

Report on the regional potential of Piedmont region

EMERGING INDUSTRIES

- Active Aging
- Sustainable Development / Green Economy
- Sustainable / Intelligent Mobility

CROSS-CUTTING ISSUES

- Internationalization
- Technology & Knowledge Transfer
- Gender in Innovation, including diversity aspects

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Structure

1 Introduction..... p. 3

2 Emerging Industries..... p. 4

3 Cross-cutting Issues..... p. 8

4 Conclusions for pilot development..... p. 11

1 Introduction

The Piedmont region is located in North-Western Italy. It has a population of around 4,500,000 inhabitants (7.5% of Italian population) and it is divided into 8 provinces, each stands out for peculiar industrial clusters, making the region one of the most vibrant economies of the country. The regional GDP is 123.4 billions Euro, representing the 8% of the domestic economy (year 2012). The region boasts also a strong inclination to foreign trade: with its 38.5 billion Euro of exports, Piedmont ranks 4th in Italy. The regional GDP per capita is 25,645 Euro (year 2011).

Out of 6 million businesses based in Italy, more than 467.000 are located in the Piedmont. Nearly 90% of local businesses have less than 50 employees and this makes our industrial system extremely flexible in adapting to international economic challenges. Piedmont, internationally famous for being the cradle of Italian car industry, also hosts top-class enterprises active in robotics, ICT, life sciences energy & environment aerospace, industrial design, logistics, pharmaceuticals, healthcare and agrofood.

The overall amount of R&D investments in Piedmont is 2.2 billion Euro (1.8% of the Regional GDP), ranking 3rd in Italy. And it ranks 4th as for number of patents, 1,214 (2012) Besides, Piedmont has the highest percentage in Italy for private investments on the total: 76.8%. R&D is strongly supported by a dynamic network of more than 220 research centres of international standing, 380 laboratories, 6 scientific & technology parks and 12 innovation clusters.

Last but not least of the key factors of development of Piedmont is the emphasis given to training & education, with four universities, including its two leading institutions: the University of Torino and the Politecnico of Torino.

With reference to the specific case of the regional policies devoted to clusters, the territorial governmental body Regione Piemonte was the first Italian region to have developed innovation clusters, and financed them with 52M Euro. There are 12 formal clusters:

- areas of Cuneo and Asti for the Agro-food
- areas of Canavese and Vercelli for the Biotech and Biomedicine
- area of Novara for the Sustainable Chemistry
- area of Alessandria for the New Materials
- area of Turin for the Digital Creativity and Multimedia Industry
- area of Turin for the Sustainable Architecture and Hydrogen
- area of Tortona for the Renewable Energies and Biofuels
- area of Verbano-Cusio-Ossola for the Equipment, Systems and Components for Renewables
- area of Vercelli for the Renewable Energies and Mini Hydro
- area of Turin and of Canavese for the Information & Communication Technology
- area of Turin for the Meccatronics and Advanced Production Systems
- area of Biella for the Textile.

Plus, 29 industrial districts were identified, involving 543 municipalities, and linked to six productive chains: textile-clothing; mechanic; food; gold; wood; paper-printing.

Summing up, the main features of our entrepreneurial system are:

- entrepreneurial system based on SMEs and clusters
- good performances on international markets
- high level of investment in R&D
- emphasis given to training

2 Emerging Industries

All three Emerging Industries are present in the Piedmont region, although at different stages of development. As can be seen in the tables below, taking into account that, according to the mapping guidelines, “for relevance to Emerging Industries, knowledge institutions will score: 2 points for each YES, 0 points for each NO and 1 point for each UNKOWN”, the following were the results of the research conducted in 2012.

Organization	Type	AA	GE	SM
Università di Torino	university	2	2	2
Politecnico di Torino	university	2	2	2
Università del Piemonte Orientale	university	2	2	1
CNR Piemonte	national research council	2	2	2
INFN Torino	national institute of nuclear physics	2	1	1
ISMB Istituto "Mario Boella"	private research centre	2	1	2
CRF	FIAT research centre	0	2	2
Total per EI		12	12	12

For Knowledge producers, there is an overall equality in all 3 EI, although the specific relevance depends from the kind of knowledge producer involved.

The following table, concerns instead intermediaries and government, and was generated, using the same scoring method as requested.

Organization	Type & Focus	AA	GE	SM
Regione Piemonte	Direzione Innovazione, Ricerca ed Università	2	2	2
The ICT Technology District in Piemonte	innovation cluster on ICT	2	2	2
POLIGHT	innovation cluster on Green-building & Hydrogen Technologies	0	2	2
Environment Park	S&T Park to support research on Green Economy and Environmental Sustainability	0	2	2
Virtual Reality & Multimedia Park	S&T Park to support research on new media and virtual reality	2	1	0
POLIBRE Polo della chimica sostenibile	innovation cluster on renewable energies and biofuels	0	2	2
Polo Innovazione del Lago Maggiore	innovation cluster on renewable energies and thermal systems	0	2	2
ENERMHY	innovation cluster on renewable energies and mini hydro systems	0	2	2
bioPmed	innovation cluster dedicated to health care related product and services	2	1	0
MESAP	innovation cluster on Mechatronics and Advanced Production Systems	0	2	2
Polo Nuovi Materiali	innovation cluster on New Materials	1	2	1
Polo agroalimentare	innovation cluster on Food and Agriculture	2	2	0
I3P - incubatore POLITO	incubator of Politecnico di Torino	1	2	2
2I3T- incubatore UNITO	incubator of University of Turin	2	1	1
Total per EI		14	25	20

Here we can see, that Green Economy (also because of the width of its definition) is the one with highest score, followed by Sustainable Mobility and the by Active Aging. The lowest score of the Active Aging industry in intermediaries and government organizations should not be read as a lower interest at regional level, as there are many policies and projects related to it in Piedmont, as well as a good number of actors (firms, onlus and so on) active in this industry. The point is that, as will be noted further on, AA is characterized by fragmentation, and this is one of the main reason why Regione Piemonte wants to do a pilot action on it.

Strengths and gaps of the three EI will now be presented as emerged from round tables, one per EI and with key players and stakeholders of that specific EI.

Active Aging strengths in Piedmont were recognized to be the presence of strong technological innovation at regional level and state-of-the-art scientific knowledge, which now it must be transformed into applicable sustainable technologies, not only economically rewarding, but also in terms of results.

Gaps were identified as being a lack of coordination of the many studies and projects already underway to avoid duplicates, funds fragmentation and to improve effectiveness; the necessity of a systemic approach organizing innovation processes able to tackle all benefits; and the necessity of a change in mentality.

Concerning Active Aging, in the round table were recognized many different topics, some of them dealing with social issues, the main ideas generated in the discussion can be summarized as follows.

Social/medical issues: social capital can also mean capitalizing elderly people competences for education system, jobs, volunteering, etc.; mental health and intellectual activity are important to avoid isolation and to keep elderly integrated into society; a safe and apt environment and of healthful nutrition are important all life long; physical activity is a mean for a better life; injury prevention, substance abuse/misuse and preventive health care are important for AA; Personalized health care: the whole health system should be thought to minimize problem and increase advantages for each senior subject, E-health here is the future.

General and scientific issues: Personal approach: acute, chronic diseases and identification of the elderly as a person; Systemic approach: public/private health, education, job, community medicine; Scientific approach: in Piedmont it is not needed state of the art science, but science necessary to develop operative solutions. Problem-solving approach and sustainability approach; Personalized healthcare: population census for person-orient support; Early diagnosis with innovative diagnostic approaches, E-health: data management through one and only national database.

Green Economy strengths in Piedmont were recognized to be the fact that GE can be used in many different technological domains and it is considered as stimulating business opportunity and Green Building, in particular, is potentially a smart specialization sector, involving the whole production chain. Moreover GE research and industry present today in Piedmont cover many different fields: energy efficiency, renewable materials, water management, waste management, environmental technologies.

Gaps were identified as being: limited private funds, therefore there is the need to access venture capital; limited public funds and in this case public procurement could be a way of supporting this industry; ICT is not only as a Key Enabling Technology, but as a real new green opportunity; and, again, the necessity of a change in mentality.

Concerning Green Economy, the main ideas generated in the round table can be summarized in two groups of concepts. Group A consists of issues which are already known and the Regional governance has already started to act on such points: understanding that GE is a cross-sectorial

industry; there is a need of promotion of R&D and promotion of activities to transform research results in industrial application; Networking is much needed at firms and cluster level; legal issues and governance should be coordinated at European level; policy as opportunity catalyst. Group B consists of new issues that stakeholders feel have not been yet recognized for their intrinsic relevance: demonstration level projects is still in need of financial support; test sites are needed: maybe living labs; regional and national programs should span several years; R&D results should be presented to venture capital, this could be done by cluster internal offices or through out-sourced services; public procurement for green products/services could be helpful, especially in giving examples of available advantages.

Sustainable Mobility strengths in Piedmont were recognized to be the fact that there are many centers and firms studying and prototyping technologies for: green fuel, innovative powertrains, electric vehicles, infomobility, traffic systems, safety and comfort, and the application of ICT to new interface paradigms for man-machine interaction.

Gaps were identified as being first of all the fact that there is already available necessary knowledge to support technological development and implementation of products for SM, the real issue is to find public and private funds to actually do it; and the demand from stakeholders for more pro-active Regional policies, which should enable large-scale deployment of test sites (living labs), refine technologies/infrastructures/services, and, again, increase awareness.

Concerning Sustainable Mobility, the main ideas generated in the discussion can be summarized as follows: Piedmont region has strong technological and industrial capabilities for implementing sustainable mobility; Regional policies should enable large-scale deployment of test sites: maybe living labs; refine technologies/infrastructures/services; drive innovation avoiding being driven; increase awareness at societal, industrial and governance level needed to improve bureaucracy efficiency in the approval phase

To further develop the potentials of EIs, similar necessities were recognized in terms of what policy can do to promote them. Regional policies should enable large-scale deployment of test sites: i.e. living labs; legal issues and governance should be coordinated at European level; policy is seen as opportunity catalyst and public procurement for EIs as a show available advantages; regional and national funding programs should span several years; and E-health needs data management through one and only national database

Key strategy elements are: Drive innovation/avoiding being driven; networking is much needed at firms and cluster level; problem-solving approach and sustainability approach; and R&D results should be presented to venture capital.

Clusters, firms and research centers all see a lack of systemic coordination between investors, enterprises and clients etc. in each of the three emerging industries. Therefore, measures in this respect are called for.

In particular, it turned out that the actors are looking at public entities such as the Region to pick up the role of coordinator (to avoid duplication of studies, projects and experiments) and of “tester” through public procurement.

All three Emerging Industries also noted that, although present, the public funds available for these new sectors are insufficient, especially if compared to funds for more traditional sectors, in this sense it was unanimously recorded that it is difficult to transform innovation into actual technologies to be ready-to-use in the EIs.

One common core measure proposed as important for the development of the three EIs is the possibility of testing with the final users through living labs.

3 Cross-cutting Issues

In Piedmont, all three CCI play an important role, in general. However, such roles are different when it comes to R&D and Innovation. In fact, Internationalization and Knowledge and Technology Transfer play a significant role in business, not the same happens with Gender and Diversity, in Innovation.

Internationalization became almost a necessity for companies in this time of economic global crisis, as demonstrated by the fact that Piedmont has an active of 38.5 billion Euro of exports, and traditionally enterprises in RD&I sector have an international outlook and international contacts.

The same is true for KTT, because innovative companies almost always have contacts with key-players in the field of research, at regional and often at national level, as most of such companies do in-house research but also need the support of research centers and universities for more advanced RD&I.

Unfortunately, the issue of Gender and Diversity in Innovation is not as significant. The fact is not given by absence of women in innovative enterprises, but their number is however low if compared to that of man. The problem comes from the lower number of female graduates in scientific fields (other than medicine), compared to those who go for human sciences and

economics. This creates at the basis a low percentage of women in companies active in RD&I. Moreover, although there are several actors (public and private) promoting equal opportunities in general (and not only in innovation), there is still an intangible barrier. Actions have been taken to help women organizing their working-private life so they can avoid being penalized by the fact of having children. However, there is still the so called “crystal roof” problem, which is that is difficult for women to access high level position in companies. To tackle this issues there are policies at national and regional level, but what is really needed is a change in mentality, and this can happen only through education and cultural actions over in a long-term horizon.

Therefore the CCIs that are more important for the CluStrat project, in the case of Piedmont, are Internationalization and Knowledge and Technology Transfer. This is because of significant actions already underway in both CCIs and by the fact that there are institutional key-players in these two fields.

IV - National/Regional support to internationalisation - incentives, institutions				
No.	Name of supporting institution	Focus NAT / REG	Incentives beneficiary	Other type of support - service
1	Piemonte Agency for Investments, Export and Tourism (CEIP)	REG	companies from Piedmont AND from abroad	business promotion
2	Centro Enterprise Europe Network	REG	companies from Piedmont	access to EU funds and search for potential partners abroad
3	Technological Innovation Office, Chamber of Commerce of Turin	REG	companies from Piedmont	search for potential partners abroad
4	International Cooperation - University of Turin	REG	university departments and students and researchers	joint research projects, joint university programs
5	International Relations Office - Politecnico of Torino	REG	Politecnico departments and students and researchers	joint research projects, joint university programs

In the table above, only the most important key-players at regional level were taken into account. There are a number of smaller agencies that offer similar services.

Local clusters are normally in contact with at least one or two, if not more, of those key players, as regional clusters normally do not have a specific office for internationalization.

Internationalization activities are implemented on a case-by-case base, depending on the member company needs and requests. The same goes with strategic plans, which are kind of informal in Piedmont clusters.

As for Knowledge and Technology Transfer, the situation is similar. Together with the most “traditional” important players in KTT at regional level: University of Turin, Politecnico of Turin, Istituto Superiore Mario Boella, CSP (Innovation in ICT), IRCC (Institute for Research on Cancer at Candiolo); and at national level: CNR (National Research Council), INFN (National Institution of Nuclear Physics), ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development); there are a number of specialized regional entities in KTT:

III - Specialised Regional Institutions in KTT								
No.	Name of the institution	Research org.	Incubator	STP	TTO	RIC	Cluster/platorm/association	Other-specify
1	ALPS - Chamber of Commerce of Turin	X			X			
2	2I3T - University of Turin		X					
3	Support office to Research and Technology Transfer Politecnico of Torino	X			X			
4	I3P - Politecnico of Torino		X					
5	Discovery - Bioindustry park						X	
6	Incubatore di Tecnogrande						X	
7	ENNE 3 Novara	X	X					

The interrelation between clusters and regional KTT players again a table is best expressed in a table:

IV- Interrelation of regional KTT players and clusters (consider only entities listed in section III)			
No.	Name of the regional key player	Cluster	Cluster member
1	CSP	Environment Park, ICT Cluster, MESAP, Agrofood	various companies
2	Politecnico of Turin	Environment Park, ICT Cluster, MESAP	various companies
3	University of Turin	Environment Park, ICT Cluster, MESAP, VR&MM Park	various companies
4	CNR	Environment Park	various companies

As can be deduced from the tables above and from the interviews done in the desk research maps, Piedmont is quite strong concerning Internationalization and KTT. There are a number of

structures that tackle these two CCI. Gaps stay in the fact that not always these structures “talk” to each other and/or to clusters, therefore there is a lot of fragmentation.

Piedmont region, as already said is already oriented to foreign markets, but the potentials, always for Internationalization and KTT is in developing a structured chain connecting companies in clusters, clusters to existing structures for Internationalization and KTT and include Knowledge Producers and private funding (together with public and European funding) in such a chain

The key strategic element, which came out mainly to interviews to important stake-holders, would be to have an integrated strategic policy at Regional level for both Internationalization and KTT. Moreover an interesting proposition was made to create a sort of regional task force or office (one for Internationalization and one for KTT) to oversee and involve all existing actors, so to avoid duplication of efforts and fragmentation of services. This would help both companies and clusters to access the information, services or aid they need.

There is an example of good practice by the cluster bioPMed and it is an Open Innovation Platform called Mind-browser.

Mind-browser for BioPMed is a platform that was created for all members of BioPMed to share on this private net their project ideas. One of the roles of BioPmed is to do TT by cooperative research, trying to set up a system that can be usable by all members. So, in the platform each company says its own project idea and what competences they are looking for. In 3 years this has produced 68 project ideas, 40 of which have become real projects. The cluster also decided to "open" the platform access to selected foreign partners and these has brought (in the last 3 years) to 44 proposals presented to 7th FP. The BioPmed cluster also offers support to their members in writing proposals.

4 Conclusions for pilot development

We would like to conduct a pilot action on Active Aging, as – from all that was said above – it is an Emerging Industry that already sees many actors and actions in our region, although it’s missing a central body that can unite efforts and avoid duplication and fragmentation.

We thought to cooperate with the other two Italian partners, Regione Veneto and Friuli Innovazione, because all three our regions are in one of the national clusters, that are being developed; the cluster that is of interests for all three of us is that of the life sciences.

Based on our regional strengths, the kinds of pilots we are discussing with the Regione Veneto and Friuli Innovazione might concern either “Tourism for well-being” or “House-care”.

In both cases, two clusters will be present whichever action will be decided: BioPMed and Torino Wireless, the first because of its the medical and scientific characterization, and the second from the ICT point of view; moreover both clusters are already engaged in AA projects. The third institution might be ISMB, a private research center which is also already involved in AA projects.

Another pilot that we could propose, because of our regional strength in SM, would on “Info-mobility”. In this case, two regional clusters could be involved (Torino Wireless and Envy Park) together with Politecnico of Torino as knowledge producer. In this case, we would need to cooperate with clusters from CluStrat partners countries or regions.

Depending on the kind of pilot we are going to define with our partners, key enabling actors will be different and will be specified in September. We would anyway like to address the CCI of Internationalization.