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System-based policies in Italy: From industrial districts to technological clusters

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Despite the presence of some antecedents, system-based policies enter very slowly the framework of Italian industrial policies. However, they spread rapidly under the impulse coming from the EU as enterprise and innovation policies. The article briefly reviews this diffusion process, illustrating that the latter generates policies having different labels and goals. Their future depends on many factors, including the beliefs and confidence in these instruments by policy makers and policy analysts. Before developing new policies in this field or adapting existing ones, effective tools are needed, which allow for a proper evaluation of past experiences.

Technological Districts, Innovation Poles, Technological Clusters, System-Based Policies, Industrial Policy

1. Introduction

Italian cluster policies are challenged today by a number of factors. The most relevant one is the pressure put by the current recession on the design and the implementation of long-term innovation strategies. The contemporaneous presence of increasing constraints on public spending, and the need of implementing short term strategies, aimed at counteracting the financial distress of firms and loss of employment could reduce the room for the implementation of (medium to long-term) innovation policies such as cluster-like policies. Moreover, the very effectiveness –and usefulness– of such policies is currently questioned by a number of scholars who claim the inappropriateness of policy targeting and the adoption of strategic interventions and evoke the implementation of more effective horizontal policies (Giavazzi et al., 2012).

However, it is precisely today that cluster-like policy tools (innovation poles, technological districts) –as well as the promotion of other collaborative tools (e.g.: innovation networks, R&D JVs)– seem to play an important role (Landabaso and Rosenfeld, 2009; OECD, 2011). This depends on a number of reasons. First, the promotion of clusters combines medium-to-low budget tools and high acceleration potential (via the creation of external economies). Second, resources tend to be concentrated in some sectoral / technological and territorial areas with significant potential for innovation and growth. At the same time, narrow policy targets are not required since those tools apply to groups of interrelated activities. Third, more prosaically, EU regional policy guidelines 2007-2013 tie up a non-negligible part of the EU funds to the support of clusters. At present, Italian industrial and innovation policy –a large part of which is delivered at regional level– is largely based on the use of such type of funds.

The EU regional policy guidelines provide a definition of the innovation cluster concept that, in some EU member-language translations, as for instance in Italian, often becomes the ‘innovation pole’ (Official Journal of the European Union, 2006). In addition, other cluster-like units of policy intervention coexist, also at regional and national levels of policy-making, such as various types of locally-rooted R&D networks, ‘technological districts’, and ‘technological clusters’.

All these interventions have antecedents in the policies for the promotion of industrial districts that have been implemented in Italian regions for a long time, and which have obtained a formal recognition in the early 1990s (Landabaso and Rosenfeld, 2009; Bellandi and Caloffi, 2009, 2010). The difference between the innovation pole (and the technological district) and the industrial district is not completely irrelevant. While the latter concept has entered the Italian policy discourse after a long season of studies regarding forms of –mostly spontaneous– local development, the concept of innovation pole explicitly refers to policy-driven processes encouraging regional inter-firm strategic alliances as well as university-industry ties. Moreover, the innovation pole is often conceived of as a policy tool for the promotion of urban areas, which generally hosts a base of innovative actors and competencies that the policy aims to boost. Underlying this approach there is a ‘picking the promising’ (when not the winners) idea of public intervention in support of innovation and structural change (Caloffi and Mariani, 2012).

All these policy definitions address the promotion of complex systems of companies and other agents that collaborate to implement innovative activities. In other words, these policies refer to complex units of analysis and intervention that go beyond the individual firms. For these reasons, we refer to them as ‘system-based’ policies. In almost all the policy objects mentioned above the ‘system’ has a territorial ground. In fact, the policies very often promote the collaboration among agents that are part of the same territorial context, characterized by its specific social, economic and institutional features. A recent exception is the technological clusters that have been adopted by the Italian government (d.d.257/2012, issued in May 2012). According to the definition introduced by the Italian Ministry of Education, University and Research (MIUR), the technological clusters should be composed of agents localized in different territories.

The article develops as follow. Section 1 briefly illustrates the antecedents of the current Italian system-based policies. Before discussing the contemporary scenario of system-based policies, section 2 clarifies the regional / national interplay in the design and the implementation of such policies. A wide spectrum of tools can be used in order to promote complex systems such as technological districts or innovation poles. In the subsequent sections 3 and 4, we will limit our attention to the policy tools that have been used in the Italian industrial policies (enterprise and innovation policy), which explicitly target such kinds of systems. In particular, section 3 discusses the main contemporary units of industrial system-based policies at the national-level, while section 4 presents the variety of policies implemented at regional level. Section 5 concludes.

2. Antecedents of system-based policies: the promotion of industrial districts

Current Italian system-based policies have their antecedents in a wider group of local development strategies that have been implemented by local agents (e.g. local governments, Chambers of Commerce) during the 1980s and the 1990s in several Italian industrial districts. Such locally-designed and locally-funded strategies were aimed to provide either financial or ‘real’ (i.e. the provision of services) support to the development of existing agglomerations of small manufacturing firms specialised in some particular sectors (Brusco, 1994; Bianchi 1996; Ceris 1997; Dei Ottati, 2002).¹

¹ The emergence of a web of providers of ‘real services’, and the promotion of the formation of consortia between enterprises are among the main results of these local actions (Ceris 1997). Brusco (1992) refer to ‘real services’ as a broad range of services, ranging from access to information on the evolution of markets and technology, support to innovation, quality certification, product testing, award of trademarks, credit guarantee, product and export promotion, export insurance, organisation of fairs, client rating, consultancy, training, to pollution control.

The industrial district officially enters the Italian industrial policies in the early 1990s. The first national example is the Law n.317, issued in 1991, which was aimed at regulating the public support to innovation for small enterprises. This law provided a policy definition of ‘industrial district’² and a general framework for the implementation of specific interventions within these systems (Caloffi, 2000; IPI, 2002; Altobelli and Carnazza, 2010).

The intervention proposed by this law would have been quite innovative for two main reasons. First, it is one of the first system-based policies to be designed in the European scenario. In fact, the unit of policy intervention is not the single firm –as it was in almost all the industrial policies of the time–, but the system of local firms. In particular, the intervention does not focus on the provision of monetary incentives to the single firm, but instead on the creation of local-specific public goods (such as the promotion of business development service centres, the creation of logistic platforms, the funding of training organizations, etc.) (Bellandi, 2011). Second, it gives to regional governments a specific policy responsibility, in a period when industrial policy is designed and implemented at central level.³ In particular, this law aimed at combining bottom-up actions with regional government policies: on the one hand, the leading agencies⁴ in each industrial district were supposed to form a local committee or consortium, for elaborating a ‘district development plan’, composed of several projects; on the other hand, the Regions had to select the projects to be funded on the basis of periodical tenders.

However, the Italian government did not provide any fund to the Regions to implement those actions, which, therefore, have found a very limited application. Only in a small number of Italian regions the district development plans have been implemented with the help of EU funds for some years, favouring the creation of district logistic platforms, local R&D centres, service centres and similar infrastructures (Caloffi, 2000).

Then, at the beginning of the new millennium, Italian Regions, which have acquired new autonomy in the field of industrial policy, have opted for a different kind of intervention. They have no longer followed a ‘policy by exception’ approach, but instead they have inserted the promotion of industrial districts into more general policy lines targeting SMEs. In particular, in the programming period 2000-2006 no Italian Region has designed a policy by targeting only the firms located within the industrial districts. At the same time, most of the Italian Regions has introduced specific sectoral and territorial targets in their industrial policies, implicitly devoting a part of their funds to the promotion of firms or groups of firms located within the industrial districts. (Bellandi and Caloffi, 2006).

The programming period 2000-2006 has seen the emergence of new system-based policies, which target more explicitly innovation. An example of such policies is represented by the promotion of technological districts, which is implemented by the national policy maker in the early 2000s. We will explain this –and other similar strategies– in the following section 4.

² With the Law n. 317, the Italian policy-maker adopted a definition of industrial district that emerged from the economic literature, stating that “an industrial district is a territorial area characterized by a high concentration of small specialized enterprises, where there is a particular relation between local enterprises and population”. A subsequent law (issued in 1993) fixed the parameters for the identification of the industrial districts referring to the definition provided by the National Institute of Statistics (ISTAT). Following this definition, an industrial district is a local labour system where there is a high degree of agglomeration of SMEs, which mostly operate in a particular manufacturing sector.

³ The first steps towards the current system of regional autonomy are undertaken in 1998, with the ‘Bassanini reform’.

⁴ Such as Provinces, Municipalities, Chambers of Commerce, consortia, SMEs’ associations, trade and labour unions. The definition of the specific composition of each District committee was left to the Regions.

3. Some technical notes ...

Since the beginning of the 2000s, the scenario of Italian industrial policies progressively becomes more complex. In order to understand its current features, in this section we briefly explain the interplay of national and regional competencies in the field of industrial policy and the programming documents that contain the sources of funding of such policies. Then, in section 4 we describe the programmes that have been designed at the national level, and in section 5 we move on to the regional level.

Since the constitutional reform of 2001, Italian Regions have gained a prominent role in the design and the implementation of industrial policies. The reform introduces a system of federal legislation, where the State has a limited number of exclusive competencies and the Regions have general or ‘residual’ competencies. State and Regions share a broad number of competencies under the principle of the vertical subsidiarity. For this reason, Italy currently have a series of industrial policies of ‘local’ scale, which are designed and implemented by the Italian Regions, as well as some programmes of national relevance that are managed by the national government.

Since the regional legislative autonomy has not been accompanied by a financial autonomy,⁵ the Italian Regions are still dependent on transfers from the central government. However, today most of the regional policies are funded through EU Structural funds. Besides EU funds, the regional policies are funded also through the use of the following national funds: i) the national fund for the co-funding of Structural funds; ii) the national fund for ‘under-employed’ areas (FAS).

A number of programming tools seek to ensure consistency between the national and the regional policies. With regard to the programming of EU funds, the National Strategic Reference Framework (QSN) –developed in collaboration between the State and the Regions– identifies a set of priorities over several years, as well as the funds (Structural funds as other financial instruments) that are needed to implement such strategies.

The strategy set out in the QSN is implemented through the National Operational Programmes (PON), the Regional Operational Programmes (ROP),⁶ the Interregional Operational Programmes (NIOP) and the Operational Programmes “European territorial cooperation”. For the period 2007-2013, Italy has a total of 66 operational programmes, some of which are devoted to convergence regions only.⁷

Italian industrial policies –and in particular its system-based policies– are scattered across all these programmes, and are associated to various levels of government. Analysing both the programming documents and the public spending in the field of industrial policy, in the following sections we will look at the system-based policies that have been implemented both at national and at regional level.

It should also be noted that a further element of complexity in the formulation of Italian industrial policies is constituted by the presence of agents such as the Chambers of Commerce that provide a variety of incentives to enterprises and groups of enterprises. As mentioned above, these agents have in the past played an important role in supporting the development of industrial districts. Their role is still not marginal.

⁵ Regions have some small funds, deriving from a regional tax on productive activities (IRAP), a share of a national tax on individuals, and a share of VAT.

⁶ There are usually two Regional Operational Programmes: one using the ERDF funds and the other using the ESF funds.

⁷ See also Sterlacchini (2008) for a general description of regional programming tools and for an in-depth analysis of a set of regional programming documents.

4. Contemporary system-based units: the technological districts and the technological clusters promoted at national-level

The common feature of the most recent cluster-like policies is their increasing focus on innovation. During the 2000s, the industrial district as such gradually disappears from the national political agenda, and make way for the reference to technology districts and similar concepts, as well as for a number of system-based policies which emphasizes R&D and innovation features.⁸

The technological districts policy launched in the early 2000s is aimed at identifying and promoting specific territorial areas characterized by the presence of both research organizations and high tech enterprises that collaborate (or might collaborate) for the realization of common innovation projects (Antonelli, 2000). The underlying approach to the promotion of innovation suggests concentrating public and private resources in sectoral and territorial contexts that feature major development potential: these are dynamic areas that can act as a significant driving force for the regions and countries in which they are rooted.

Technological districts are identified by the Regions and the State. In many cases there exists a sort of formal acknowledgement at the level of central government, via protocols of understanding between the Ministry for the University and Research (MIUR) and the Region. The protocols are also used to identify priorities and funds for their implementation. Connected with such action there are no official parameters or quantitative thresholds to be complied with, as instead was the case with the industrial districts.⁹

From 2002 to 2011, State and Regions have promoted the creation of 27 technological districts (see some examples in the following table 1). For some of them, the agreements between MIUR and Region that enable the funding of districts have not been finalized, while others were funded for only a short time.

Table 1. Technological districts in Italy (some examples)

Technological district	General info: Specialization, partners, and year of foundation
Torino Wireless (Piemonte)	ICT, multimedia Partners: MIUR, University of Torino, Politecnico di Torino, University of Piemonte Orientale, Camcom Torino, Municipality of Torino, Province of Torino, Piedmont Region, Compagnia di San Paolo, Fiat, Alenia Aeronautica, Fondazione CRT, CNR IEIIT, IEN - Istituto Elettronico Nazionale Galileo Ferraris, Istituto Superiore Mario Boella, Motorola Electronics, ST Microelectronics, Telecom, IMI S. Paolo, Unicredit. Year of foundation: 2001. APQ signed on May 2003

⁸ However, a national law, issued in 2005 also promoted the ‘productive district’, i.e. territorial and functional agglomeration of enterprises, which aims at implementing district projects of development (Law 266/05). The policy definition, which is broader than that of industrial district, established neither “official” parameters or quantitative thresholds to be complied with, nor a preventive territorial analysis to be performed by the regions (Altobelli and Carnazza, 2010). Still at the national level, a more recent law, signed in 2009 (Law 33/09), has defined the ‘network contract’ (Cafaggi, 2009), which is a form of contract through which two or more enterprises carry out a common economic activity in order to achieve positive results in terms of innovativeness and competitiveness. Specific fiscal benefits are provided for the enterprises participating to network contracts (and projects) and to productive districts.

⁹ Nonetheless, the most diffuse criteria for the identification (or the promotion) of technological districts may be summarized as follows: i) the presence of a set of agents with innovation capacities based on R&D and high technology, including universities, research centres, technology transfer organizations; ii) these agents jointly elaborating an innovation project, which is consistent with the national framework of the research policy; iii) the innovation project has a strong developmental potential; iv) and its cost is jointly funded by the public actor and the local partnership, also in collaboration with other private venture capitalists.

ICT (Lombardia)	<p>ICT</p> <p>Partners: MIUR, Lombardy Region, University of Milan, University of Milan – Bicocca, University of Milan Vita S. Raffaele</p> <p>Year of foundation: 2003. APQ signed on July 2004.</p>
New materials (Lombardia)	<p>New materials</p> <p>Partners: MIUR, Lombardy Region, University of Milan, University of Milan – Bicocca, University of Milan Vita S. Raffaele</p> <p>Year of foundation: 2003. APQ signed on July 2004.</p>
Hi-Mec (Emilia-Romagna)	<p>Mechanics, (mechatronics and automation)</p> <p>Partners: Arcotronics, Aster, Cineca, Citieffe, CNH – Italia, CNR, CSM-Centro Sviluppo Materiali, Datalogic, Democenter, ENEA, INFN, Laserline SpA, Lombardini srl, MIUR, Modena Centro Prove, Officina Freddi, Ognibene, Organic Spintronics, ReggioInnovazione, Emilia Romagna Region, Rossi Motoriduttori SpA, Sacmi Cooperativa Meccanici, Sir SpA, Tecna, Tecnopolo Castel Romano, University of Bologna, University of Ferrara, University of Modena e Reggio Emilia, University of Parma.</p> <p>Year of foundation: 2003. APQ signed on May 2004.</p>
Nanotech (Veneto)	<p>Nanotech</p> <p>Partners: ABM Network Investments S.A., Astrel srl, Banco popolare, Bcc Piove di Sacco, Chamber of Commerce of Padova, Chamber of Commerce of Venezia, Chamber of Commerce of Vicenza, Carel SpA, Centro Ricerche Dino Paladin Advanced Technologies SpA, Civen, CNR, Municipality of Padova, Municipality of Rovigo, Confartigianato Veneto, Consorzio INCA - La chimica per l'ambiente, Consorzio INSTM, Consorzio per lo Sviluppo dei Sistemi a grande interfase, Federazione degli Industriali del Veneto, Fondazione Cariparo, Fondazione Cassamarca, Gear World SpA, Gruppo Eurotech, MBN srl, MIUR, Nord Resine SpA, Parco Scientifico di Verona Star, Plastal, Pometon SpA, Padova Province, Rovigo Province, Treviso Province, Venezia Province, Veneto Region, Silcart srl, University Ca' Foscari Venezia, University of Padova, University IUAV Venezia, Veneto Innovazione SpA, ZF Padova SpA, Zhermack SpA.</p> <p>Year of foundation: 2002. APQ signed on July 2004.</p>
Aerospace (Lazio)	<p>Aerospace</p> <p>Partners: Agenzia Spaziale Italiana, CNR, ENEA, Parco del Lazio meridionale, Tecnopolo di Castel Romano, University of Cassino, University of Roma La Sapienza, University of Roma Tor Vergata, University of Roma Tre.</p> <p>Year of foundation: 2004. APQ signed on June 2004.</p>
Etna Valley (Sicilia)	<p>Micro and nano-systems</p> <p>Partners: MIUR, Sicilia Region, STMicroelectronics srl, University of Catania, University of Messina, University of Palermo</p> <p>Year of foundation: 1999. APQ signed on June 2005.</p>
IMAST (Campania)	<p>Materiali polimerici.</p> <p>Partners: Alenia Aeronautica SpA, Avio SpA, Cetena SpA, CIRA - Centro Italiano Ricerche Aerospaziali, CNR, Consorzio Tre, ENEA, Esaote, Istituto Banco di Napoli, Mapei SpA, Meliorbanca SpA, Optosmart srl, Pirelli Labs SpA, Campania Region, San Paolo Banco di Napoli SpA, STMicroelectronics srl, University of Napoli Federico II.</p> <p>Year of foundation: 2003. APQ signed on March 2005.</p>
CBM Molecular	<p>Molecular Biotech</p>

Biotech (Friuli Venezia-Giulia)	Partners: Area Science Park, Assicurazioni Generali SpA, Bracco Imaging SpA, Bruker BioSpin srl, Centro di Riferimento Oncologico di Aviano, Centro Interuniversitario per le Biotecnologie, CNR, Diaco Biomedicali, Eurand SpA, Eurospital SpA, Fondazione Callerio Onlus, Fondazione CRTrieste, Fondo per lo Studio delle Malattie del Fegato Onlus, Friulia SpA, ICGEB – Trieste, ICSHT, Instrumentation Laboratory, IRCCS Burlo Garofolo, Istituto Superiore di Sanità, Italtbs SpA, Laboratorio TASC/INFM, MIUR, Friuli Venezia Giulia Region, Sincrotrone SCpA, SISSA, Sviluppo Italia, Transactiva srl, University of Trieste, University of Udine Year of foundation: 2003. APQ signed on October 2004.
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Source: Authors' elaboration on <http://www.distretti-tecnologici.it/home.htm>, <http://www.ricercaitaliana.it/distretti.htm>

Note to table 1: The table presents a selection of technological districts that have been funded by the State. The year of foundation refers to the year of the first agreement signed at local / regional level, while the APQ (Accordo di Programma Quadro) is an agreement between the Region and the MIUR - Ministry of University and research. The APQ allow the district partners to benefit from the national funds.

The promotion of technology districts or similar policy objects has been re-launched by the new policy agenda for the programming period 2007-2013, through two national programs (PON National Technology Clusters and PON High-Tech Districts and Public-Private Laboratories). These two programmes see technological districts as bridging organizations that promote public-private partnerships for R&D, technology transfer and other innovation-related activities (Bonaccorsi and Nesci, 2006; Bonaccorsi, 2012). The new programmes amount to 797 million of Euros, which is about 9% of the total national funds 2007-2013 that are devoted to the implementation of enterprise and innovation policies.¹⁰

Compared to the previous programming period 2000-2006, the new programmes place a particular emphasis on the brokering function that technology districts can / should perform. In this perspective, the governance structure of the district is particularly important. In fact, the latter feature is subject to the specific evaluation by the MIUR as a prerequisite for obtaining the public funds. Moreover, as previously noted, the new “national technology clusters” promote collaborations among firms, universities and other agents, which are not located within the same territory. The underlying logic of this new policy –which differs from that of technological districts– is to promote a number of networks of excellence in some innovative sectoral and technological contexts, which can have a national dimension.

The ‘old’ technological districts were funded only in part, some only recently and only for a relatively short period. Moreover, the first call for the new national technological clusters has been launched very recently (May 2012), and the admission to the programme of the selected clusters has not been yet concluded (December 2012). For these reasons, an assessment of the effectiveness of these policies is still premature.

5. System-based units of Italian industrial policies defined by the regional policy makers

New regional-level system-based units of industrial policy have emerged during the last years, which explicitly target the promotion of university-industry relations and technological change. These are the innovation poles which, in the definition provided by some Italian

¹⁰ Our estimation is consistent with the data provided by the EU (DG competition: http://ec.europa.eu/competition/state_aid/studies_reports/expenditure.html). EU estimates a total of about 3 Billions of Euros per year that Italy has spent for their industrial policy (national + regional aids). The national aid we have calculated for the years 2007-2013 amounts to 9 Billions of Euros. To these latter, we have to add the regional aids.

Regions, are groups of independent firms –innovative start-ups, SMEs or large firms– and of research organisations that are active in a particular sectoral or territorial context. These groups are aimed at stimulating the innovative activity by encouraging the interaction among agents, the sharing of common infrastructures, and the exchange of knowledge and competencies. The aim of these poles is to strengthen the R&D capacities of the local firms, promote technology transfer activities, and create an environment which is more diffusely conducive to research-driven innovation.

Together with the innovation poles, the Italian Regions have also promoted the formation of technopoles, innovative *filière* and clusters and other policy (and economic) objects. Adapting from Caloffi, Mariani and Rulli (2012), we recall this regional variety in the following Table 2. The table also shows the previously recalled national targets that have been adopted in this field.

Most of these programmes include two main parts. The first concerns the creation of material and immaterial infrastructures that will be useful for the life of the pole / cluster / district. In this case, the funds received are generally used for the creation of the managerial structure of a pole, as well as for the creation or expansion of research and service structures that will be shared by the cluster firms (or by the firms that become member of the pole). The second part relates to the promotion of the pole. This part is mainly implemented by resorting to grant loans to cluster firms for the implementation of innovation projects in collaboration with other firms and universities. To achieve this second part, the regions can launch calls for projects that are restricted to firms located in poles / clusters / districts. Obviously, the same companies can participate also in bids for funding that are more generally addressed to all enterprises in the region.

As for the first part –the creation of material and immaterial infrastructures– a recent research has shown that in the programming period 2007-2013 the Italian Regions have allocated¹¹ almost 90 million Euros of their ERDF funds in the creation of such policy (calculations refer to June 2012). Considering the whole amount of ERDF funds related to pole / cluster / district policies (funds that have been allocated for the implementation of both the first and the second part of cluster-like policies) Caloffi, Mariani and Rulli (2012) have shown that on average Italian Regions have devoted around 20% of the total funds allocated to their industrial policies to the implementation of this type of intervention. As previously mentioned, to these amounts we have to add the cluster-like policies implemented at national level (be they for Convergence regions alone or for the total number of Italian Regions). Especially for Convergence regions (Calabria, Campania, Puglia, Sicilia), the promotion of high-tech districts is made through the use of such type of funds.¹²

Table 2. Cluster-like policy targets of the Italian industrial policy based on 2007-2013 ERDF funds

Italian Region	Policy target	Sectoral / technological targets
Valle d'Aosta	<i>Filière</i> ; Technology platforms	Logistics, ICT, Advanced mechanics, new materials, biotech, Renewable energies and environmental technologies
Piemonte	Innovation poles	Aerospace, Biotech, Food, Automotive
Trento	Technological district; innovation pole; <i>filière</i>	Renewable energies, ICT
Friuli Venezia	Technological	Biotech, Shipbuilding, Domotics

¹¹ The term allocated mean here to refer to that amount of funds that the regions have used to finance their invitations for competitive bids. The beneficiaries of 'first-part' interventions, referring to the creation of material and immaterial infrastructures, are the managers of the poles.

¹² As stated in the PON 'High-tech districts and public-private labs', Convergence regions are also endowed with 389 Millions of Euros for the promotion of such kind of policies.

Giulia	district; innovation networks	
Liguria	Innovation poles	Logistics, Renewable energies, Biotech, Advanced mechanics, Marine biology
Emilia-Romagna	Technopoles	Advanced mechanics, agro-industry, Construction, Biotech, Renewable energies, ICT, Nanotechnologies
Toscana	Innovation poles	Fashion industries, Paper production, Marble, Shipbuilding & marine biology, Furnitures, Renewable energies, Life sciences, ICT & Robotics, Nanotech, Sustainable & smart cities, Optronics, Advanced mechanics
Marche	<i>Filière</i> ; Local production systems	ICT
Lazio	Innovation poles; <i>filière</i>	Aerospace, shipbuilding, Multimedia, ICT, Paper production, Chinaware
Abruzzo	Innovation poles; <i>filière</i>	Agroindustry, automotive, ICT, Construction, Advanced services, Textiles & Footwear, Tourism
Molise	<i>Filière</i>	Agro-industry, Furniture, Shipbuilding, Mechanics-automotive, Biotech, Textiles, Renewable energies, ICT
Sardegna	<i>Filière</i> ; Local production systems; SMEs network	Marble production, Logistics, ICT, Shipbuilding, Food industry, Biotech, Fashion
Sicilia	<i>Filière</i>	ICT, New materials and nanotech, Biotech, Renewable energies, Agro-industry, Logistics and transportation
Calabria	Innovation poles	Logistics and transportation, Biotech, Cultural goods, ICT, Agroindustry, Renewable energies
Umbria	Innovation poles	Renewable energies, biotech, advanced mechanics, New materials, Nanotech
Puglia	Technological districts; innovation poles	Agro-industry, ICT, Biotech, Advanced mechanics, Renewable energies and environmental technologies
Campania	Technological districts; innovation poles	Agro-industry, ICT, Biotech, Advanced mechanics, Renewable energies and environmental technologies
Italy	Technological districts; National Technological clusters	Biotech, agro-industry, smart communities, logistics, aerospace, renewable energies, IT-automation
Italy - convergence regions (CAM, PUG, CAL, SIC)	High-tech districts	Logistics and transportations, Cultural goods, ICT, Agro-industry, Advanced mechanics, Renewable energies

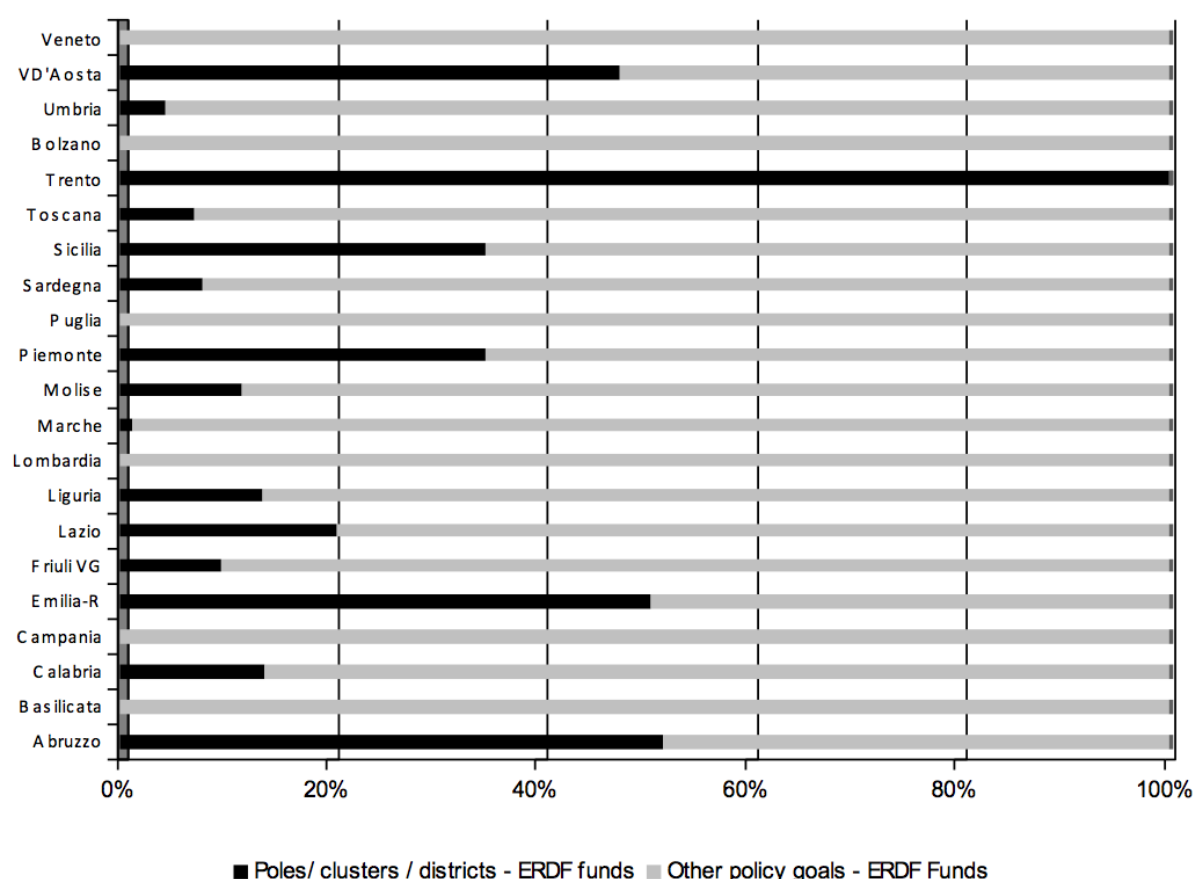
Source: Adapted from Caloffi, Mariani and Rulli (2012)

Note to table 2: Lombardy and Veneto Regions have programmes involving meta-districts and regional poles but they do not appear to be funded with ERDF funds, or possible applications are to explicitly tagged to clusters/poles/technological districts.

Considering the two policy levels, it can be concluded that the policies for the poles / clusters / districts are progressively gaining importance. While in the previous programming period (2000-2006) only some of the national policies mentioned above (creation of technology clusters) have been implemented, the period 2007-2013 has witnessed the emergence of a variety of programmes, also at regional level. Moreover, it should also be remembered that the promotion of various forms of R&D collaborations has increased sharply. While in the 2000-2006 period only a few Italian Regions have experimented with the support to the promotion of R&D collaborations, in the new programming period the

regions that have focused on this type of policy are becoming more numerous (Bellandi and Caloffi, 2010). Considering ERDF funds used by the Italian regions to implement their industrial policies, Caloffi, Mariani and Rulli (2012) have calculated that about 23% of such funds are devoted to the promotion of R&D collaborations. As mentioned above, the promotion of this type of innovative activity can be an important part of any system-based policy.

Figure 1. Incidence of clusters / poles / tech districts policies on the total funds devoted to industrial policy in the Italian Regions – programming period 2007-2013, ERDF funds



Source: Caloffi, Mariani and Rulli (2012)

Note to figure 1: The figure considers only the ERDF funds that have been allocated by the Italian Regions. Only in some cases we have also considered some FAS funds¹³. It has to be noted that in the case of Convergence Regions (Campania, Puglia, Calabria, Sicilia), the funds for the implementation of the clusters / poles / tech districts policies often come from national sources (see note 12). The total amount of funds used to implement the regional enterprises and innovation policies includes the provision of guarantees. See also the note to Tab. 2.

6. Concluding remarks

The short discussion on Italian system-based policies shows that these policies are becoming increasingly important, both at the regional and at the national level. It is fair to say that current Italian industrial policies are in line with the European ‘cooperative paradigm’

¹³ Most of the FAS funds, which were initially designed to support the clusters / poles / tech districts regional policies, has been redirected towards other purposes for emergency reasons.

(Bozeman, 2002). Indeed, in many cases, the regional policy makers have gone far in the experimentation of a variety of cooperative tools.

However, the current scenario entails new challenges for this type of industrial policy. The first issue concerns the need to rationalize the experience, especially in times of severe budget constraints. The second aspect refers to the need of exploiting a number of synergies between the regional and the national programmes. The third issue refers to the need of mobilizing strategic capabilities by regional policy makers, especially in view of the need to implement smart specialisation strategies (Lengrad et al., 2006).

As for the first point, it has to be recalled that under the tutoring of the European Union, Italian regional policy makers have had the chance to experiment a large variety of system-based policy tools for the promotion of innovation and local development. At the same time, the national government has also conducted his experiments, launching first technological districts, then multi-territorial technological clusters, and other forms of R&D collaborations. The various policy objects have proliferated in a fragmented and volatile way. Often, policies have had a short duration. Moreover, regional policies have often granted a small amount of funds to individual organizations. In the present context, the proliferation of additional policy tools does not seem useful, or even viable. As shown by the literature, policies supporting innovation are effective when they are not short-term policies, and when the size of individual incentives is not very small (Hall and Van Reenen, 2000; Lundvall et al., 2002; Izushi, 2003; Rodrik, 2004). Therefore, particularly in times of crisis, it is useful not to put the limited funds in many different programmes, focussing instead to a few strategic objectives.

As for the second point, we note that the collaboration between the national and the regional policy-makers is required, as the new policy tools, such as the innovation pole or the technological districts, often target high-tech sectors, where national public research organizations play a fundamental role. Moreover, productive and cognitive relations concerning the formation of innovation poles or technological districts often have a supra-local level. However, the local context hosts the basic nuclei of competencies, social relations and entrepreneurial energies upon which these systems may develop, and each local context can have its very peculiarities. Industrial districts, cities, and other local reproductive systems should be considered still as a fundamental structure of multi-scale policies of industrial development (Becattini, 2011; Bellandi, 2011). Therefore, the regional policy-makers –not too far from both the local contexts and national and European policy makers– can play a leading role in the scouting and in the promotion of the local experiences, and in facilitating their access to the national funds (Caloffi and Mariani, 2012).

As for the third issue, the new system-based innovation policies increasingly require the implementation of strategic capacities from the side of the policy-makers. Successful experiences show that local innovative systems often emerge thanks to a considerable investment in public or private research activities, made by research organizations or leading firms. Strategy is essential in order to target specific competencies and technological fields that might benefit from the public investments. Moreover, strategy might be required in order to support the formation of linkages between particular groups of agents, and clustering projects (Caloffi and Mariani, 2012). In fact, this kind of industrial policies has the nature of a discovery process, where multi-level policy networks engage in a process of strategic collaboration (Rodrik, 2004). As noted previously, these considerations are more urgent today in times of crisis.

To conclude, we want to stress an additional –and very important– point. A proper evaluation phase of past experiences is needed in order to rationalise the scenario of system-based policies, coordinate the actions designed at different policy levels, and elaborate a strategy for the future. The results of these interventions need to be carefully evaluated, in order to identify successful experiences that may be fruitfully strengthened by the joint

support of regional, national and European policy-makers. Obviously, evaluation is far from being a panacea, but it can be an important source of relevant information to policy makers, enabling them to tackle the design of new interventions. The evaluation of this type of policies is particularly complex and there are no ready-made solutions. However researches on the analysis and the evaluation of system-based policies are developing (Branstetter and Sakakibara, 2002; Schwartz et al., 2010; Barca and McCann, 2011; Chun and Mun, 2011; Caloffi, Mariani and Mealli, 2012; Okamuro and Nakamura, 2012), trying to address the problem.

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