STUDY ON RESEARCH AND INNOVATION SUPPORT TO ENTERPRISES IN SPAIN: RECOMMENDATIONS FOR STRATEGIC GUIDELINES AFTER 2013

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EXECUTIVE SUMMARY

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1. Introduction and Objectives.

The current programming period of Structural Funds (2007-2013) will conclude in the near future, and the undertaken operations and programmes should be overhauled and evaluated in order to design new operations taken into account the results obtained and the lessons learned over this period.

The main objective of this study is to provide background material and support to the Commission Services in the forthcoming negotiations with the Spanish authorities on the preparation of the future ERDF interventions in the field of the research and innovation support to enterprises in Spain. This will be particularly useful in order to assess the "Smart Specialisation Strategies" to be submitted by the Spanish authorities.

As most of the programmes will be regional, the analysis should be carried out both at national and regional level, including a **diagnosis** of the current activities and policies of Regional and National Innovation Systems on the basis of the experience, opinions and suggestions stated by small and medium enterprises (SMEs) of all Spanish regions; and some **conclusions and recommendations** in order to achieve more coordination and efficiency among all research and innovations support instruments for SMEs

2. Methodology.

The methodology of the study uses different techniques with a sequential approach. They are the following ones:

- **Review of the statistics and written information** (Desk research).
  We have analysed and reviewed all the available and updated statistical sources and documents at national and regional level regarding research and innovation policies for SMEs in Spain.

- **Field work: interviews with managers of relevant regional/national SMEs and enterprises associations; and interviews with representatives of public sector at regional and national level.**
  The evidence obtained in the previous phase has been compared and checked with the results of the interviews carried out with 47 SMEs and 41 Institutions in all Spanish regions (17 Autonomous Communities and National institutions).
  We have met: SMEs, enterprises sector Associations, Public Bodies, Technological Centres, Scientific Parks, Universities and Foundations.

- **Field work: SMEs Survey.**
  To complete the information obtained in the interview phase, a survey to 400 Spanish SMEs has been carried out. The **sample is statistical representative at national level.** Nevertheless, the sample design (selection) has been specifically adapted to optimise information regarding innovation, and distribution among industry and service sector (retailers) has been modified in favour of industry (45,3%) and services (54,7%).

- **Worskshops**.
  After compiling all the results of the interviews and the surveys, interim conclusions and recommendations were presented and checked with enterprises and innovation support public institutions in two workshops held in Madrid and Valencia. Two representatives of the European Commission participated also in the workshops.
  All participants in the workshops took active part in the open discussions of the conclusions, agreed on the main ideas, and suggested some additional measures regarding forthcoming interventions. The roundtables provided a complement component to enrich the obtained information and evaluation with different approaches and views (public and private perspectives).

Furthermore, the methodology has been controlled all the time by the research team in order to guarantee its quality and accuracy; and the different phases have been designed as a **sequential process with permanent feedback** on the relevant date and lessons learned from each phase. In other words, the results obtained in the interview phase have been taken into account for the survey design, and so on.

The **Interim Report was presented to the European Commission on February, 4th** in Brussels, according to the Contract Conditions.

Additionally, a **Working Group** was created in the High Council of Chambers of Commerce website, to allow the European Commission Services to have access to all the documents and working papers used in the execution of the project.

To sum up, the applied **methodology has allowed deep and accurate knowledge of the current research and innovation public support to SMEs in Spain**, and has collected main needs and demands of Spanish SMEs for future interventions in this scope.

3. Conclusions y recommendations.

3.1 Final Conclusions.

CONTEXT.

1 **Research and innovation current situation:** Spanish economy has **greatly struggled in favour of R+D investment over the last decade** moving from 0,91% GDP of expenditure in 2000 to 1,33% in 2011; or regarding working population in this scope, from 6‰ in 2000 to 11,9‰ in 2011. Nonetheless, **due to the deep and long economic crisis, figures are stagnated over the last two years**, despite that the official target is to achieve a R+D expenditure of 3% of GDP in 2020.

Comparing these figures with Europe, **Spain is below the average** (2,03% of EU GDP in expenditure in R+D). Besides that fact, in Spain **public R+D expenditure is higher than the average in the EU**, revealing the **relative weakness of private R+D expenditure in Spain.**

The contribution of private expenses on total R+D of the Spanish economy has been cyclical: **companies cope the higher proportion of expenditure on R+D on periods of expansion in activity**, while during slowdowns, the percentage of expenditure on R+D linked to the private sector has been reduced (and therefore, public sector concentrate greater research effort in relative terms).

From a regional perspective, in competitiveness regions, private funds in the financing of R+D are significantly higher than in convergence or phasing Spanish regions.

2 **Current situation specifically for innovation: unfortunately, the great boost made in favour of R+D expenditure has not been accompanied of a similar evolution in innovation terms.** Actually, the number of innovative enterprises has decreased continually since 2008, with a cumulative fall down of 76,6%.

In 2009-2011 period, a total of **50.982 enterprises were innovative, representing 31,1% of the total figure of enterprises with 10 o more employees.** Non technological innovation is the priority for this group of companies (16,6,% of the total enterprises with 10 or more employees).

3 **Big companies versus SMEs:** Big companies have **more capacity to innovate technologically** (48,9% in 2011 vs. 15,9% of SMEs), and are able to obtain greater returns from new products or services.

SMEs declare that **main obstacles to innovate are linked to the scarcity of financial, operational and human resources.**

Finally, in Spain, **big enterprises do not foster innovative processes and investments among SMEs.** In general terms, big companies subcontract/hire SMEs for technological research and development, but SMEs must bear the cost and risk of new technological investment with not continuous or medium support offered by the big companies.

4 **Regional approach:** regional analysis shows an **intense concentration of human and economic R+D+I resources.** Madrid and Catalonia are the outstanding regions, (whereas Basque Country and Navarre have relative good figures too). But the main characteristic is the **deep regional gap with little variations and no relevant changes over the years.**

5 **Research and Innovation public activities:** Both, Regional and National Strategies and Plans, mentions and fosters mutual beneficial relationship between Research instruments and Innovation instruments. In other words, in theory, activities designed are willing to establish links between research (Universities and Research Institutions) and innovation.

Official documents, however, do not include actual proposals to solve the gap between Spanish scientific excellence (nº10 in International Scientific Publication rankings) **and innovation activities among companies** (Spain is behind the average in EU).

6 **Spanish R+D+I System Dimensions: There are currently numerous innovation support institutions in Spain** and this fact can be explained because of: i) the particular **Competence distribution** between Regional (17 Regions) and National Administrations; ii) the **youth of Spanish support innovation system**; and iii) the **small size of industrial enterprises** in Spain which demand close offices to work with or to get advice. This wide system helps to extend knowledge among enterprises, but now is the moment to **organise efficiently the whole system according to criteria of specialisation, critical mass and capabilities of available human resources.**

STRATEGIC GUIDELINES FOR INNOVATION.

7 **Focusing enterprise needs and innovation (results):** The previous National Innovation Strategy (E2i) and the current Spanish Strategy for Science, Technology and Innovation highlight the interest to increase the number of innovative enterprises and to close research work to the market. Nevertheless, **the Strategy does not consider clearly the needs of**

industrial or service enterprises as protagonists of the process. It does not include either any mention to use **economic impact or wealth generation among SMEs, to evaluate the results of the Strategy.**

8 **New activity scopes.** The Regional and National Strategies state the need to develop new innovation activities among public sector, and new activity scopes for innovation such as: social innovation and community welfare. However, **official documents do not include any mention to identify and strengthen the sectors according to technological competitive advantages.** In other words, all documents keep on working with the sector approach, instead of combining technology and sector fields to support innovative activities and to use the European Industrial Framework as reference.

9 **Smart Specialization and Clusters:** National and Regional Plans include the objective to work on a cluster/association basis with local companies. This approach is positively linked to the Technological Centres available in each region, and would help the investment in applied innovation. Global analysis of the documents and the opinions of companies and institutions show that **there are 6/7 common priority sectors in the 17 Regions of Spain and** that, in many cases, **there is very little relevant experience in working at supra-regional level.**

10 **Internationalization:** Regional and National Plans insist in strengthening international collaboration of public institutions and private participants. This international trend was already started some years ago thanks to the European R+D Framework Programmes.

Regarding this issue, the trade-off is the following: **Should each regional innovation system internationalise once it has achieved a critical mass in Spain? Or should each regional system keep on closing collaboration agreements with other European regions, whatever future sustainability or independence capability it has at regional level?**

Finally, Regional Plans include the European dimension as crucial, but the **European dimension is not important for SMEs** of the region, apart from the SMEs of Competitiveness Region. There are still **big differences in collaboration among Spanish SMEs and Research Centres.**

11 **Governance of the System:** New Spanish Strategy includes a specific chapter regarding this issue. Some information exchanges are mentioned and collaboration mechanisms among Regions, and a new National Research Agency is to be created, but there is **no mention about a single Public Body to coordinate innovation instruments in Spain**, and there are not quantitative indicators to evaluate the objectives to achieve.

12 **Best practices and proximity networks (bottom-up approach):** The outstanding best practices identified by enterprises or regional agents are generally **simple projects** (including some advice and technological investment) **and distributed by proximity agent networks.** This bottom-up approach is very well considered by SMEs because it usually offers subsidies and advice/training funding.

OPERATIONAL INNOVATION ACTIVITES: SUPPORT INSTRUMENTS.

13 **Innovative Capacity: Manufacturing and Technological enterprises are progressively more specialised** (more than 50% declare to sell their products to a specific segment of clients) **and with more qualified human resources** (mostly with high education), despite the fact that most of the Spanish GDP comes from sectors of medium and low technology. The actual challenge is how to foster growth among many young small technological enterprises, without size enough to compete at global level.

Spanish innovative companies usually are more internationalised (76,6% of interviewed enterprises are exporters) than the total of the Spanish Companies, and with a lower trend to reduce employment.

14 **Enterprise opinions about public instruments to support innovations: Main obstacles** declared by enterprises regarding public instruments are the following ones: **long reimbursement periods** (55,3%) **and administrative burdens** (49,3%). New interventions should reduce administrative burdens (67,2% of interviewed companies asked for less paperwork), and reduce the periods to get the reimbursement of the innovation expenditure (currently, in many cases more than 18 months).

Besides, there are a lack of knowledge and information about innovation support activities among most companies (40,5% in the survey declare that the lack of transparency is a difficulty too).

15 **Innovation Sources for enterprises:** The main source of innovation for enterprises, apart from their internal resources, are **clients** (38,8% in the survey, and 87% among interviewed enterprises). University is relevant in innovation only for 10,4% of the enterprises, in the survey, and 17,4% in the interviews. All enterprises declare that University in Spain has not adequate incentives to foster knowledge transfer in favour of SMEs[1]. The European Commission has stated the main idea in some studies.[2]

Collaboration between Universities and SMEs can be described merely as formal collaboration, most of it is linked to training activities and staff: enterprises do not consider University as a relevant source for innovation. **Many SMEs collaborate with Technological Centres** to foster applied research with relevant results, even though, in some cases, technological companies declare and there is direct competition between these public institutions and them, and they consider this fact as "unfair competition".

16 **Investments in innovation by companies:** Enterprises invest mainly in technology to compete and find new business opportunities (59,6%). Investment in innovation is progressively permanent in companies that usually export, even though the **level of investment is still very low** (1,3% of annual turnover according to the survey). Companies in IT sector invest much more (more that 30% per year).

Investments of SMEs are linked to new software products/inputs (59,7% in the survey and 74,5% in the interviews), equipment and specific technology (43,3% in the survey and 66% in the interviews), and training (34,3% and 27,4% respectively).

17 **Tax Deductions: The Spanish system of research and innovation tax deductions is not used by most of the SMEs, because they think it is very complicated and, consequently, expensive** (they have to hire a consultant to help them). In theory, the system is very generous and comprehensive for enterprises, but in practice, it is worthwhile only for medium-big companies or for the small group of technological-based enterprises (EBT).

18 **New financial instruments:** Spanish SMEs declare **that grants/subsidies are still needed to start innovation investments because the special risks of innovation.** Nonetheless, after the first phase, most enterprises will accept credit lines (76%) to pay innovation investments, provided the credit conditions are better than those of the regular financial institutions, and if the institutions do not ask for additional guarantees. Currently this is not the case and many credits offered to SMEs are not used by companies.

[1] Spain report- Innopolicy Trend Chart-Proinnoeurope.

[2] Competitivenes Report in the EU, 2011.- DG Research and Innovation. European Commission.

For this reason, **new distribution networks/systems should be established in the new period** in order to extend or wide the number of beneficiary enterprises.

Actually, most of the enterprises in the survey (78%) declare that financial support and particularly, subsidies are needed to start the innovation process; thanks to the financial support, they have decided to undertake innovative actions (68,7%)

19 In Spain, **innovation culture is not yet widespread among SMEs**, so they will keep on working with innovation as they work with marketing or accounting systems (only 16,8% of enterprises of the survey have participated in innovation support public projects). Many enterprises still think about innovation only for new projects (not for new strategies or new process), and they do not think they can afford a continuous investment in innovation[3].

Something must be done to **help companies to profit via innovation**. SMEs in the survey think that only 2,5% of their annual turnover comes from innovation.

20 **The CDTI is notorious and well-known among innovative companies.** It is a prestigious institution for technological companies, wherever Spanish region is considered. CDTI usually works with medium-big companies and they consider this institution as a well prepared and professional regarding research and innovation activities. CDTI is not so relevant among SMEs in general terms, which usually work in innovation with regional technological centres.

There are very few relevant technological centres in Spain for companies, whereas a national institution for Innovation (maybe CDTI) will be welcomed to coordinate and organise the innovations agents nationally.

21 **Innovation Support Public Institutions declare they do have outputs and results indicators to evaluate their performance**, but actually, the indicators are not so clear and many enterprises do not know about their usefulness.

3.2. Recommendations

CONTEXT

1 **Research and Innovation Public Activities**: An actual **segmentation** of activities and discrimination according to **different profiles of companies** should be done both in National and Regional Innovation Plans.

Additionally, forthcoming policies in Spain should take into account **interests and needs of many small and medium companies able to innovate and not only interests of big companies**. This approach should foster institutional cooperation and new public-private schemes. Furthermore, **it should be analyzed the possibility of considering private funding as eligible in the new Structural Funds context**, in order to achieve greater sustainability in actions.

2 **Dimensions of National and Regional Innovation Systems**: Under current economic circumstances, Public Authorities should use **scarce financial resources most efficiently and for this reason, they should start a new organisation (reduction and optimisation) of technological and innovation infrastructures**, according to efficiency and performance of each institution and with a supra-regional approach. Since there are 6/7 common economic sector that are essential for many regions in Spain, interregional collaboration will help to achieve a critical mass, specialisation and sustainability in the long term and at European level.

[3] Idem previous.

STRATEGIC GUIDELINES FOR THE FUTURE.

3 **Focus on Innovation and Results**: **New indicators** for innovation are required. The new indicators must refer to new commercial operations, new commercial agreements, **new productivity levels, new growth or wealth generation for the company or the region**. The same should be applied to University Centres.

Public support instruments for innovations should include **a result evaluation scheme to analyse the effects of the innovation funds according to economic efficiency** criteria and entrepreneurial management variables. Some of the new indicators could be the following: new commercial references obtained new markets opened, new collaboration agreements signed.

4 **Smart Specialisation**: In the definition process, **previous analyses of competitive technologies at Spanish level must be done**, before designing the new Strategies.

Given the fact that there are common economic priority sectors in most of Spanish Regions, a **real benchmarking of capabilities of the private sector in each technology and region** should be done. This process will allow creating links among the best of each region and keeping high competitiveness levels abroad.

5 **Internationalization**: Before any forward movement in this field, each Regional System should present a committed **strategic analysis about the eventual International position that each region/sector is aiming at, and the actual and relative capabilities** the region can count on to get it.

6 **Governance of the system**: Forthcoming interventions should include the role of the Spanish **General Administration as the leader and responsible for the coordination** of the innovation systems. A new structure should be adequate, for instance: CDTI or other national institution should play the role as **National Innovation Agency**.

Additionally, **new milestones and progress indicators** should be established to measure the **real simplification and better coordination of the system**, particularly those of different regions. For the enterprises, the priority is to operate in Spain as an integrated territory, not only regarding commercial operations, but also innovation activities and there are invisible frontiers in this field too.

7 **Best practices**: Forthcoming interventions **should combine all the available public networks** (Technological Centres, Scientific Parks, and Chambers of Commerce) **to extend and foster continuous support to small companies**, thanks to sequential instruments: advice, training, innovation management, small technological projects, or new processes, in order to include new innovation culture to thousands of capable companies.

OPERATIONAL SUPPORT INSTRUMENTS FOR INNOVATION

8 **Procedures**: All enterprises demand **integrated procedures when applying to innovation projects,** whatever responsible Administration it is. They suggest that **a single technological platform** should be created in which all proposals and projects could be presented. If some regions or Call for proposals would need some particular information for specific reasons, this information should be minor and included in an additional chapter.

A **reduction of the administrative burden** is needed in the innovation support forthcoming interventions, at least in the first phase **(applications forms)** when the project/proposal is

requested. Sometimes, enterprises declare that Regional Administrations ask for more paperwork than in the case of the VII Framework Programme.

9 **New Operations Design**: Enterprises demand that when documents for a **call for proposals (in innovation)** are prepared, public Administrations should take into account **real private sector requirements (companies and final users), not only in the long term and eventually**, but in the short term and according the context of the region. This is necessary in order that companies could later commercialise what has been funded by public innovation funds (otherwise, sometimes the results are kept in a drawer by companies).

In the new period after 2013, **more supra-regional projects** should be fostered in order to help collaboration among companies of different regions.

10 **Training:** New interventions to foster **training among enterprises, financial agents, and institutions about how to evaluate and give value to innovation investments** should be implemented. Many companies do not know how to take advantage of innovation and how to implement a virtuous and continuous process to manage innovation in the company.

Many enterprises still think about innovation only for new products or new services, and they do not collaborate with public innovation institutions because they cannot appreciate the worth of doing it. For this reason, Spain still needs a wide approach to companies and to link innovation to new processes and new market strategies (Innovation: competitiveness` tool).

11 **Financial Instruments**: Due to financial and credit crisis, forthcoming interventions should include new financial instruments with **easy proceedings and with better financial conditions** that those offered now by financial institutions (in the market).

Subsidies or grants are still needed, because they are a real stimulus for small companies to start an innovation project. Even new credit instruments should include a small percentage of aid.

A **new system of credit lines should be implemented with no additional guarantees**, as the current required by financial institutions, because they are impossible for SMEs, and with new networking distributors. Some new indicators should evaluate the accessibility of SMEs to new financial support instruments regarding innovation.

12 **New financial schemes**. Some enterprises suggest that new call for proposals regarding innovation should include **multiannual financial support** and not only yearly funds, because many innovation projects require investment covering longer periods than a year. In Spain, innovation support systems usually are approved for just one year, and enterprises should apply again for the financial help the next year, with no guarantee of continuation.

Other enterprises suggest that **credits should be reimbursed only in case of success** of the innovation project. In other words, if the project get the economic target or it is commercialised, then the enterprise should reimburse the funds.

Finally, firms demand to **eliminate common and total responsibility in collaborative projects**: Under the present circumstances, SMEs cannot accept external costs and additional risks to their own risks.

13 **Technological Centres (CTs)**: Enterprises suggest that **a single ranking of Technological Centres in Spain should be published. This new repertory/catalogue should include relevant information** such as: turnover in the year, number of clients/year, technology and clients, etc. Only 1/3 of the current CTs have around 150 clients per year. Many enterprises do not know how to select CTs when they are looking for technological support.

14 **Public Call for Proposals** (in innovation) should **avoid direct competition among technological enterprises (generally, small companies) and Technological Centres**. Many call for proposals require that applicant enterprises hire the service of a technological centre, so the company bears the risk of the project whereas the technological centre works and is paid for sure in the proposal/project.

15 **University**: Enterprises and many Professors demand **effective stimulus** to foster real knowledge transfer between Research University Departments and enterprises. They suggest **for instance that knowledge transfer should reduce teaching activity** or could allow partial leave permissions to work in companies. The excellence aim for Basic Research for Universities should not prevent that those Universities willing to foster knowledge transfer could do it in the best available conditions.

16 **Evaluation**: New system to evaluate innovation projects, referring to commercialization of the results funded by public support instruments. For instance: commercial references obtained in 2-3 years. **New indicators** should link results of the projects to new commercial agreements, new markets or new productivity gains of enterprises. Companies also underline that public evaluators of the proposals should have more criteria and knowledge to better know the economic potential of the projects, similar to those of the CDTI staff.

17 Forthcoming interventions should foster **new triple alliances in Innovation: Medium/Big enterprise with a SME and a Technological Institute/Centre**, taking care of the value that small enterprise could add and not only as an instrumental partner to theoretical mutual benefits (big companies vs. small enterprises). The internal agreements should care about who bears the innovation risk in the alliance.