniques such as near neighbour matching and multiple regressions are used.

the study stressed the adverse effect of delays in procedures as well as in payment, which create a liquidity shortage in SMEs and can stop them investing.

A previous study by the Ministry of Economic Development and the Ministry of Education and Research (2002)¹⁰ underlined the additional effects of the fund for technological innovation (FIT) which mainly finances product development. This study¹¹ examined a sample of projects funded in the period 1994–98 and concluded that there was an additional effect on R&D investment, especially among SMEs, and also a slight increase in the profitability of firms.

The findings of other studies have been less positive. A recent analysis (de Blasio, Fantino and Pellegrini 2010)¹² used a regression discontinuity approach to identify the effect of the technological innovation fund (FIT) in stimulating investment. The study took advantage a discontinuity in programme financing due to an unexpected shortage of public money to compare firms that applied for funding before and after the shortage in early 2002. The study found no evidence of effectiveness since the firms subsidised did not increase investment in tangible or intangible assets.

An ex-post evaluation (Giannangeli, Merito and Bonaccorsi 2007)¹³ assessed the effects of R&D incentives on research productivity and firm growth. An econometric analysis was carried out¹⁴ on data on projects financed by FAR in the period 1999–2000. The findings are that innovation performance of firms improved only temporarily and in terms of market results, there was no significant difference between grant-recipients and non-recipients. A previous study (Bronzini and de Blasio 2006)¹⁵ also evaluated the impact of incentives in Italy, analysing investment incentives (Law 488/92) rather than focusing particularly on innovation or RTDI investment. A sample of firms that required the subsidy but failed to receive it were used as a control group. The econometric analysis indicated that there was an inter-temporal substitution in investment decisions of firms (they anticipated investment and then their capital formation fell) and also suggested a crowding out effect (investment would have not been carried out by grant-recipients but by other firms in the absence of incentives).

¹⁰ MAP-MIUR (2002), "Indagine sugli incentivi alla Ricerca e Sviluppo", Direzione Generale Coordinamento Incentivi alle Imprese.

¹¹ A "difference in differences" method is used.

¹² De Blasio, G., Fantino, D. and Pellegrini, G. (2010), "Evaluating the impact of innovation incentives: evidence from an unexpected shortage of funds", Bank of Italy.

¹³ Merito, M., Giannangeli, S. and Bonaccorsi, A. (2007), "Do incentives to industrial R&D enhance research productivity and firm growth? Evidence from the Italian Case", Sant'Anna School of Advanced Studies and University of Pisa.

¹⁴ A "sample average treatment effect on the treated - SATT" method is used.

¹⁵ Bronzini, R. and de Blasio, G. (2006), "Evaluating the impact of investment incentives: the case of Italy's law 488/92", Bank of Italy, Research Dept.

As regards the ERDF, the evaluation of the NOP Research 2000–2006¹⁶ provides evidence on the effects of co-financed initiatives. The evaluation was focused on industrial research projects carried out in the Southern Italian regions and provides a detailed analysis of the quality of the projects funded and of their role in the strategies of firms. The study concerned 262 industrial research projects which received EUR 1,182 million of funding (ERDF, national contribution and private investment); it used three main methods: 1) a survey of funded projects aimed at identifying the outcome and role of the research activities, the compatibility between the time-to-market of project results and the competitive context, the project spill-over, the impact on patenting propensity and employment, and the frequency of industrialisation of project outcomes; 2) a “peer review” of the technological level of the projects carried out by sector experts; 3) an assessment of the financial sustainability of each project based on a comparison between the net present value of costs (public and private) and the expected net present value of revenue. The study was carried out in 2 steps: one in an ongoing phase and the second when most projects were completed to verify if the expected results of the first phase were achieved and to what extent. The main findings were that on average the quality of the projects funded was high and the impact on the competitiveness of firms positive¹⁷. The evaluation also concluded that the high frequency of commercialisation of the research outcomes cast some doubt on the degree of risk of the innovation concerned and therefore on the suitability of the measure in question to support risky investments rather than incremental innovation. While incremental innovation could be achieved through networking and cooperation between large firms and SMEs, at the same time the relative success of the measure demonstrates that SMEs in traditional sectors might adopt critical technologies resulting from RTDI activities which are adapted to their production methods. The evaluation also highlighted the obstacles to effectiveness and efficiency due to long and tiresome procedures involved in granting the subsidies. However the analysis in the second phase confirmed the results of the first phase and demonstrated that the measure performed reasonably well and that with some adaptation and adjustment it could be used in the succeeding period.

As part of the mid term evaluation of the NOP Industry 2000–2006¹⁸, an analysis was carried out of the effects of investment incentives (Law 488/92) and the integrated support packages for innovation (*PIA Innovazione* – a combination of grants, loans and training schemes in a single measure). In relation to the NOP, the incentives supported 6.751 firms with funding of around EUR

¹⁶ Ismeri Europa (2005), Updated Mid-term Evaluation of the NOP Research 2000–06; and Ismeri Europa (2008), ex-post evaluation of industrial research projects co-financed by the NOP Research 2000–06.

¹⁷ Among the most relevant findings it is worth mentioning: following a peer-review, 70% of the projects have been assessed as high and medium-high tech; 80% produce results leading to industrial exploitation, in 70% of the cases this happens in the same region where the project was carried out; 20% lead to patents; the impact on export and employment is positive: 6% average increase in export, 11 new employees on average among SMEs; 87% of projects lead to creation of stable networks and cooperative linkages etc.

¹⁸ Ismeri Europa – Nova (2005), Updated Mid Term Evaluation of the NOP Industry 2000–2006, November.

12 billion ¹⁹ (as of April 2005). The econometric estimates showed positive effects on investment, turnover and employment but negative effects on productivity. Applicants that did not receive support were used as a control group. As part of the evaluation, a sectoral and territorial analysis of production after the interventions was also carried out; which was unable to identify any significant change. The assessment of *PIA Innovazione* consisted of a survey of beneficiaries based on a structured questionnaire and interviews with project managers, which indicated positive results in terms of leveraged investment and the quality of projects. Some shortcomings observed, such as the selection criteria which favoured certain sectors (ICT) or the bureaucratic procedures suggested that the measure could be improved when applied in the succeeding programming period.

Other assessments of innovation initiatives were carried out as part of the Mid-term or Updated Mid-term Evaluations of ROPs 2000–2006. These consisted of an analysis of expenditure and programme indicators and in one case of the added value of the investment supported. The Mid-term Evaluation of ROP Campania included an econometrics-based estimate of the additionality of R&D incentives.

In addition, among the evaluations carried out on **innovation friendly environment** activities, an evaluation report²⁰ drafted by the Evaluation Unit of the Apulia Region is worth mentioning. This assessed the implementation of the regional IT network (RUPAR) and the preliminary effects of diffusion of e-government on the basis of a survey of beneficiaries (municipalities). The study found that only half of potential beneficiaries used the infrastructure; with other service providers being used besides RUPAR, indicating a suboptimal use of public resources. Moreover, interoperability was not well developed. Technical problems, insufficient skills in the public authority and lack of expert assistance are some of the reasons for this. Overall, the objective of implementing an integrated regional information system in the public authority seems far from being realised. The results of this study may be translated to other regions that adopted the same measure and continued to finance it in 2007–13, in both the Convergence and Competitiveness regions.

Progress in implementing the 2007–2013 programmes

A brief summary of the implementation of programmes in the Convergence regions is presented below. This is in no way exhaustive²¹.

¹⁹ Total investment costs referring to the 4th, 8th, 11th, 14th and 17th tender; as recorder in the MAP (now MSE) database at the date of completion of the Updated Mid Term Evaluation.

²⁰ Gaudino, S. and Moro, G. (2008), "Innovazione nella PA attraverso la realizzazione di una rete telematica unitaria. Analisi del processo di implementazione", Nucleo di valutazione e verifica degli investimenti pubblici della Regione Puglia.

²¹ The information has been collected from the Annual Implementation Reports, the websites of the regional authorities and through interviews and informal discussions with managing authorities and beneficiaries (see list of meetings).

In the present programming period NOP Research and Competitiveness remains of crucial importance in the Convergence regions. Total certified expenditure as at end April 2010 was around EUR 604.8 million, mainly from continuation of grant activity (law 297/99). In addition, the ROPs also allocated a substantial share of resources to innovation operating in line with the NOP through framework agreements, as mentioned above, between the regions and the ministry, in which the field of intervention is spelled out.

As regards support for an **innovation friendly environment**, several initiatives to develop human capital were launched as part of the NOP ReC. Almost 1500 initiatives involving business creation have been funded (and over EUR 76 million spent on them) together with 100 vocational training projects (EUR 7.5 million spent). Moreover, two training programmes are being financed (EUR 1.6 million committed) as part of the large strategic research projects (GPS) introduced by the national research programme. A guarantee fund of EUR 100 million has also been set up.

Innovative finance initiatives and guarantees are being carried out as well by ROPs in all regions. In Apulia, for example, EUR 50 million was committed to a guarantee fund. In Campania the procedure for setting up a fund is underway as part of the JEREMIE initiative (EUR 90 million committed).

Initiatives to support e-government investment are also underway in all regions. For instance in Campania, two tenders were published in September 2009 to support e-government projects of municipalities (with funding of around EUR 44 million).

Some initiatives which can be included in the second policy area – **Knowledge transfer and support to innovation clusters and poles** – are being carried out by both central and regional government. However, the two are using different measures. The NOP ReC has identified five technology districts and funded 24 related research projects (over EUR 87.1 million committed; 40% spent and 12 networks involving universities, public research centres and firms have been set up under the initiative.

In addition, the Ministry has provided support for public-private laboratories (23 research projects funded – EUR 110.5 million committed; EUR 30.7 spent so far) and for as many complementary training projects (about EUR 30 million committed). These initiatives also supported the creation of cooperative networks between universities and enterprises. A new tender is currently being finalised to support both technology districts and public-private laboratories with funding of over EUR 900 million.

In the same policy area, the ROPs are focused more on 'soft' interventions, such as liaison offices and grants for investing in innovation as well as for purchasing services, such as audits for knowledge diffusion and technology transfer. For instance, in Apulia, a tender was published for the purchase of consulting services (EUR 40 million), in Calabria, a regional innovation network

(ILOs, innovation counters of the Chambers of Commerce) was funded in 2010 (with EUR 13.2 million). In Campania a tender for ICT investment in firms was published in 2009 (EUR 25 million).

The **Boosting applied research and product development** policy area is the main focus of the national government, though the regions also provide support in the form of smaller scale grants. As part of the NOP ReC, 15 large strategic projects (GPS) have been approved for co-financing (EUR 46.5 million committed, 3% spent). 45 (bottom up) industrial research projects are being funded (EUR 53.5 million committed, 77% spent). So far these have given rise to 33 innovations. A new call for tender was closed in April 2010, with applications from 533 projects for funding totalling; EUR 5.8 billion, demonstrating the huge potential demand from firms.

In the NOP as well as, three calls for tender relating to the “Industria 2015” strategy have led to the selection of 30 large industrial innovation projects (PII) on energy efficiency (EUR 50 million committed) and 25 projects on sustainable mobility (EUR 22 million committed). Some EUR 40 million of funding has been committed to experimental development projects aimed at reducing harmful chemical substances (EC regulation 1907/2006 REACH) and EUR 10 million has been spent. Start-ups are also being financed (EUR 20 million committed; EUR 5 million spent).

As regards the progress of the implementation of ROPs, in Campania a tender (Bando Campus) was launched in November 2009 to fund cooperative private-public research in key strategic areas (EUR 50 million). In Apulia, a notice for industrial research projects was published. In Sicily, schemes for pre-commercialisation development projects were launched in 2010 (with funding of EUR 53 million) and EUR 99 million has been allocated to research projects and advanced services as part of the plan for the development of value chains (*Piani di sviluppo di filiera*).

3.2 ACHIEVEMENTS UNDER THE COMPETITIVENESS OBJECTIVE

Evidence from evaluations and studies

The available evidence on the performance of RTDI measures mainly concerns the effects of widely used measures **boosting applied research and product development** projects carried out by firms (investment incentives). The evidence summarised above and the studies referred to on incentives, therefore, relate in most cases to both Convergence and Competitiveness regions. A further study (Bronzini and Iachini 2009)²² which focused on an investment subsidy programme implemented in Emilia Romagna in 2003 also deserves mention. Under the programme, subsidies were awarded to proposals from firms that scored above a certain threshold. The investment spending of subsidised firms was compared with that by firms just below the cut-off score using econometric discontinuity methods. The study found no significant increase in investment as a result of the

²² Bronzini, R. and Iachini, E. (2009), “Are incentives for R&D effective? Evidence from a regression discontinuity approach”, Bank of Italy, Dept. of Structural Studies.

programme, though the results differed according to firm size. While small firms increased their investment as a consequence of the subsidy, larger firms did not do so.

A comparative study on the impact on employment of incentives in particular localities was carried out in Piedmont²³. The econometric analysis using a database (2001–2003) including details of different types of aid schemes available in the region found that: the average effect of incentives on employment increased with size and that the different types of incentive (grants, loans and mixed schemes) had similar employment effects.

A number of evaluations of ERDF-financed innovation initiatives were carried out as part of the Mid-term or Updated Mid-term Evaluations of SPDs/ROPs 2000–2006. These mostly consisted of an analysis of expenditure and programme indicators and an attempt to collect evidence on additionality by means of surveys of grant-recipients. In particular, the Updated Mid-term Evaluation of the Tuscany SPD included a survey of aid scheme beneficiaries which recorded a positive effect on the propensity to invest, turnover, employment and patenting activity but little effect in terms of additionality.

Less structured assessments have been carried out in Piedmont (mapping of the innovation system and identification of technology priorities and interventions to be implemented in the following period), Veneto (a positive employment effect of R&D schemes emerged from a questionnaire), Lazio (questionnaire and case studies on 2000–2006 initiatives which used a control group and recorded a positive effect of aid schemes on the innovation performance of beneficiaries), Umbria, Marche and Friuli V.G. Most studies have reported positive results, though these need to be considered with some caution since the methods used mostly relied on information and opinions of beneficiaries and were based on a limited set of data. Monitoring of support for innovation needs to be substantially improved at regional level if evidence based evaluations are to be undertaken.

As regards **knowledge transfer and support to poles**, Emilia Romagna has monitored and evaluated the performance of regional research laboratories between 2006 and 2007 through its innovation agency (ASTER). As part of the OP ERDF 2007–2013, the region has also launched an assessment of the regional high-tech network of laboratories and innovation centres aimed at benchmarking them against EU best practices. Results will be available in the next 2–3 years.

Information on the implementation of 2007–2013 programmes

A survey of activities carried out in the Competitiveness regions is presented below. As in the case of Convergence regions, this gives some indication of progress in implementing the innovation

²³ Bondonio, D. (2007), “Gli effetti occupazionali delle politiche di aiuto alle imprese: una valutazione comparativa tra diverse modalità di agevolazione”, Dept. of Public Policy and Public Choice – POLIS Working paper n. 101, November.

initiatives supported under EU Cohesion Policy. Unlike in Convergence regions, however, there are no national or multi-regional programmes in Competitiveness regions.

As regards support for an **Innovation friendly environment**, initiatives have been undertaken in all regions. For instance, three innovation funds have been set up in Lombardy²⁴ and two in Tuscany and Veneto²⁵. A seed capital fund has also been set up in Trento and a venture capital fund (*Ingenium*) in Sardinia.

Infrastructure and aid schemes to develop the Information society and ICT research and diffusion were launched in all the Competitiveness regions as well. For example, infrastructure providers have been selected in Veneto with the aim of narrowing the digital divide. In Abruzzi, a tender for ICT access and diffusion was published at the end of 2008 (and EUR 47.4 million committed).

As regards **Knowledge transfer as well as support to innovation clusters and poles**, aid schemes (e.g. grants for investing in innovation and cooperative research) and infrastructure (relating to buildings and equipment, poles and districts) to support knowledge transfer and technology diffusion have been launched in several Competitiveness regions.

As regards innovation poles and knowledge diffusion in key strategic sectors, a call for proposals for integrated value chain projects (PIF) was published in Lazio. In Liguria, EUR 5 million have been committed to setting up, expanding and developing research and innovation poles and a call for tender for providing advanced services to enterprises was also published. In Marche, around EUR 2 million has been committed to supporting innovation in firms in the fashion industry and EUR 6 million to technology investment in SMEs. In Umbria, EUR 5 million has been committed to Innovation Poles.

Technological innovation projects are being implemented in Piedmont (EUR 30 million geared towards micro and small firms), Liguria (EUR 20 million committed), Lombardy (EUR 10 million committed to process and organisational innovation), Veneto (EUR 22.6 million for technology transfer), Basilicata (EUR 50 million) and Abruzzi (where a call for tender supporting SMEs was published in 2009).

A particular emphasis on eco-innovation is evident in Piedmont (344 projects geared towards SMEs have been co-financed; funding amounting to EUR 12.6 million), Sardinia (over EUR 21 million committed to environmental protection and safety at work) and Umbria (105 projects in 2008; with funding of EUR 5.8 million).

In addition, several tenders for the diffusion and adoption of ICT were published in Piedmont, Emilia Romagna and Umbria between 2008 and 2009.

²⁴ FRIM, Made in Lombardy and JEREMIE; they support innovation in SMEs and the creation of innovative enterprises (EUR 45 million).

²⁵ Early stage & expansion as well as a guarantee fund.

As regards **Boosting applied research and product development**, aid schemes (grants and loans) to support industrial research and pre-commercialisation development in key sectors were launched in the majority of regions.

Aid schemes for industrial research and experimental development are being implemented in Tuscany, Aosta Valley, Liguria, Umbria, Marche, Friuli V.G. and Lombardy. In Lazio, complex projects of industrial research, provision of services and technology transfer are being carried out to strengthen the regional “innovation value chain” (with funding of EUR 4 million), the aerospace technology district (EUR 7 million) and ship-building (EUR 9 million). In Piedmont, several call for tender were published on support of transnational industrial research (MANUNET) (EUR 7 million in 2009 and 7 million in 2010).

As regard business creation, in Molise the “GO!” initiative (start-ups and spin-offs) is being carried out (with EUR 7 million) and start-ups are also being funded in Valle d’Aosta (EUR 1.6 million), Veneto (over EUR 8.3 million for the creation of high tech firms) and Marche (EUR 3 million).

Research infrastructure and facilities in strategic sectors are being supported in several regions. For example, in Emilia Romagna, the techno-poles project is underway and premises for the networks of laboratories are being constructed (EUR 80 million of ROP resources). In addition, a call for proposals was launched in 2008 to select the universities and research centres that will participate in the regional high-tech network of laboratories. In parallel, a call for tender to fund cooperative research in SMEs was published (371 proposals have been received).

4 CONCLUSION: MAIN CHALLENGES FACED BY COHESION POLICY PROGRAMMES

Regions have major competence for all aspects of innovation policy. The scaling down of national programmes which followed the 2008 political changes and the onset of the economic crisis further increased their importance.

The central government still plays a crucial role in innovation policy, especially in the South and so far as Convergence regions are concerned. Important steps have been taken in the present programming period to improve coordination between levels of government and different policy measures, such as by unifying programmes managed by the MIUR and by the MSE and through framework agreements with the regions.

The role of ERDF is crucial. A substantial share of the fund is devoted to innovation policy both in Competitiveness (44% of the total ERDF) and in Convergence regions (34.5% of the total ERDF). Overall, in the Competitiveness regions, the ERDF allocated to innovation represents around 2% of total RTDI effort (proxied by GERD). In the Convergence regions, this proportion is much larger at over 40%.

To realise their potential for innovation, Italian regions need to improve their skills and methods of management as well as to develop more coherent medium and long term regional strategies for innovation.

The development of the capacity to manage innovation policy is therefore the main challenge. This mainly translates into: introducing multi-annual strategies designed so that their results can be monitored step by step and the know-how of staff developed along with efficient innovation agencies.

Convergence regions have a strong influence on innovation policy as a result of the significant amount of resources at their disposal. However up until now, their strategy has mostly been determined by the NOP ReC, which is the only framework for RTDI policy in absence of a region-specific framework. These regions have also developed and launched their own initiatives to support RTD and ICT diffusion. Such initiatives have mostly focused on the prevailing structure of the economy rather than on investing in key technologies or sectors with high growth potential. The results of these initiatives are not clear because of a lack of critical analysis of their achievements. It is urgent to remedy this situation especially in relation to certain new initiatives such as support for innovation poles which is increasingly common.

Competitiveness regions have carried out a wide range of innovation initiatives whose effects seem to be favourable. Moreover most of resources they have available have been committed, though evidence on achievements remains limited.

The evidence available so far on the performance of innovation support measures concerns mainly aid schemes for enterprises and relates to the past rather than the current programming period, but it is relevant insofar as it focuses on national instruments that are still widely used across the country. This shows mixed results, depending on the method used, the features of the dataset and the control group as well as the specific evaluation questions asked. There is, in fact, an ongoing debate on the appropriateness of the variables and control groups used in the different studies. It is a challenge to advance both theoretically and empirically in this area, to set up a common and broader information system in order to produce more comparable and reliable results.

The information on the progress of 2007–2013 programmes is encouraging in that a wide range of initiatives have been launched in all regions across all policy areas. The focus of ERDF support seems strategically appropriate in the most advanced regions while, in the South, the support is biased towards boosting applied research despite the lack of an environment favourable for innovation and the difficulty in fostering knowledge diffusion. This seems to be due to the limited capacity of policy makers to design and implement effective support measures and their greater familiarity with aid schemes, which reinforces the need to develop management capacity.

A final challenge which deserves mention is that both regional and national authorities need to make an effort to adapt their grant instruments to support riskier investment and leading-edge

research. Aid schemes for industrial and collaborative research, despite the different procedures used, represent by far the most important measure, accounting for the bulk of resources. These guarantee, from the evidence of the previous programming period, a high rate of absorption and good results in terms of both the innovation performance of beneficiaries and spill-overs. However, as evidenced by some 2000–2006 evaluations²⁶ of industrial research projects, the high success rate of projects financed casts doubt on the capacity of these initiatives to support risky investment rather than incremental innovation. This together with other findings has been taken into account by the managing authority in designing the unified NOP ReC but more progress remains to be made on this front.

²⁶ Ismeri Europa, Op. cit.

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KEY STAKEHOLDERS AND EXPERTS CONSULTED

Fabrizio COBIS	Managing Authority of the NOP ReC (Ministry of University, Education and Research)
Renato FÀ	Managing Authority of the NOP ReC (Ministry of University, Education and Research)
Esmeralda PASSERINI	Technical Assistance to the Managing Authority of the NOP ReC (Ministry of University, Education and Research)
Paolo PRATICÒ	Head of Evaluation Unit – UVAL (Department for Development Policies – Ministry of Economic Development)
Laura TAGLE	Evaluation methods and local development – UVAL (Department for Development Policies – Ministry of Economic Development)
Iolanda ANSELMO	Evaluation methods – UVAL (Department for Development Policies – Ministry of Economic Development)
Tito BIANCHI	Industrial policy and local development (Department for Development Policies – Ministry of Economic Development)

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

The data on the ERDF resources allocated cover the FOI codes defined as being relevant for support of RTDI, or, more precisely, those that cover the bulk of resources devoted to innovation (see annex B for the list of codes).

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

Programme	Total ERDF resources for innovation	Total ERDF	Innovation support as % of total ERDF	Main initiatives planned/implemented
Poin Attrattori culturali, naturali e turismo	45,164,449	515,575,907	8.8%	• Aid schemes (grants and loans) for industrial research and pre-competitive development projects
Poin Energie rinnovabili e risparmio energetico		803,893,176	0.0%	
Pon Governance e AT FESR		138,095,405	0.0%	• Development of R&D infrastructure, networks of labs
Pon Istruzione FESR – Ambienti per l'apprendimento	138,686,753	247,654,915	56.0%	• Aid schemes (grants) and infrastructures (building and equipment) for knowledge
Pon Reti e mobilità		1,374,728,891	0.0%	

Pon Ricerca e competitività	2,999,196,821	3,102,696,821	96.7%	<p>diffusion, technology transfer and creation of innovation poles</p> <ul style="list-style-type: none"> • Aid schemes to support innovative investment of SMEs such as the purchase of advanced services as well as their growth and clustering • Innovative finance and guarantees and support to creation of new firms • Initiatives to develop the information society (access, diffusion, advanced services, e-government) 	
Pon Sicurezza per lo Sviluppo – Obiettivo Convergenza	355,849,301	579,040,437	61.5%		
POR Calabria FESR	356,790,567	1,499,120,026	23.8%		
Por Campania FESR	1,000,000,000	3,432,397,599	29.1%		
Programma Operativo FESR Puglia	670,500,000	2,619,021,978	25.6%		
Por Sicilia FESR	535,331,091	3,269,802,550	16.4%		
Por Basilicata ST FESR	65,272,000	300,874,549	21.7%		
Total Objective 1	6,166,790,982	17,882,902,254	34.5%		
Por Abruzzo FESR	51,790,300	139,760,495	37.1%		<ul style="list-style-type: none"> • Aid schemes (grants and loans) to support industrial research and pre-competitive development projects in firms, in key sectors • Research Infrastructures and facilities (competence centres, networks of labs) in strategic sectors • Aid schemes (e.g. grants for cooperative research) and infrastructures (building and equipment, innovation poles and technological districts) to support knowledge transfer and technology diffusion • Aid schemes to support SMEs innovative investments such as eco-innovation and aggregation of SMEs • Aid schemes for the purchase of advanced services (e.g. audit, patenting, business plan preparation, start up, technological foresight) to increase innovative capacity of firms • Infrastructures (e.g. incubators) and aid schemes for the creation of new innovative firms, spin-off etc. • Innovative finance (venture capital, equity, guarantee etc.) • Infrastructures and aid schemes to develop information society, ICT solutions research and diffusion
Por Emilia Romagna FESR	77,461,293	128,107,883	60.5%		
Por Friuli Venezia Giulia FESR	37,485,000	74,069,674	50.6%		
Por Lazio FESR	146,500,000	371,756,338	39.4%		
Por Liguria FESR	94,849,350	168,145,488	56.4%		
Por Lombardia FESR	101,197,923	210,887,281	48.0%		
Por Marche FESR	50,439,814	112,906,728	44.7%		
Por Molise FESR	29,193,710	70,765,241	41.3%		
Por P.A. Bolzano FESR	7,077,979	26,021,981	27.2%		
Por P.A. Trento FESR	7,100,600	19,286,428	36.8%		
Por Regione Piemonte FESR – versione 2	181,210,803	426,119,322	42.5%		
Por Toscana FESR	140,412,315	338,466,574	41.5%		
Por Umbria FESR	62,989,874	149,975,890	42.0%		
Por Valle d'Aosta FESR	7,200,000	19,524,245	36.9%		
Por Veneto FESR	101,269,606	207,939,920	48.7%		
Por Sardegna ST FESR	293,948,103	680,671,765	43.2%		
Total Objective 2	1,390,126,670	3,144,405,253	44.2%		
Overall total	7,556,917,652	21,027,307,507	35.9%		

* The term initiatives should be understood in a wide sense covering measures, projects, actions and so on co-financed by the ERDF. Among these, experts should identify the main kinds of intervention.

Source: core team on EC data.

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

a – Convergence Objective

Policy Area	Categorisation of Expenditure (FOI codes)	Total ERDF
Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)	06	423,091,835
Investment in firms directly linked to research and innovation (...)	07	1,144,158,536
Other measures to stimulate research and innovation and entrepreneurship in SMEs	09	697,626,955
R&TD activities in research centres	01	1,097,309,799
Boosting applied research Total		3,362,187,125
Advanced support services for firms and groups of firms	05	348,195,555
Developing human potential in the field of research and innovation, in particular through post-graduate studies ...	74	310,200,000
Information and communication technologies (...)	11	649,732,459
Information and communication technologies (TEN-ICT)	12	154,350,359
Other measures for improving access to and efficient use of ICT by SMEs	15	71,240,906
Services and applications for citizens (e-health, e-government, e-learning, e-inclusion, etc.)	13	244,353,003
Services and applications for SMEs (e-commerce, education and training, networking, etc.)	14	89,366,982
Innovation friendly environment Total		1,867,439,264
Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)	04	215,339,941
R&TD infrastructure and centres of competence in a specific technology	02	562,086,077
Technology transfer and improvement of cooperation networks ...	03	159,738,575
Knowledge transfers and poles Total		937,164,593
Total Objective 1		6,166,790,982

Source: core team on EC data.

b – Competitiveness and Employment Objective

Policy Area	Categorisation of Expenditure (FOI codes)	Total ERDF
Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)	06	107,415,614
Investment in firms directly linked to research and innovation (...)	07	160,464,074
Other measures to stimulate research and innovation and entrepreneurship in SMEs	09	151,882,417
R&TD activities in research centres	01	70,555,634
Boosting applied research Total		490,317,739
Advanced support services for firms and groups of firms	05	235,454,896
Developing human potential in the field of research and innovation, in particular through post-graduate studies ...	74	
Information and communication technologies (...)	11	84,188,784
Information and communication technologies (TEN-ICT)	12	14,110,537
Other measures for improving access to and efficient use of ICT by SMEs	15	18,068,915
Services and applications for citizens (e-health, e-government, e-learning, e-inclusion, etc.)	13	62,218,791
Services and applications for SMEs (e-commerce, education and training, networking, etc.)	14	69,405,281
Innovation friendly environment Total		483,447,204
Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)	04	186,121,845
R&TD infrastructure and centres of competence in a specific technology	02	99,249,959
Technology transfer and improvement of cooperation networks ...	03	130,989,923
Knowledge transfers and poles Total		416,361,727
Total Objective 2		1,390,126,670

Source: core team on EC data.

ANNEX B – 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:

	<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 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>
<p>Knowledge transfer and support to innovation poles and clusters</p>	<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.
<p>Boosting applied research and product development</p>	<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>

Instruments	Short description
<p>Infrastructures and</p>	<p>Building and equipping laboratories or facilities for university or research centres, Telecommunication infrastructures,</p>

facilities	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