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The Contribution of Spanish STPs to the Europe 2020 Strategy. Promoting regional innovation, economic and social development

Roundtable 4

STPs at different economic and social stages

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The Contribution of Spanish STPs to the Europe 2020 Strategy. Promoting regional innovation, economic and social development

Executive summary

With the recent Strategy Europe 2020, the European Commission ensures innovative promotion in all regions through the development of smart specialization strategies which seek to efficiently exploit resources already available and the innovation potential for each region. Science and Technology Parks (STPs) are some of the most popular instruments for promoting innovation and competitiveness at regional level. In Spain, SPTs turned out to be key tools and backbones in different territorial policies and strategies for competitiveness, contributing to the regional development and to more and better innovation capacities. This Paper will extend the knowledge on the socioeconomic impact of Science and Technology Parks on its immediate surrounding territory, as well as on success factors and lessons learned in the Spanish experience with STPs, especially with regard to the Europe 2020 strategy and the development of smart specialisation strategies.

NOTE

This paper will present the results and conclusions of a study that was carried out by *Información y Desarrollo, SL (INFYDE*) between January and June 2011 at the request of the European Commission, DG REGIO[1] in order to analyse the contribution of Spanish Science and Technology Parks to the goals of the Lisbon Strategy and Europe 2020[2]. All graphs and tables in this paper are based on material and findings of this Study for the European Commission, DG REGIO.

BACKGROUND AND RATIONALE

With the horizon 2010, the Lisbon Strategy promoted competitiveness and cohesion in the European territories through increased investment in R&D, increased rates of employment and occupations, and a more egalitarian society. With the recent Strategy Europe 2020, the European Commission ensures innovative promotion in all regions through the development of smart specialization strategies which seek to efficiently exploit resources already available and the innovation potential for each region. Especially facing the new period for European Cohesion Policy 2014-2020 and the foreseen concentration on innovation and competitiveness support through Smart regional innovation strategies (called RIS 3, based on the S3 approach – smart specialisation strategies[3]), effective intermediaries in a given territory who would be able to integrate and develop the innovative fabric of a region, like Science and Technology Parks, are ever more important.

Precisely, Science and Technology Parks (STPs) are some of the most popular instruments for promoting innovation and competitiveness at regional level, and they are supposed to maintain this role in this new policy strategic framework. They fulfil several tasks in regional development and are a common element of regional and national strategies to support innovation and RDT activities[4].

In Spain,SPTshave been put in place in some regions already since the 1980s, mostly as part of regional innovation and infrastructure policies. They turned out to be key tools and backbones in different territorial policies and strategies for competitiveness, contributing to the regional development and to more and better innovation capacities. Despite the significant importance gained by STPs, few studies regarding their effectiveness exist. This Paper is expected to extend the knowledge on the impact of Science and Technology Parks on their immediate surrounding territory.

[1]European Commission, DG REGIO (2011): "Study on the contribution of Science and Technology Parks (STP) and Technology Centres (TC) to the goals of the Lisbon Strategy in Spain". Study elaborated by INFYDE, SL. Contract nº.2010.CE.160.AT.055. Summary available at: http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/documents/executive_summary.pdf

[2] The opinions stated in this paper present only the point of view of the authors and does not necessarily reflect the opinion of the European Commission.

[3] European Commission, DG REGIO (2011): RIS 3Guide. Draft version 2011. Available at the Smart Specialisation Platform (S3Platform) by JRC-IPTS: http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/s3platform.cfm

[4]See also OECD (2011): Regions and Innovation Policy. OECD Reviews of Regional Innovation. Paris.

SCIENCE AND TECHNOLOGY PARKS IN SPAIN

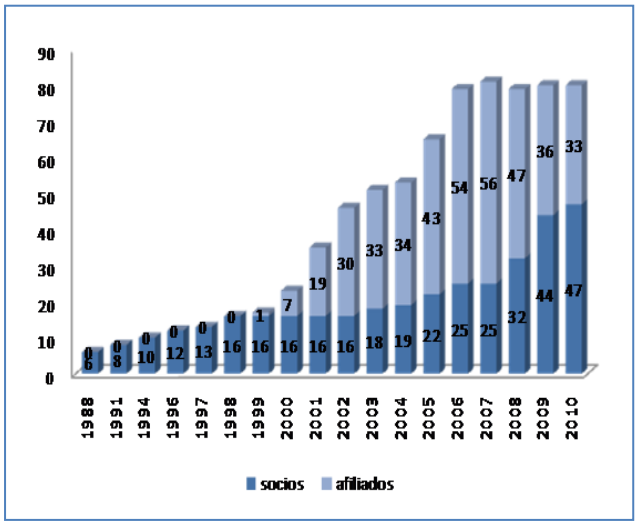
Since the 80s, Spain has experienced a boom in SPTs which has expanded to virtually all regions. STPs support the economic activity, based on highly competitive R&D, and are supposed to have also a significant impact on income creation, employment, added value and innovative capacities in their territories. However, the contribution of STPs is not only limited to the macro dimension,as it also focuses onthe business competitiveness improvements.

In this sense, the services offered by Parks can be broadly divided between advanced information and consultancy services regarding RTDI and enterprise development, infrastructure services (rental, sale spaces) as well as general services. So, along with the added value (externalities) due to the **effects of concentration and physical proximity of innovative players**, the STPs also promotes**knowledge transfer and collaboration**, known as "***cross fertilization***" among key players in the science-technology-business system of a given region. All these elements together are **the real difference in their economic contribution and business competitiveness improvements observed in their environments**.

TheSpanish Association of STP – APTE – congregates virtually all Science and Technology Parks in Spain (81 members in 2012): 49 are Full members (Operating Parks) and 32 Affiliates (support entities and Parks in development).

The Spanish regions leading in the number of STPs are Catalonia (9 Parks), Andalusia (8), Valencia (6), Madrid (5), and Basque Country (4) having the highest number of APTE member parks.

Evolution of Nº of full members (socios) and affiliates (afiliados) in APTE 1988 – 2010



Source: APTE

Distribution of STP in Spain (full members) 2011

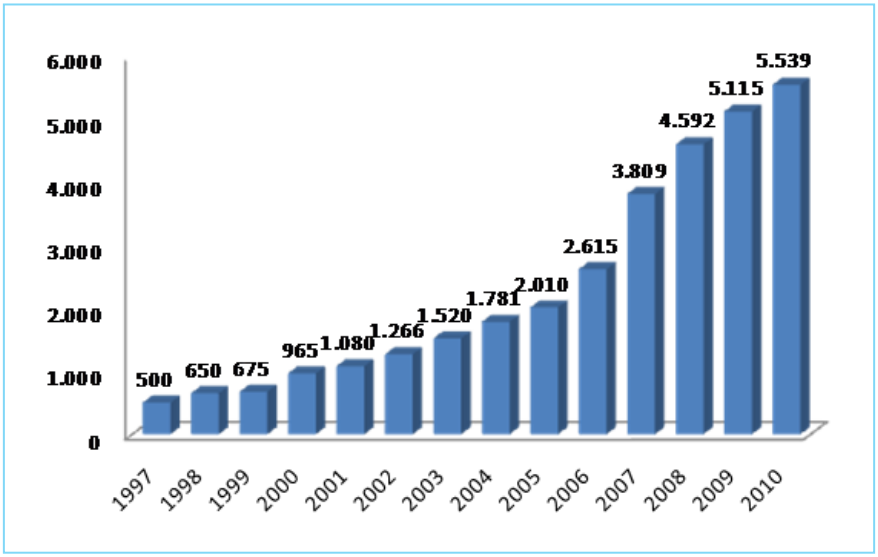
Source: Spanish Ministry of Science and Innovation 2011.

APTE[5] as an Association is very active in the promotion of information exchange and mutual learning between the STPs in Spain, and also between STPs and other key players (National and Regional Administration, Universities, Society). The Spanish STP usually benefit from the lobbying activity of APTE at policy level, but also from the elaboration of strategic knowledge through studies, impact assessments and evaluations.

The evolution and continuous growth of Science and Technology Parks in Spain is a sign for its success, although there is normally little evidence for direct or short-term economic impacts on the territories where Parks are located. This success in the promotion and generation of new Science and Technology Parks despite of a lack of evidencedescribes the "Science Park Paradox", as titled by Van Geenhuizen andSoetanto.[6]A study on the Economic Impact of Science and Technology Parks in Spain[7] was one of the few analyses of impact in this regard and detected important economic and innovative results produced by the firms which are located in the specific innovative environment which generated a STP.

As for their direct impact, Science and Technology Parks in Spain were home in 2010 to more than 5,500 companies, most of them highly innovative.

Nº of Companies in Spanish Science and Technology Parks 2010



Source: EC DG REGIO 2011 based on figures by APTE

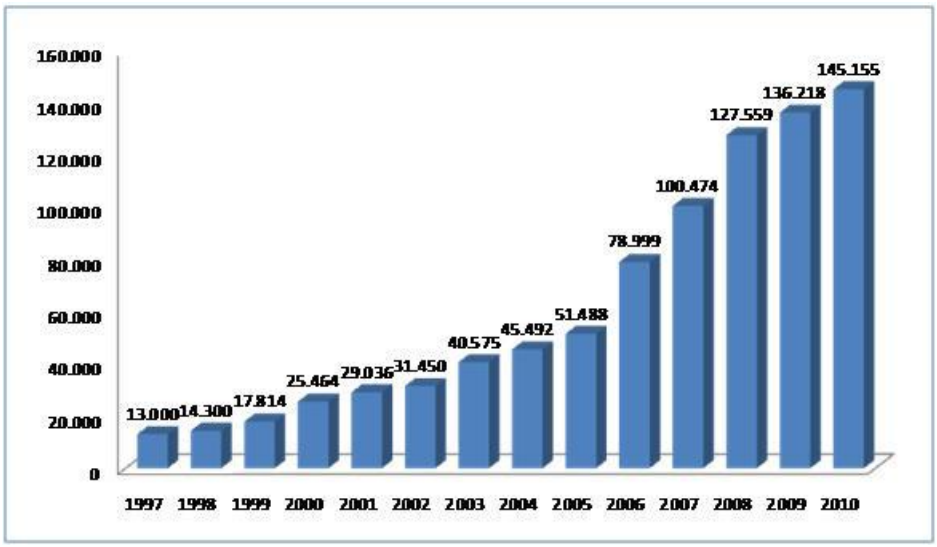
[5] www.apte.org

[6] Van Geenhuizen, M. and Soetanto, D.P. (2008): Science Parks: what they are and how they need to be evaluated. en: Int. J. Foresight and Innovation Policy, Vol. 4, Nos. 1/2, 2008, pp. 90-111.

[7] INFYDE (2007): Estudio del impacto socioeconómico de los Parques Científicos y Tecnológicos españoles. Málaga.Study for APTE. www.apte.org

These companies have a total number of 145,155 employees (direct employment) with a high level of scientific and technological occupations and highly-qualified jobs.

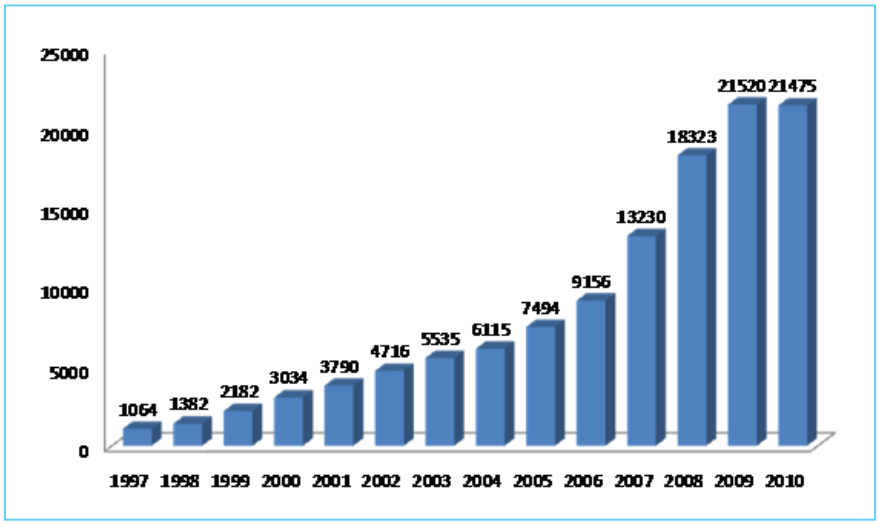
Employment in Spanish Science and Technology Parks 2010



Source: EC DG REGIO 2011 based on figures by APTE

The companies in Spanish STPs have overall revenues of 21,475 million EUR. It should be noted that the financial and economic crisis hit hard on economic performance in Spain, in general, in the years after 2008 and until today. However, at it can be observed, the crisis had little influence on the overall performance figures of companies in Science and Technology Parks, indicating the high level of resilience which offer STP to its tenant companies.

Revenues in EUR by companies in Spanish Science and Technology Parks 2010

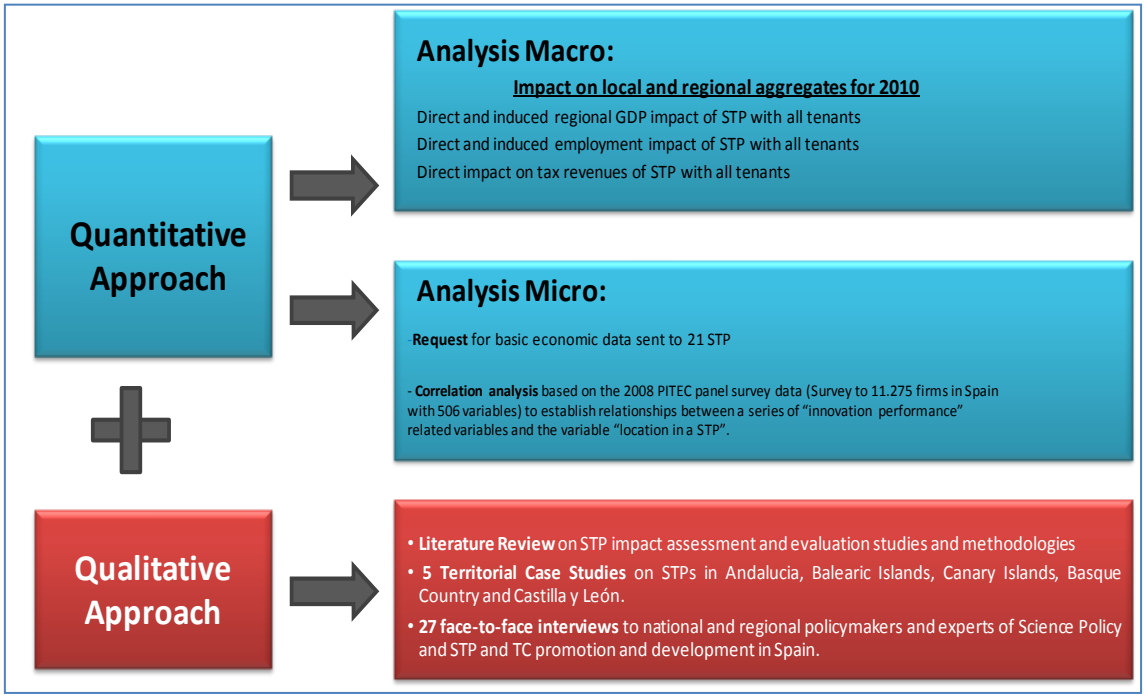


Source: EC DG REGIO 2011 based on figures by APTE

METHODOLOGY

The study was based on a mixed quantitative and qualitative approach, focussing not only on the tangible and socioeconomic impacts of Science and Technology arks, but also on intangible and qualitative impacts.

Methodological Approach to the Impact Analysis



Source: Own elaboration

Theresearch had to face some methodological challenges. In general, the identification and quantification of the knock-on effects on the economy (induced impacts) as well as the contribution through externalities to business competitiveness improvements, is never easy. We must also highlight important differences in the manner of economic impact and innovative capacity contribution between different STPs (as enclaves with different companies and institutions located therein and in their regional context).

The methodology proposed focused on both, qualitative and quantitative analysis. Regarding the first approach, several case studies on Technology Parks, related policies and programmes were analysed. A number of interviews and the PITEC panel[8], where micro data about STPs and business competitive performance can be found, were made.

Regarding the second approach, using the regional economic accounts information and methodologies on impact assessments[9], the direct and induced impact of STPs at national and regional level has been estimated. This analysis has allowed identifying the contribution of STPs to regional economy through a decade.

[8] Technology Innovation Panel elaborated by National Institute of Statistics in Spain (INE), FECYT and COTEC.
[9] Del Castillo, J. and Paton, J. (2008) "*The Socioeconomic Impact of Spanish Science and Technology Parks*" 2008 IASP World Conference in Johannesburg.

RESULTS: IMPACTS OF STPs

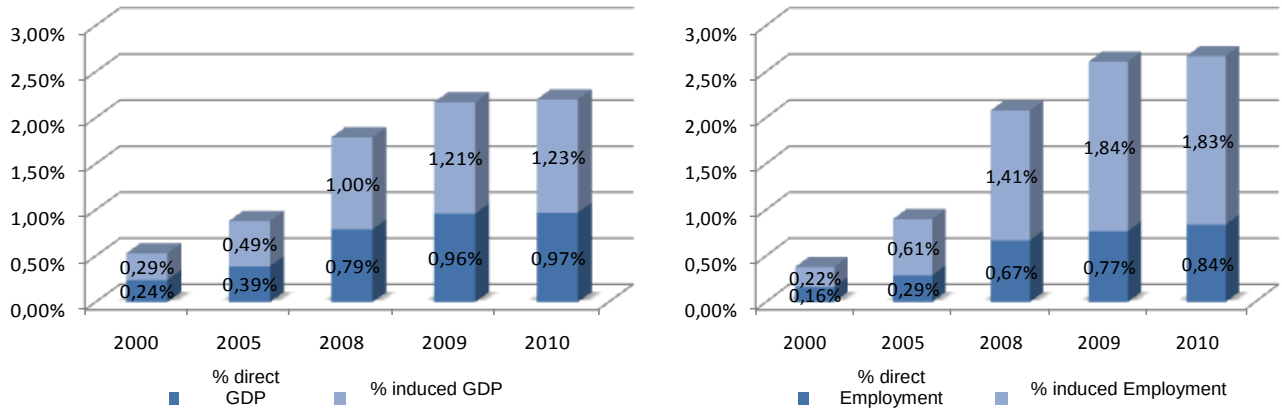
The study allowed identifying the most prominent quantitative and qualitative impacts of Science and Technology Parks in Spain on their immediate surrounding territory.

Regarding the direct quantitative contribution, the impact of Spanish STPs on national economy in 2010, as mentioned earlier, encompassed a total of 5,539 companies and organizations in 47 Spanish STPs. They billed a total of 21,475 million Euros, the equivalent of generating a GDP of 10,090 million Euros (more than 1% of total Spanish economy including direct and indirect effects). They employed some 145,155 people, 25,433 of whom are dedicated to R&D. In 2009, 11.51% of total R&D employment(public and private) in Spain was concentrated in Science and Technology Parks. Besides, STPs are instrumental in creating EIBTs: 783 new innovative businesses were being incubated in Parks in 2010.

The estimation of the macroeconomic impact on overall regional GDP and employment in the regions of Spain where Science and Technology Parks are located indicates a considerable effect on socioeconomic development.

At regional level, STPs generate up to 2.2% of GDP (total impact including direct and indirect effects) in those regions with STPs. This effect rises to 2.74% of the provincial GDP, in the case of the provinces with STPs. Regarding employment, a running STP provides on average a total impact of 2.67% in a given region. In the case of a province, an STP has an average impact of 3.42% on provincial employment.

Direct and induced impact on GDP and employment by Spanish STPs on their corresponding regions



Source: EC DG REGIO 2011, Study by INFYDE, SL.

In the case of the consolidated STPs, their socio-economic impact is even more significant. Thus, for instance, in 2010 the Technology Park of Bizkaia in Zamudio showed a total impact of 3.85% of the Basque GDP (7.54% considering its nearest geographical location –Bizkaia) and about 4.95% of regional employment (9.28% in Bizkaia).

On the other side, there is an **impact of Science and Technology parks on the regional innovative capacity**, especially in regions with less tradition on industrial or innovative activities. Here, the Science and Technology Parks assume the role of a regional engine on innovation, channeling the efforts, both public and private on business innovation and technological development. The impact can be estimated based on the observation of comparing RTDI indicators at European and national level with the indicators for the Spanish STPs. In regard to R&D expenditure as percentage of the GDP the figure is 5.39% in the Spanish STPS, whereas it reaches the level of 2.0% in the EU27 average and 1.39% in the Spanish average. This shows the increased intensity of RTDI efforts in innovative areas such as Science and Technology Parks.This trend is even stronger in the field of human capital devoted to RTDI and knowledge-intensive activities. As for the staff engaged in R%D, the STPs have a ratio of 17.5 employees dedicated to R%D per 100 workers, well above the overall average at European (EU-27 1.07%) and Spanish level (0.96%). Also, according to data from the APTE, about 50% of employees in the Parks have tertiary qualifications (university). The EU 27 average lies at 24.3% and the Spanish at 29.2%. These data confirm the important human innovative capacity of the PCT and its potential in terms of promoting employment of more skilled and knowledge-based sectors. The additional advantage of STPs is that they are highly visible to other highly qualified workers and for talent, in general, so that it is much easier for companies and job-seeking talent to match employment offer and demand within STPs.

Finally, the study identified diverse and extensive **qualitative and intangible effects** of the Spanish Science and Technology Parks on their surrounding territory, but especially on the regional innovation system.

Regarding the qualitative impact, in view of the different actors interviewed during the study, there are many intangible impacts of STPs, many of them related to business competitiveness improvements at micro level. Among the most prominent impacts, there is the effect of **concentration and linking all innovative companies and institutions** within a particular area, making it possible **to generate new collaboration relationships** among them as well as with R&D centres. This fact is importanteven in some countries and regions with a long tradition of strong industrial agglomeration, such as Catalonia or the Basque Country, but it is actually a giant step for rural or service-oriented regions such as Castilla y Leon, Andalusia or the Balearic Islands. In this sense, the STP becomes also the territorial centre of many business innovation activities. The STP managing entity acts, therefore, more and more as an **intermediary between innovation policy and business fabric** in two directions, innovation support from policy to companies and support demands from companies toward policy-makers.

Another more qualitative effect is to grant a common entryway and a "**visitor's card**" providing reliability, professionalism and modernity to enterprises and organizations established in the Parks. STPs are seen increasingly as **trustworthy "access points" for international business** and R&D activities. Especially the consolidated STPs are perceived as "emblematic enclaves and **showrooms with international projection**". According to experts interviewed, this factor becomes more important regarding challenges as globalization, where businesses (especially SMEs) are required to internationalise their strategies and strengthening their linkages with foreign companies. In this sense, STP become more important for regional support schemes, including mobility of researchers, attraction of

foreign investment, retention and attraction of talent. Almost all STPs in Spain focus on the support to innovative entrepreneurs. In 2010, 783 companies were being incubated in STPs.

STPs have also an important effect on the **introduction of an innovation and entrepreneurial culture**, especially with regard to the creation of spin-offs and new innovative and technology-based companies. In many STPs, there are incubator facilities, supported either directly by the STP managing entity or by the regional/local government and/or other agents such as Technology Centres or Universities.

High quality in all services, including basic and maintenance services, is the key for a good performance of the STP management entity. The role of the STP management and its supporting activities (rental, innovation support, training, networking, marketing, innovative and sustainable urban and infrastructure management, landscaping) are seen as an important factor for the generation of a collaborative and trustful environment, where innovation can take place. The **stimulation of common activities to foster acquaintances and face-to-face contacts** among businesses, researchers and other people is seen as an important asset of Science and Technology Parks.

SUCCESS FACTORS FOR SCIENCE AND TECHNOLOGY PARKS

The study revealed a number of success factors determining whether a Science and Technology Park is or is not effective in its commitment.

In this context, two external factors (not to be influenced by the Park itself) and five internal dimensions for successful and effective Park implementation and management were identified.

On the one side, the **external success factors** are:

- A favourable policy framework and a global Science/Technology and Innovation strategy in the region, where the STPis embedded. The Park could offer strategic support to policy-makers and facilitate the matching of technology and knowledge supply and demand.
- A sufficient innovative absorption capacity of the firms and SMEs in the territory. The Park should stimulate technology and knowledge demand, but there need to be a certain fabric with innovation capacities to be able to absorb more support measures.

On the other side, the **five internal dimensions** for success are:

1. Effective internal organization and management: The focus should be on personal leadership, professional knowledge and experience, on-going training and skills improvement, Cost effectiveness within a sustainable financial management, and the use of tools for strategic planning, such as evaluation, to improve processes and outcomes.

2. Efficient and high-quality services and activities: The aspects to comply with are: proximity to the clients (companies, researchers, and universities), promotion and support based on the needs and potentials of the territory, capacity to build critical mass for RTDI (by physical agglomeration and incentives for collaboration). STPs should foresee from the beginning

tenant selection processes that help to guarantee and stimulate innovative capacity, high-quality urban development with innovative buildings and landscaping, and institutional commitment to innovative projects on environment, mobility, land use, energy.

3. Long-term institutional commitment and support. The Park should try to be inserted in general and specific policy measures at local/regional level and seek acceptance as a strategic instrument to support innovation policy within a wider political and social consensus.

4. Proximity to innovative actors. Successful STPs are capable to generate a climate of trust and collaboration among the potential beneficiaries (companies, researchers, entrepreneurs, investors), promote public-private collaboration and fulfil a role of leadership in the regional innovation system.

5. Positive Reputation and visibility at national and international level. Since STPs are the "visitor's card" for local companies, STPs can play an important role as interfaces in international networks and larger RTDI projects. They can carry out measures in Regional and Science Marketing Strategies and, for instance, in talent retention and attraction schemes.

To resume, apart from various external factors (political, resources), efficient and professional Park management and processes built on "trust, communication and coherence" appear key. The learning curve of Science and Technology Parks is long and its growth stage, from commencement to when first results appear, can last between 5 to 10 years. Yet factors such as long term political and institutional support, and experience exchanges within networks and working groups of the IASP or ATPE are important to continued growth and improvement.

COMMON OBSTACLES FOR STPs AND LESSONS LEARNED

Thework within the Study on the socioeconomic impactof Science and Technology Parks revealed that Spain and its profound practical experience regarding the development of STPs might serve as a case of reference to draw lessons and document good practices. The analysis of the Spanish experience in creating, developing and managing STPs, and related policies, can help other countries and regions on their way to design and improve territorial innovation and competitiveness strategies.

Many STPs face the same obstacles in their life, especially in the early phases of development. Some of the main obstacles and challenges in STP development are:

- Organizational and internal management difficulties, as well as lack of technical knowledge and experience,
- Difficulties associated with long-term political support and collaboration between institutions and innovation actors,
- Lack of resources,
- Lack of connection with customers (businesses, entities),
- Problems relating to the site, infrastructure, facilities and services,
- A nonexistent image or one inconsistent with reality due to poor visibility.

When talking about obstacles, there has to be differentiated between newly created Science and Technology Parks and mature STPs. The learning curve of STPs is long and its growth stage, from commencement to when the first results appear, can last between 5 to 10 years. Yet, factors such as long term political and institutional support, and experience exchanges within networks and working groups of the IASP or ATPE, are important to continue growth and improvement.

Challenges for young and mature STPs

CHALLENGES

Parks in development – first stages:

- Lack of political support or only short-term commitment.
- Lack of resources.
- Conflicts or differences between promoting institutions at different administrative levels, or from different thematic units.
- Lack of leadership in the Park management, inexperienced general manager, or no manager at all.
- Need for (institutional) patience until first infrastructures are built and the "innovation support" can start and yield effects.
- Inefficient Park management, especially property-related management.
- Problems establishing general services (restaurants, bank, public transport), at the same time, claims of tenants regarding lack of services.
- Difficult access to the Park area (unfinished roads, no public transport)

CHALLENGES

Mature Parks – advanced stages:

- Poor visibility; inexistent or poor image among the general business and social environment.
- Difficult access or defective internal infrastructures and services (parking space, security).
- Lack of demand for spaces and buildings.
- Problems with establishing and stimulating interaction among companies, researchers, entrepreneurs, etc.
- Park dominated by only one client group (companies or university) and rejected by others.
- Poor services and lack of connection of the management entity with the tenant companies.
- Difficult access to national and international networks, projects, contacts.
- Difficulties in promoting technology-based entrepreneurship.
- Difficulties to reach potential clients from more distant areas (other cities, provinces, regions).
- Need to be in an entrepreneurial environment.

Source: Own elaboration based on EC DG REGIO 2011, Study by INFYDE, SL.

Some **lessons learned about the management and service delivery derived from the Spanish experience**, can help shorten the learning curve and provide an early positive contribution to competitiveness and territorial development in other countries. A key factor for effectiveness is the integration of STPs in broader territorial R&D strategies, since they unfold their array of positive effects at best in combination with other support measures and instruments, based on a common strategic approach.

Other lessons which could be identified are:

Maintaining independence and professionalism of the management team, along with learning and continuous improvement of management and technicians.

Find a balance between income-generating activities (property-related) and activities that are designed to serve companies and entities within the environment.

Identify and reach a consensus on objectives between the entities involved, as well as conduct periodic evaluations and strategic analysis at the management level and in cooperation with the main stakeholders.
Proactive work with companies and entities within the environment and anticipating their needs within a framework of mutual trust.
Create a common vision for the territorial innovation system with regional actors (companies, political) and seek consensus for its construction (territorial strategy).
Be aware of the role as showroom for regional R&D and innovation products and technologies and as an international gate for the region and for companies and RTDI players.

To finish, we would like to resume some recommendations for both, STP managers and regional and local policymakers who want to strengthen the role and capacity of STPs in their territory.

Recommendations for STP managers:

- STPs need to be aware of their role within the overall regional innovation system and of their leadership within its territory with respect to fostering innovative and collaborative behaviour among companies and other RTDI players.
- To be truly efficient, it is important to understand that STPs are strategic projects requiring the professional participation and strategic planning tool implementation.
- STPs play a key role in the R&D globalization within territories, their companies and research bodies. They must understand their role at the international level and conduct more outreach activities with an open economic perspective, creating a positive international reputation.

Recommendations for policy-makers:

- More ambitious integration and use of Science and Technology Parks in strategies and regional planning may be recommended (active integration includes being accountable for services and results).
- STPs should be fully integrated as key actors in innovation strategies and policies, particularly within the context of smart specialization strategies.
- STPs together with innovative clusters are the most effective tools for public advocacy of key enabling technologies and their application in other business areas: biotechnology, nanotechnology, information and energy/green. STPs should be used and supported in this direction.
- Strategic knowledge is needed. It is important to improve the availability and analysis of information, on STPs and their effectiveness, as well as to improve exchange and analysis of information to be able to improve and learn.
- Regional Policies should consider the potential of STPs to integrate regions (their companies, governments, researchers) into the global economy and insert them in networks and processes based on the “open innovation” approach.

CONCLUSIONS: STPs AS INSTRUMENTS FOR EFFECTIVE INNOVATION POLICIES IN THE EU 2020 FRAMEWORK

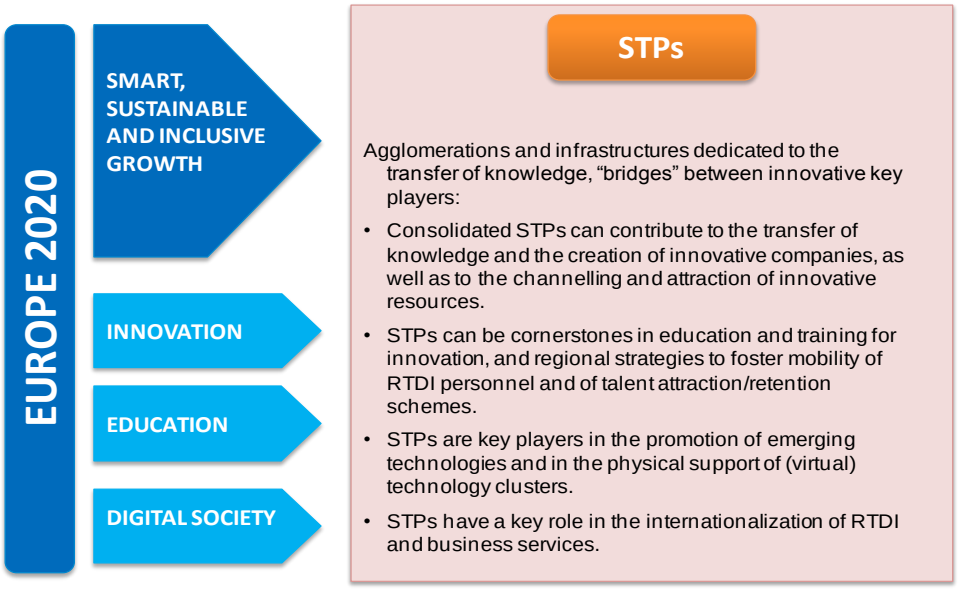
The Study on Spanish Science and Technology Parks confirmed that STPs are complex instruments, highly interconnected with regional strategies for innovation and the behaviour of other innovative agents, both private and public. The study was able to demonstrate, however, that Science and Technology Parks can contribute to innovative development and competitiveness of their environments.

It is not easy to analyze the effectiveness and usefulness of the STPs as instruments for innovation policy. Even within the same country, these organizations offer multiple management forms, objectives, and methods. On the other side, the key to the success of STPs, seems to lie precisely in the diversity of models and articulation forms, which allows them to adapt to different administrative systems, economic structures, and local and regional innovation environments.

In Spain, STPs have become central factors in strategy and policy for science and technology existing in all Autonomous Communities. They have also been identified as interface agents for business innovation by the Ministry of Science and Innovation, and therefore increasingly act as a support channel for aids to collaborative R&D projects and to the creation of shared R&D infrastructure. STPs play an important role in advanced measures to promote regional innovation. In this respect, they may be critical for attraction and retaining talent strategies, schemes to support internationalization, in implementing innovative voucher schemes, or in the extension of services to other areas within the territory. Spain's experience shows that virtually all Autonomous Communities, some sooner than others, have opted to promote and support Science and/or Technology Parks with the result that these have been established with varying degrees of success in the different regions.

The **Strategy Europe 2020** commits policy makers to smart, sustainable and integrated development. In this context looking forward into the future, Science and Technology Parks can play a fundamental role in the articulation of territorial strategies (Smart Specialization Strategies). STPs can be helpful in two ways. First, STPs can be effective tools for innovation decentralization throughout a territory. Science and Technology Parks can become infrastructure bases and anchors for other actions promoting innovation, particularly in Regional Innovation and Smart Strategies. Second, the role that Parks could play is important in the complex processes of strategic planning for regional technological specialisation, because normally they are home to numerous innovative and specialised technology companies and know well the level of regional specialisation in RTDI. Thus, STPs can be key factors in promoting smart specialization promoted by Europe 2020, as they can identify and address the sector and technological prioritization.

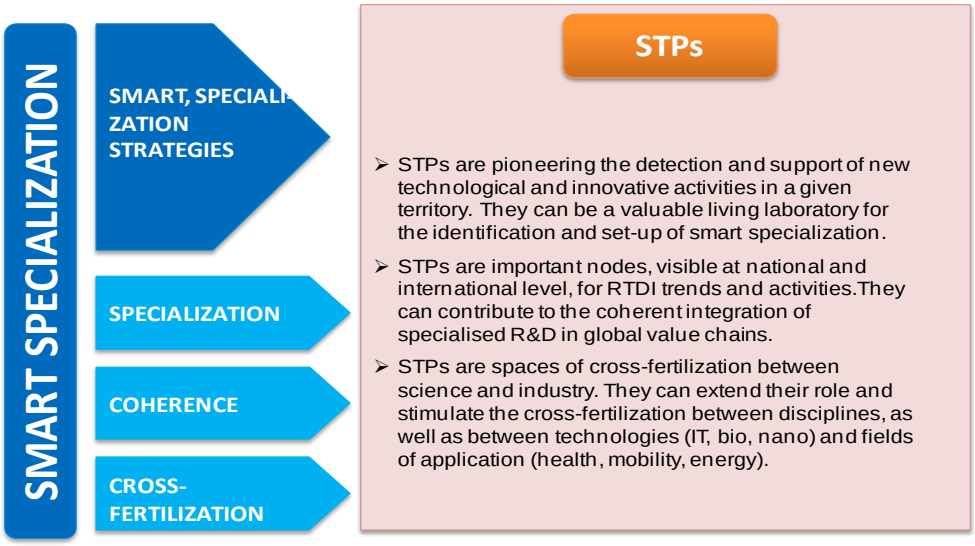
Contribution of Science and Technology Parks to the Europe 2020 goals



Source: Own elaboration based on EC DG REGIO 2011, Study by INFYDE, SL.

The role of STPs in **territorial Smart Specialization Strategies**(or so-called third generation Regional Innovation Strategies) may be essential. Therefore, it is necessary to highlight the Parks' value and capabilities.

Contribution of Science and Technology Parks to RIS3 (Smart Specialisation Strategies)



Source: Own elaboration based on EC DG REGIO 2011, Study by INFYDE, SL.

From the perspective of **national and European policies**, creating a favourable framework for the creation and growth of Parks as components of regional innovation strategies should be encouraged. In keeping with the differentiation of innovative needs for leading advanced innovative regions and "catch-up" regions, intermediate infrastructure such as STPs also require different consideration in both region types. As demonstrated by Spain's example, on the one hand, there are regions that have a high absorption capacity for Parks. On the other hand, there are regions in which it is difficult to gather critical mass to establish an STP, which in principle is not a concern, but requires the application of formulas for collaboration and networking tailored to the specific regional situation.

STPs in Convergence regions:

- In line with a wider regional innovation strategy and other measures to enhance innovation supply and demand, STPs should be put in place as 'bridging' entities and interfaces between academia and industry, policy and productive fabric.
- STPs should be created as physical poles of innovation in the region, concentrating the resources for R&D and the creation of a critical mass of innovative capacities. During their initial phase, the goal should be to enhance visibility and credibility, both inward and outward, of the regional innovative offer, to establish regional partnerships and collaborations, as well as to channel the support to the productive sectors and to private RTDI activities.

STPs in Competitiveness regions:

- In these regions the innovation resources and activities are normally more abundant, which allows the differentiated development of diverse STPs in a region. The function of regional policy in this case is more to coordinate the different infrastructures and their activities, to develop a common strategic framework and to facilitate collaboration within the region and especially at an international level.
- STPs couldeasier specialize and search for more international activitieson demand of their tenant companies. They should become tools and interfaces for advanced regional innovation programmes and projects, such as researcher mobility schemes, talent attraction, regional reputation, open and collaborative innovation, etc.).

STPs in Transition regions:

- In transition regions, instruments such as STPs are essential to promote regional competitiveness. Due to their specific character (innovative resources developed, but still parts of the region and the economy not involved in RDTI), regions need to develop regional innovation strategies focussed, on the one hand, on the extension of innovation support to regional firms and SMES, and, on the other hand, on strengthening technological sectors and niches. STPs might play an important role in both areas, but they require specific resources and priorities to carry out their activities.
- STPs in transition regions usually have overcome their initial phase, but still need important political support to activate the endogenous innovative resources and/or attract foreign innovative investment. It is recommended that in this phase an up-dated analysis of the territorial innovation needs of the business environment and of

the market opportunities should be carried out, regarding the adjustment of STP planning to real needs.

- The exchange of good practices and experiences with other Parks and Regions might be useful especially for STPs in their early years of life but also for decision-makers in transition regions, which are at a crossroads in their regional development and need to take strategic decisions on their future.

Last but not least, STPs may be important tools for regional authorities and development agencies in complex processes of **defining smart specialization strategies**, given that many times they are already recognized as an interface between public and private, between science and business, and between the various technological and industrial sectors, candidates for prioritization.

They can also assist in articulating Smart Specialization Strategies because they are like a knowledge map displaying the current specialization level existing in a territory in terms of innovative, emerging or high-tech activities. This is largely due to the fact that STPs represent knowledge hubs, contribute to building international reputations, and operate as key players in strategic territorial marketing processes.