WORKING PAPER

Sardinia case study: Developing regional industrial policy capacity

Developing regional industrial policy capacity

Future of Manufacturing in Europe

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Preface

The objective of this case study is to map and assess the industrial policy capacity in the region of Sardinia and to analyse the processes of the overall regional policy design and implementation by identifying good practices.

This work is prepared in the framework of the Pilot Project 'The Future of Manufacturing', proposed by the European Parliament and delegated to Eurofound by the European Commission (DG Internal Market, Industry, Entrepreneurship and SMEs). The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social and work-related policies. The study on 'Developing Regional Industrial Policy Capacity', of which this case study is part, is one of several studies being conducted as part of the Future of Manufacturing Project.

The specific research questions addressed by the study include:

- What is the existing industrial policy capacity in EU regions? Among the EU regions, what is the existing industrial policy capacity of the EU regions managing industrial restructuring processes related to manufacturing?
- For identified regions, what are the industrial policy capacity key components (involved actors, policy areas and instruments)?
- What are the good practices in regional industrial policies, with focus on a future-oriented manufacturing eco system, including (if applicable) reconversion and structural change towards new (potentially more service oriented) regional economic structures?
- What are the success factors in regional industrial policy (capacity) and factors that facilitate/hinder regional industrial policy success and capacity building?
- How to further develop the current industrial policy capacity to match the identified good practices?

In the context of this study, industrial policy is defined as 'the set of strategic measures targeted at improving the competitiveness of the regional economy, taking into consideration the specific characteristics of the region' (Warwick, 2013). Policy capacity is defined as the 'capacity of government and other public actors to plan, develop, implement, and evaluate purposeful solutions to collective problems' (Denis et al, 2014).

The study team has conducted nine in-regional case studies across selected EU Member States. Case studies are meant to illustrate how regional industrial policy is interpreted in different regional settings, how it is governed, implemented and evaluated. Case study regions have been selected on the basis of an extensive literature review and indicator analysis, expert interviews and the use of a number of selection criteria (such as geographic, economic, demographic) in order to ensure a good balance of the sample. An open definition of 'regions' has been adopted for this study, with most of the selected regions corresponding to NUTS II regions.

This case study is based on half-standardised qualitative interviews with seven individual/representatives of institutions involved in the regional policy process. Interviews have been conducted in autumn 2016. Moreover, it has relied on official documents and on the proceedings of two important regional conferences:

- 'Sinnova 2016' (Cagliari, 6-7 October 2016), in which important policymakers, practitioners, academics and opinion leaders have discussed about innovation in Sardinia[1].
- 'Financial instruments and European Social Fund (ESF) – results and new objectives' (Cagliari 17-18 November 2016), in which important policymakers, practitioners, academics and opinion leaders have discussed about old and new financial instruments in Sardinia, financed through the ESF.

The contents and views expressed in this report do not necessarily reflect the opinions or policies of the regions, Member States, Eurofound, or the European Commission.

[1] For further information, see: http://www.sinnovasardegna.it/sinnova-2016.html

Executive Summary

Sardinia: key facts and figures

Sardinia is the third largest Italian region and the second largest island in the Mediterranean sea (after Sicily). It is predominantly rural and scarcely populated. The average age is relatively high and on the rise. Its GDP per capita (€19,990) is far below both the national (75%) and the EU28 average (72%) (Eurostat, 2014). From 2008 to 2014, that is during the economic crisis, Sardinia's GDP has further decreased by -2.45%.

Unemployment is very high (17.4%, compared to a national average of 11.9% and an EU28 average of 9.4%) and youth unemployment is even dramatic (56.4%, compared to an Italian average of 40.3% and an EU28 average of 20.5%) (Eurostat, 2015).

In Sardinia there are 52 companiess for every 1,000 inhabitants, as compared to an Italian average of 64‰. The average company size is very small (2.7 members of staff), far smaller than both the Italian (3.9) and the EU27 average (5.6) (Istat[2], 2011). Exports correspond to just 14% of regional GDP, as compared to 25% of the national average. Moreover 82% of the regional exports are related to a single sector: the refining sector (Istat, 2014).

Sardinia is characterised by high levels of school dropouts (22.9%, compared to the EU28 average of 11%) and low levels of tertiary education (just 14.4%, compared to the EU28 average of 30.1%) (Eurostat, 2015).

Sardinia has very low infrastructure endowment: according to the European Spatial Planning Observation Network (ESPON), out of 270 EU regions ranked according to their levels of infrastructure endowment, Sardinia holds the 231st place (only 39 regions score worse). The region is however endowed with two universities and an important system of public research centres specialised in various fields of research, notably: ICT, big data, biosciences, energy and environment, food technologies. Despite this, innovation indictors depict a scarcely innovative region. For instance, according to the Regional Innovation Scoreboard, Sardinia is a moderate innovator (EC, 2016).

Economic structure and its evolution

Traditionally the regional economic structure was specialised in agriculture and heavy industry (particularly mining, chemicals and textile industry). However, the industrial sector underwent a long and deep crisis which reduced significantly its size: it dropped from 15.4% of Standard Work Units (SWUs)[3] in 1975 to just 8.8% in 2013. Despite a decrease of 45.7% since 1951, the agriculture sector is still very important (in 2013, 10.8% of SWUs, compared to just 3.2% in the Centre-North of Italy). Market services have increased constantly: from 15% in 1951 to 51% in 2013. Also non market services (that is, the public sector) have increased significantly: from 11.6% of SWUs in 1951 to 22.6% in 2013.

Currently there are three sectors that can be considered particularly important for regional economic development: agrifood, tourism and ICT. The agrifood sector relies on one of the most traditional regional economic specialisations (agriculture), but goes beyond it. In fact, it also

[2] The National Statistics Institute.

[3] A Standard Work Unit (Unità di Lavoro Standard), according to Istat's definition, represents either the amount of work carried out over the year by a full-time worker or the equivalent amount of work carried out by part-time workers or by workers who have multiple jobs.

includes food production - considering that after the refining sector food production is the most important manufacturing sector in Sardinia. Tourism is another important sector for the regional economy and is characterised by high growth potential. Finally, the ICT sector, which resulted from public and private investments in the 1990s, represents today the most important innovative sector of regional specialisation.

Industrial policy in Sardinia

Sardinia has a long tradition in the design and management of industrial policies. A significant share of these policies have been financed through EU resources - considering that Sardinia has traditionally been entitled to received EU structural funds. As a result, its policymaking approach has been strongly influenced by EU policies.

Currently, it has a very comprehensive industrial policy strategy which, on the one hand aims to improve the overall business environment (through investments in education, infrastructure institutional quality and labour market policies), and on the other it aims to enhance specific sectors that have been identified by the so called Smart Specialisation Strategy (S3): ICT, agrifood, tourism, smart grids for efficient energy management, aerospace and bio-medicine.

While the first three priorities correspond to existing specialisations of the regional economy since a considerable number of companies already operate in these sectors, the last three priorities aim to develop sectors in which, though some research expertise has already been developed through public investments, the number of already operational companies is negligible. This suggests that, insofar as these three sectors are concerned, the success of the regional strategy will depend on the ability of attracting inward investments. In fact, the main goal of R&D investments at the regional level consists in boosting the business sector.

The agenda setting process is a mix of top down and bottom up approaches. On the one hand EU and national policy documents fix general objectives and strategies (top-down approach); on the other hand the regional government is in charge of identifying regional-specific objectives and strategies. In order to do this, the regional government seeks to involve the most relevant regional stakeholders (notably companies, trade unions, business associations, universities and research centres) through a participatory approach which, in the 2014-2020 programming cycle, is called 'entrepreneurial discovery process'. For this reason, among the various stakeholders, a very key role is played by 'the entrepreneur', considered as the real driver of local economic growth.

Policy implementation is entrusted to numerous regional departments and agencies which (directly or indirectly) are accountable to the regional government. According to the interviewees, despite some exceptions, most of these actors are characterised by low levels of administrative capacity - in line with the Quality of Government Index, ranking Sardinia in the 204th position out of 236 regions (Charron et al., 2016).

Despite this, overall according to various interviewees the regional policy mix is comprehensive and well balanced. In this regard, companies support policies stand out (particularly for innovative companies). In fact, a vast array of policy instruments is currently available in this field, to support the companies from its infancy to its maturity. Moreover, these tools vary according to companies' size and sector.

Sardinia has developed great expertise in policy monitoring: large amounts of data are regularly collected about the projects financed by the regional government. Nevertheless, also major weaknesses exist, in particular: on the one hand there is lack of data analysis, on the other there are too many monitoring systems which do not communicate with each other.

With regard to policy evaluation the regional administration shows significant delays, especially in light of the new EU obligations which impose evaluations as a standard phase of the policy cycle (particularly impact evaluations).

Overall this study depicts a picture of a region which still has considerable scope for improvement in the design and implementation of industrial policies but which, at the same time, has also developed a series of important good practices.

Strengths and weaknesses

Important good practices have been developed by the regional government concerning policy design, governance and implementation. For instance, policy governance was improved by introducing a good practice called Unitary Programming (UP). UP consists in organising regular meetings at both the political and technical level, in order to coordinate and to take common decisions concerning the main policy issues which affect multiple ministries. It allows to concentrate all the resources available at the regional level according to the policy priorities and objectives and to improve policy programming.

The regional government was also able to develop a comprehensive regional development strategy, combing horizontal policies for improving the overall business environment with vertical policies for supporting particular sectors identified through the regional S3 strategy. The overall strategy results from various policy documents which are tightly integrated with each other (the Regional Development programme –RPD – and the S3 strategy are the most important ones), cover relatively long time periods (5 years for the RDP and 7 years for the S3 strategy) and are characterised by medium/long term objectives.

Sardinia is endowed with a very comprehensive set of companies support policies, which vary according to companies' lifecycle stage, sector and size. Supporting innovative start-ups (especially in the ICT sector) represents an important priority for the regional government. For this reason, a specific sub-set of companies support policies has completely been devoted to innovative start-ups.

In addition to this, it is worth recalling the C-Lab (Contamination Lab), a project financed by the regional government and managed by the University of Cagliari. The C-Lab aims to boost entrepreneurship among its participants (about 100 graduate students per year). In order to achieve this objective, participants are encouraged to work together, organised in groups and in joint projects. They can rely on both university facilities and the expertise of university tutors and researchers. Learning does not take place through formal teaching but through contamination and collaboration.

An additional good practice consisted in the creation of a centralised, standardised and computerised system to provide public services to local companies, called One-stop-shop for business. This new system has made life easier for local companies and has improved the attractiveness of Sardinia for extra regional companies.

In the field of research infrastructure, an interesting good practice is represented by the creation, in the 1990s, of a technological park called 'Polaris'. The park, which since its foundation has constantly received regional financial support, has allowed the development of an important new business cluster in the ICT sector.

Finally, it is worth recalling that the regional government is particularly advanced in the use of so called financial engineering instruments. Financial engineering instruments are revolving funds and have been introduced to compensate the scarce willingness of the local bank system to lend

money to local companies. They are important since, by leveraging private investments, they represent an answer to the drop in available public resources.

Despite these good practices, the interviewees highlighted various weaknesses of regional industrial policy capacity that deserve attention. In particular, there is a lack of skilled public employees. Moreover, the current system for allocating the public administration staff to the various offices does not guarantee a good matching between individual skills and job tasks. These problems should be addressed through personnel reskilling, by recruiting new personnel in the specific fields were the lack of skills is more serious (for instance statistics, policy evaluation and IT) and by boosting personnel mobility.

Another problem is represented by the excessive fragmentation of the remits in the field of industrial policies. In this regard, a reorganisation of the public offices according to the policy priorities of the regional government would be of great help.

In the field of inward investments there are serious delays that should be tackled by translating the most relevant regional laws and regulations into English, by establishing a regional office in charge of inward investments, by improving coordination between offices and by creating integrated location packages for potential investors.

Currently policy intelligence is scarcely used. To overcome this problem, the Statistics Unit (*Servizio della Statistica Regionale*) should be strengthened and should be given clearer objectives. Moreover, coordination among all the offices that collect and process statistical data (as well as other relevant data for policy intelligence) should be improved, by setting up a regional statistical network.

As outlined earlier, the regional authority is lagging behind also in the field of policy evaluation. There is much that can be done in this regard, in particular:

- the Evaluation Unit should be strengthened (both in terms of staff number and of skills),
- all the offices that manage industrial policies should receive basic training about the merit of evaluation for policymaking, moreover they should constantly collaborate with the evaluators,
- evaluation should be better integrated in the policymaking cycle (in particular the results should undergo public debate and should feed into policy design).

Economic profile

Key economic, social and geographic specificities of the region

Sardinia is the third largest Italian region out of 20 regions (24,100 square kilometres) and the second largest island in the Mediterranean Sea (after Sicily). According to Istat (2015), it has a population of 1,658,138 inhabitants (corresponding to the 11th most populous Italian region) and a very low population density (just 69 inhabitants per square kilometre, compared to the Italian average of 201). In the EU only a few regions (especially in the North of the continent) have population densities that can be compared to Sardinia.

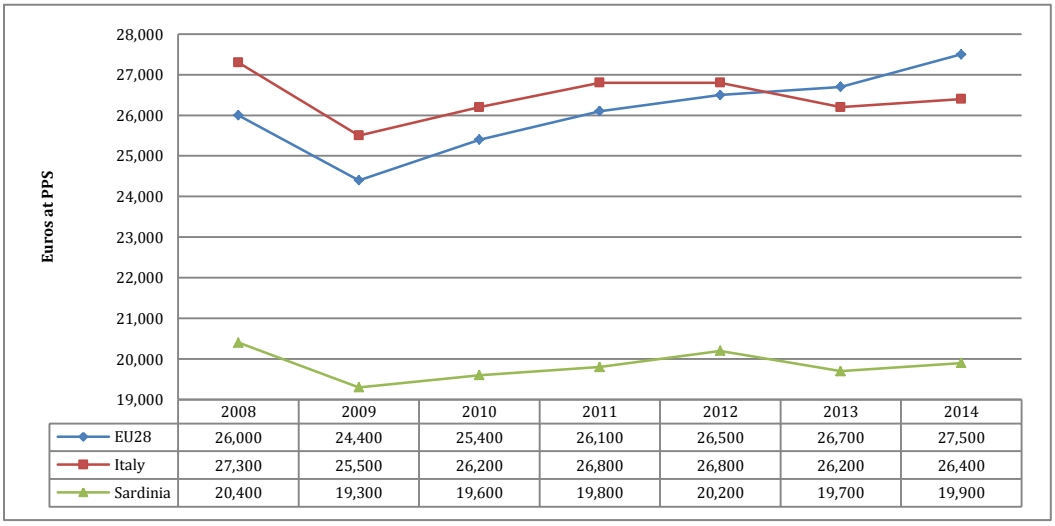
The demographic structure of the regional population is characterised by a high share of elderly people and a small share of youths: just 11.9% of the population is under-14 (compared to 13.8% of Italy and 15.6 of EU 28), 66.5% is aged 15-64 (as compared to 64.5% of the Italian average and 65.5% of the EU28 average) and as much as 21.6% is over-65 (much more than the EU average, 18.9%, and almost equal to the Italian average, 21.7%) (Eurostat, 2015). According to Istat, by 2065 the cohort of Sardinian population aged 15-64 will decrease by 15.7% (compared to -9.8% of the Italian average) and the over-65 will increase by 16.5% (compared to 10.9% of

Italy). Of course this forecast raises serious concerns about the sustainability of the current socio-economic system: higher healthcare and pension expenditure, lower shares of active population, etc.

The largest Sardinian city is Cagliari, which in 2015 was endowed with 154,460 residents (Istat). The city is surrounded by numerous smaller urban centres, 16 of which in 2016 have been aggregated into a metropolitan area whose overall population in 2015 amounted to 431,302 residents (Istat). Except for Cagliari the rest of the region is prevalently rural. According to Istat (2016, p. 26), 46% of Sardinian population lives in scarcely urbanised municipalities, 37% in averagely urbanised municipalities and just 17% in highly urbanised municipalities. Therefore, overall Sardinia can definitely be classified as a rural region.

Sardinia belongs to the *Mezzogiorno* of Italy – that is, the most deprived group of Italian regions, located in the south of the country. According to Eurostat, in 2014 Sardinia's GDP was equal to €33 billion, corresponding to 2% of the Italian GDP. GDP at Purchasing Power Standard (PPS) per inhabitant amounted to €19,990 corresponding to 75% of the Italian average and to 72% of the EU28 average.

Figure 1: GDP at Purchasing Power Standard per inhabitant, 2008-2014



	2008	2009	2010	2011	2012	2013	2014
EU28	26,000	24,400	25,400	26,100	26,500	26,700	27,500
Italy	27,300	25,500	26,200	26,800	26,800	26,200	26,400
Sardinia	20,400	19,300	19,600	19,800	20,200	19,700	19,900

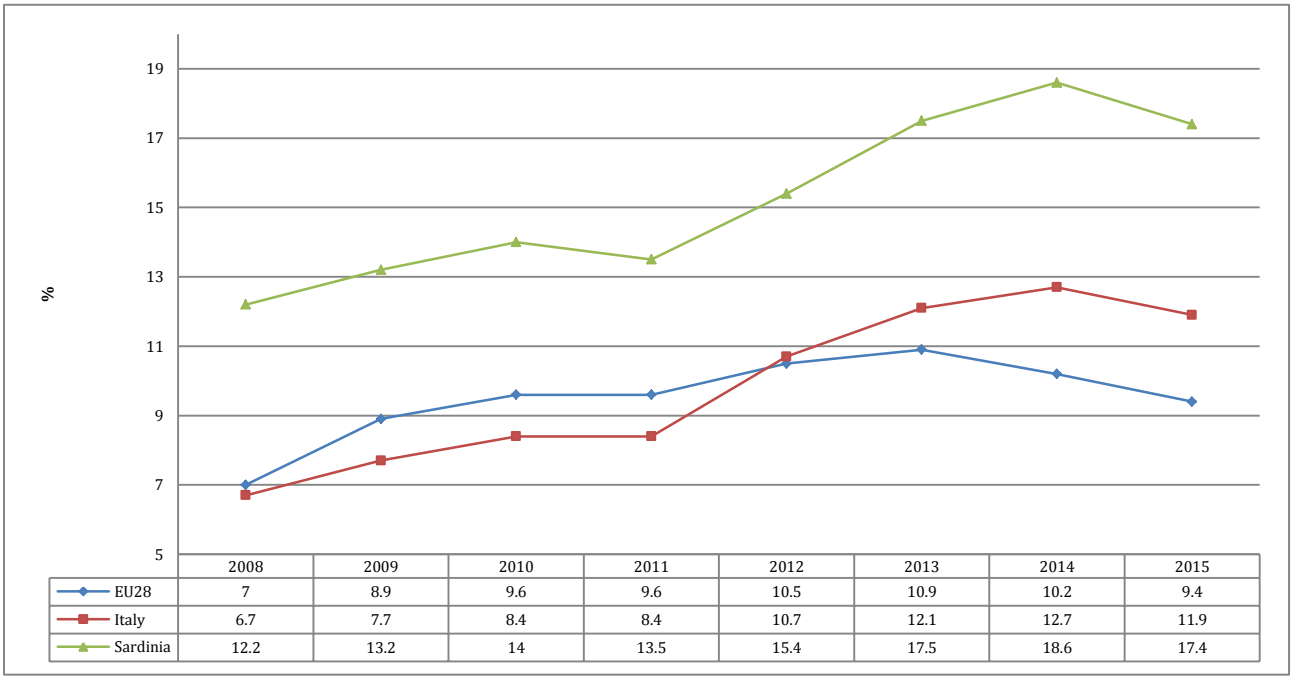
Source: Eurostat

Figure 1 shows how Sardinian GDP per capital at PPS has evolved over time, compared to both the Italian and the EU28 average: while after the peak of the economic crisis (in 2009) the EU28 GDP per capita grew constantly, both the Italian and the Sardinian GDP per capita went up and down: they increased from 2010 to 2012, decreased from 2012 to 2013 and increased again from 2013 to 2014.

If comparing 2014 to 2008 - before and after the economic crisis - it emerges that in six years Sardinia's GDP per capita decreased by 2.45%, which is better than the Italian average (-3.30%) but much worse than the EU28 average (+5.77%).

Unemployment is definitely one of the most important problems of the region. In 2008 - in the very beginning of the economic crisis - the unemployment rate was 12.2% - compared to the Italian average at 6.7% and the EU28 average at 7%. Since then it increased significantly, by reaching the peak in 2014: 18.6%. In the same year the Italian average was 12.7% and the EU28 average 10.2%.

Figure 2: Unemployment rate, 2008-2015



	2008	2009	2010	2011	2012	2013	2014	2015
EU28	7	8.9	9.6	9.6	10.5	10.9	10.2	9.4
Italy	6.7	7.7	8.4	8.4	10.7	12.1	12.7	11.9
Sardinia	12.2	13.2	14	13.5	15.4	17.5	18.6	17.4

Source: Author's own elaboration on Eurostat data

It is also worth highlighting that unemployment is particularly serious for younger cohorts. For instance, in 2015 youth unemployment (15-24 year olds) in Sardinia reached 56.4%, while the Italian average was 40.3% and the EU28 average 20.4% (Eurostat).

Figure 3: Youth unemployment (15-24 year olds), 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
EU28	15.7	20	21.2	21.8	23.3	23.8	22.2	20.4
Italy	21.2	25.3	27.9	29.2	35.3	40	42.7	40.3
Sardinia	36.8	44	38.6	42.2	47.5	53.7	50	56.4

Source: Author's own elaboration on Eurostat data

From 2008 to 2015, in Sardinia unemployment rose by 5.2 percentage points (the same as the Italian average and more than double the EU average of 2.4 percentage points), youth unemployment by 19.6% (almost equal to the Italian average but almost 15 percentage points higher than the EU average).In Sardinia there are 55 enterprises for every 1,000 inhabitants[4], significantly below the Italian average (62‰). The average company size is particularly small: 2.8 members of staff, according to Istat (2014). This figure, which is even smaller than in 2001 (2.9 members of staff), is below the national average (3.7) and, especially, the EU28 average (5.9) (Eurostat). The small company size is probably correlated to the small regional internal market and to the fact that insularity increases significantly transport costs by hindering exports.

In 2014, according to Istat, exports were equal to €4,651 million, corresponding to just 14% of regional GDP - at the Italian level, over the same year, exports corresponded to 25% of national GDP. Moreover, it must be noted that 82% of Sardinian exports refer to petroleum, gas, coke and refined petroleum products, most of which depend on a single enterprise (Saras[5]).

[4] 2013 data, from Istat (2016) "Noi Italia. 100 statistiche per capire il paese in cui viviamo".

[5] Saras was founded in 1962 and, according to their website (http://www.saras.it/saras/pages/home?lang=EN) it is one of the biggest high complexity refinery in the Mediterranean Sea (300,000 barrels per day of refining capacity, about 15% of Italy's total refining capacity). In 2013 its turnover was higher than ten billion Euros (Servizio della Statistica Regionale, 2015).

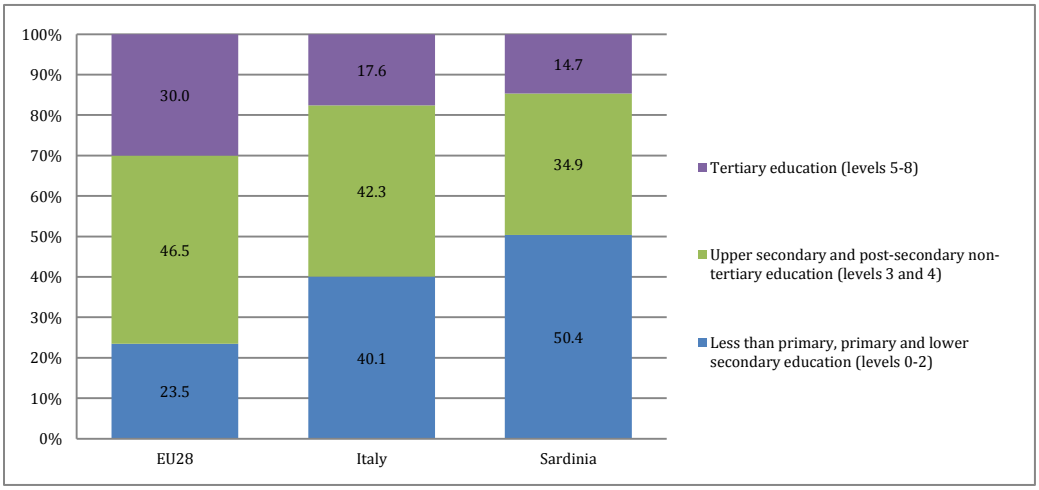
Sardinia has dramatic rates of early school leavers: according to Eurostat, in 2015 early leavers from education and training in the cohort of individuals aged 18-24 amounted to 22.9%: far more than both the the EU28 average (11%) and the the Italian average (14.7%), while EU countries have committed to reducing the average share of early school leavers to less than 10% by 2020.

According to the OECD (2012) - PISA study, Italy's performance is below the OECD average with regard to both reading and mathematics skills. Among the Italian regions, Sardinia is placed in the bottom of both ranks:

- 27.3% of 15-years-old Sardinian students have low reading skills (max 1st level out of 6 levels), compared to 19.5% of the Italian average and 26.5% of the *Mezzogiorno*'s average;
- Sardinian performance is even worse with regard to mathematics, since 33.3% of 15-years-old students do not exceed first level skills.

According to Eurostat – ISCED classification[6] – in 2015 the rate of individuals with tertiary education amounted to 14.7%, far lower than the EU28 average (30%) and the Italian average (17.6%). Also, the rate of individuals with upper secondary education was lower than both the EU28 average and the Italian average.

Figure 4: Population aged 25-64 by ISCED educational attainment level, 2015



Source: Eurostat

Insofar as infrastructure is concerned, according to ESPON[7] (2013), which ranks EU regions according to their levels of infrastructure endowments, Sardinia is in the very bottom of the rank: out of 270 EU regions it holds the 231st position - the lowest position among the Italian regions. According to Istituto Guglielmo Tagliacarne (2012) if setting the Italian average to 100, overall infrastructure endowment in Sardinia is equal to 50. The lack of infrastructure is particularly serious as regards railways (17.4), energy networks (38.3) and business infrastructure (39).

Sardinia has two universities: one is located in the south of the region (University of Cagliari), the other one in the north (University of Sassari). Overall, in the academic year 2014-2015 these two universities enrolled 38,466 students, roughly 2/3 of which in Cagliari.

[6] International standard classification of education (ISCED)

[7] European Spatial Planning Observation Network (Espon)

In addition to the universities, Sardinia is also endowed with important research infrastructure. In 1985 a consortium, called *Consorzio 21*, was established by the regional government in order to create and manage a Scientific and Technological Park called Polaris. Several tens of million euros have been invested in the park, which have led to the creation of two main research compounds: the CRS4 (which stands for Research, development and advanced studies centre in Sardinia - *Centro ricerca, sviluppo e studi superiori in Sardegna*) and Porto Conte Researches. The former - which is much larger in terms of both resources and personnel - is located in the South of the region (Pula, about 30 km away from Cagliari); the latter is located in the North of the region (Alghero, about 35 km from the second largest Sardinian city, Sassari). Both compounds host research clusters and companies which collaborate together in order to trigger innovation and economic development.

The main research clusters of the CRS4 are the following:

- biosciences,
- data-intensive computing (or big data management technologies),
- high performance computing and networks,
- energy and environment (for example instance smart grids for efficient energy management),
- information society (for example the internet of things, content technologies, education technologies and so on).

The main research specialisations of Porto Conte Researches are the following:

- food technologies,
- diagnostic systems,
- biosciences.

Despite the presence of significant research infrastructure, according to the Regional Innovation Scoreboard 2016, Sardinia is a modest innovator (EC, 2016). In 2014 R&D personnel every 1,000 inhabitants was equal to 2.3 – smaller than the Italian average (4.1‰) and especially than the EU28 average (5.5‰). Similarly, the rate of researchers per every 1,000 inhabitants (1.3‰) was smaller than both the Italian (1.9‰) and the EU28 average (3.5‰) (Eurostat). Also total intramural R&D expenditure in 2014 was relatively low: just 0.82% of the regional GDP, while in Italy the average was 1.38% and in the rest of Europe 2.04%. Probably due to small firm size, the level of private investment in R&D was even lower and close to zero (0.05%), while the Italian average was 0.76% and the EU28 average 1.30%. In 2012 patent application to the European Patent Office (EPO) per million inhabitants was equal to 5.7, while the Italian average was 60.2 (more than ten times higher) (Eurostat). According to the Regional Competitiveness Index 2013, Sardinia is among the less competitive EU regions: it holds the 222nd position out of 262 regions (Annoni and Dijkstra, 2013).

Evolution of the regional economic system: old and new economic specialisations

Just after World War II Sardinia's economy was prevalently rural: in 1951, 56.5% of Sardinian Standard Working Units (SWUs) were concentrated in agriculture, while the average in the Centre-North of Italy (the part of Italy which has traditionally been economically more developed) was 37.5%. The share of SWUs in the service sector amounted to 26% (slightly higher than in the *Mezzogiorno*, 24.5%, and lower than in the Centre-North of the country, 30.6%).

In the same year, unlike the rest of the scarcely developed regions of the South (so called *Mezzogiorno* of Italy), Sardinia was also endowed with an above-average industrial basis: 12.9% of SWUs were in industry (as compared to 10.8% of the *Mezzogiorno* and 25.8% in the Centre-

North of Italy). The regional industrial system consisted of large companies operating in the mining and metal sectors and in numerous small companies, operating in the textile, food and non-metallic mineral sectors, which were protected from external competition by high transport costs for importing goods (Paci, 1997, pp. 37-38). During the 1950s the mining sector fell into a deep crisis, which lasted for decades and led to the almost complete disappearance of the mining sector from the regional economy in the 1980s-1990s.

In the 1960s throughout the 1970s, the national government made significant efforts to boost industry in the *Mezzogiorno* of Italy (including Sardinia). These policies, which in Italy are usually known as 'Extraordinary Intervention for the *Mezzogiorno'* ('*Intervento straordinario per il Mezzogiorno'*), aimed to develop capital-intensive industrial poles in less developed regions and consisted of both tax incentives for attracting private capital and large public direct investments. Significant resources were also allocated to improve infrastructure: new roads, railways, ports, electricity and telephone networks, etc.

For this reason, despite the crisis of the mining sector, by 1975 the weight of the industrial sector in Sardinia (excluding the construction sector) had grown by 2.5% (compared to 1951). However, soon this growth proved ephemeral due to scarce competiveness of the new industries that had been created. In fact by 1996 the weight of the industrial sector had dropped again to 10.8 (-4.6%) and in 2013 reached the lowest weight ever since the post-World War II period: 8.8%, which is lower than both the national average (18%) and the *Mezzogiorno*'s average (10.5%).

The only sector which has grown steadily since 1951 is the service sector. In particular, market services have increased by 36% and in 2013 amounted to 51% (the Centre-North's average is 54.5% and the *Mezzogiorno*'s 50.4%). Insofar as non-market services are concerned, since 1952 they have grown by 11.6% reaching a total of 22.6% in 2013. This is slightly lower than the *Mezzogiorno*'s average (13.5%) but much higher than the Centre-North's average (7.9%).

Table 1: Percentage of SWUs by economic sector and geographic area, 1951-2013

Sector	Area	1951	1960	1975	1996	2006	2013		Var. 2013-1951
Agriculture	Centre-North	37.5	26.0	10.8	4.5	3.5	3.2		-34.3
	Mezzogiorno	59.2	46.0	27.0	13.7	10.1	9.9		-49.3
	Sardinia	56.5	45.0	19.8	15.6	10.9	10.8		-45.7
Industry (excluding construction sector)	Centre-North	25.8	29.1	33.7	23.4	20.6	18.0		-7.8
	Mezzogiorno	10.8	12.3	15.1	12.6	12.4	10.5		-0.3
	Sardinia	12.9	12.0	15.4	10.8	10.4	8.8		-4.1
Construction sector	Centre-North	6.1	8.5	7.4	6.2	7.1	6.7		0.6
	Mezzogiorno	5.5	9.9	11.8	7.1	8.4	6.8		1.3
	Sardinia	4.6	10.1	12.6	9.1	9.4	6.8		2.2
Market services	Centre-North	20.9	25.8	32.7	48.0	51.8	54.5		33.6
	Mezzogiorno	15.6	20.9	29.0	43.7	47.2	50.4		34.8
	Sardinia	15.0	18.6	30.2	40.7	47.7	51.0		36.0
Non-market services	Centre-North	9.7	10.7	15.4	17.9	17.0	17.6		7.9
	Mezzogiorno	8.9	10.9	17.1	22.9	21.9	22.4		13.5
	Sardinia	11.0	14.3	22.1	23.8	21.6	22.6		11.6

Source: Author's own elaboration on Istat data

Nowadays, according to the interviewees, the most important sectors for regional economic development are tourism, agriculture and ICT. They are so paramount not only since they have already attained a significant level of development, but especially since they are expected to grow fast in the coming years.

Tourism

Sardinia is very attractive for tourists: according to the tourism attractiveness index (Baldazzi et al., 2016), it is the fourth most attractive Italian region (after Bolzano, Valle d'Aosta and Trento). For this reason, the tourism sector is very important for the regional economy and generates as much as 7.4% of regional GDP (2015), which is a share significantly higher than both the *Mezzogiorno*'s (5.4%) and the Italian average (6%). The added value of the tourism sector is equal to €2.3 billion, 2.8% of the overall added value of the tourism sector in Italy (Capasso et al., 2016, p. 33).

In 2015 in Sardinia there were 2.61 million arrivals and 12.39 million bed nights, corresponding respectively to 2.3% and 3.2% of the arrivals and bed nights at the national level. The tourism sector in Sardinia is growing faster than the Italian average: from 2004 to 2015 arrivals grew by 9.13% (Italy +6.4%) and bed nights by 9.6% (Italy +4%). The upward trend is even stronger with regard to tourism supply (that is tourist facilities): since 2004 +168.5% of accommodation facilities (vs +46.4% of Italy) and +27.3% of beds (vs +16% of Italy). This growth has especially concerned luxury accommodations, which is a sign that Sardinia is targeting tourists with higher expenditure potential (Capasso, Buonfanti, Casolaro, Cozzolino, Luccardo and Panaro, 2016).

Every additional day spent in Sardinia by a tourist is predicted to generate €63.8. The fact that this amount is significantly lower than both the *Mezzogiorno*'s average (€70.8) and the national average (€103.4) suggests that in Sardinia tourism has strong growth potential (Capasso, Buonfanti, Casolaro, Cozzolino, Luccardo and Panaro, 2016, p. 33). An additional factor leading to this same conclusion is represented by the fact that accommodation facilities are currently underutilised: the annual gross utilisation rate of hotels (*Indice annuale di utilizzazione lorda di una struttura alberghiera*)[8] in 2014 was equal to 21.2%, almost one third lower than the national average (30.6%) (Istat).

Agrifood

The Agrifood sector includes both agricultural products and food production. According to the regional official Smart Specialisation Strategy (S3) document (Autonomous Region of Sardinia, 2015, pp. 38-39), in 2010 in Sardinia there were 60,812 farms, whose added value was equal to €927 million (3.5% of the Italian agriculture sector). According to the same document, Sardinia is well placed in the production of various agricultural products: cow's milk (Italian region with seventh highest production), sheep's and goat's milk (first position in Italy), wool (first position in Italy), sheep's and goat's meat (second position in Italy). Moreover, Sardinia is the Italian region with the highest extension of farming areas devoted to the production of Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) products.

Food production in Sardinia is the manufacturing sector with the highest number of both companies (1,994 companies in 2011) and employees (9,465 employees in 2011). Most of these companies are specialised in bakery products (1,424 companies), other food products (144

[8] Annual gross utilisation rate of hotels=(bednights/(beds*365))*100

companies), dairy products (133 companies) and drink products (113 companies) (Autonomous Region of Sardinia, 2015, p. 39).

Despite the importance of the agrifood sector for the regional economy, this has still a major untapped potential. In fact, on the one hand a significant share of agricultural products are not transformed (which reduces the overall added value for the region), on other hand the data on agrifood exports suggest that the very strong 'Made in Italy' brand[9] is not sufficiently exploited yet: in 2012 agrifood exports (calculated as a percentage of GDP in euro at current prices) were equal to 0.48%, as compared to a national average of 2.04% (Autonomous Region of Sardinia, 2015, p. 40).

According to a study carried out by PromuovItalia (2013) just 24.6% of the overall companies operating in the agrifood sector in Sardinia can be classified as 'innovative', as compared to a national average in the same sector of 42.1%. This suggests that further efforts should be made by the regional government to support innovation in this strategic sector.

ICT

According to most of the interviewees, the ICT sector is the most promising source of future regional economic growth.

The emergence of the ICT sector in Sardinia dates back to the 1990s, when the research centre CRS4 was created by the regional government, with the aim to compete in this field of research with the most important international competitors. Nobel Prize for physics Carlo Rubbia was appointed CRS4's first chairman in 1990. At that time he was CERN's (European Organization for Nuclear Research) director and brought to Sardinia a group of top international researchers who were developing the html language and a browser to read it.

Since its foundation, CRS4 has carried out world-class research. Just to make an example, one of its researchers (Luca Manunza) in 1995 designed the first webmail ever, even though unfortunately CRS4 did not manage to exploit it commercially: the software was published open source and a few months later Hotmail was created (that is the first webmail exploited commercially).

Despite of this, thanks to a series of fortunate circumstances, the CRS4 had huge impact on innovation in Sardinia. In the early 1990s a young entrepreneur Niki Grauso, who owned the most important newspaper l'Unione Sarda in Sardinia, decided to start collaboration with CRS4, which proved extraordinarily fruitful. Thanks to this collaboration, on 31 July 1994 l'Unione Sarda became the first Italian newspaper to go online, the second globally after the Washington Post. Most importantly, the same collaboration, still in 1994, allowed Grauso to create Video On Line, the first internet service provider in Italy. Unfortunately, in 1996 Grauso was forced to sell Video On Line to Telecom Italia, since the expenses exceeded the revenue. According to Luigi Filippini (one of the interviewees of this report, current CRS4's Chairman, as well as former CRS4's researcher and one of Grauso's main collaborators during Video On Line's experience) one of the main problems concerned the lack of an adequate business environment. Video On Line's business model consisted in selling internet services to a huge audience of potential customers. However, at that time in Sardinia there was no skilled personnel in customer care and this turned out to be a huge problem. A similar lack of skills concerned other domains: commercial law, business administration, etc.

[9] http://madeinitaly.org/en/made-in-italy/certification-made-in-italy.php

Nevertheless, this failure paved the way to a success story: Tiscali. In 1998, the Sardinian entrepreneur Renato Soru decided to return to Sardinia after a period in Prague in which, in collaboration with Grauso, he created the Czech version of Video On Line. In that period the Italian telecommunication market was about to be liberalised and, therefore, he aimed to take advantage of this opportunity by setting up a new start-up in Sardinia. According to Mario Mariani (one of Tiscali's co-founders) in a few months the essential technological infrastructure (server, call centre, web site, etc.) was set up (Bellu, 2016). This was also made possible by the presence in Cagliari of world-class technicians trained at the CRS4 and at Video On Line. Tiscali conquered the regional market very quickly, next it targeted the national market and, finally, when in 2001 it was listed in the stock market, also the international market. It was an extraordinary success: at the peak of its market expansion Tiscali had branches into 15 countries and had more than eight million customers. There was a moment in which Tiscali reached a capitalisation higher than FIAT (one of the largest Italian companies specialised in car production). Today, Tiscali is still one of the most important companies in Sardinia and, despite the crisis of the so called 'new economy', has still several hundred employees and is competitive at the international level.

The evolution of the ICT sector in Sardinia (CRS4, Video On Line and, finally, Tiscali) is a good example of how, through public and private investments, an innovative environment can successfully be created, with a significant positive effect on the regional economy. All the interviewees agreed that today in Sardinia there is a positive environment for innovative companies in the ICT sector, and that this is due to the public and private investments made in the past (regional government, Grauso and Soru in particular). For instance, one of the interviewees pointed out that, while 20 years ago there were no skills, today there are customer care skills, great ICT researchers and engineers, good technicians, but also professionals able to assist a company in listing its shares in the stock market, lawyers who are experts in copyright, several suppliers and so on.

Besides the interviewees' opinions also additional evidence can be found concerning the improvement of the business environment in Sardinia. For instance, in recent years numerous international ICT companies have opened branches in Cagliari: Amazon has already hired about than 300 members of staff and is planning to hire more (up to 500); Accenture and Avenade, two large international digital technology consultancies, in the last two years have already hired almost 300 people and plan to hire more, Huawei has decided to locate an international research centre on Smart Cities in Sardinia in collaboration with CRS4 (Sardegna Ricerche, 2016).

Moreover, Sardinia has become extremely attractive for investors in innovative start-ups. According to Aifi (Italian association of venture capital, private equity and private debt), out of the €185 million of venture capital investments in Italy between 2013 and 2015, €36 million have been attracted by start-ups located in Sardinia (19.5% of the total amount). This places the region in the second place within Italy for attraction of venture capital investments after Lombardy which, over the same period, attracted €48 million. However, if dividing these figures by the number of active population (individuals aged 15-64), in Sardinia venture capital investment is more than 4 times higher than in Lombardy: respectively, €33 vs €7 per person (the Italian average equals €5 per person).

In sum, Sardinia's economy in the past was prevalently based on agriculture and heavy industry (mines, chemicals, etc.). Today, due to international competition, it has lost a significant part of

its manufacturing sector and the remaining part is in a serious crisis with no easy way out[10]. On the other hand, it has a solid tourism sector with high growth potential, an agrifood sector which accounts for most of current Sardinian manufacturing production and exports (excluding the refining sector) and, most importantly, has developed a positive business environment in the ICT sector (innovative start-ups, research centres and skilled human capital).

[10] For instance, in November 2016 the CISL's (one of the main Italian trade unions) regional secretary Ignazio Ganga, sent a letter to the Italian prime minister by highlighting that in Sardinia there are 3,528 workers that have been laid off by regional industrial plants (Alcoa, Eurallumina, Keller, Ex Ila, Vesuvius, Ottana Polimeri, Settore Tessile and Meridiana) and that, therefore, the national government should deploy specific policies to support them.

Industrial policy objectives

The scope and objectives of the regional industrial policy

In Sardinia the official programming documents do not provide any definition of industrial policy and barely mention this term. The most important programming document at the regional level, the Regional Development Programme (RDP), uses the term industrial policy just four times throughout almost 200 pages. However, as discussed below, this does not mean that Sardinia does not run industrial policies but rather that the latter are usually named in a different way: regional development policies. Therefore, since in Sardinia the concept of industrial policies tends to overlap with that of regional development policies (or just regional policies), in the rest of this study these terms will be used as synonymous.

According to a very influential definition provided by Warwick (2013, p. 16) *'Industrial Policy is any type of intervention or government policy that attempts to improve the business environment or to alter the structure of economic activity toward sectors, technologies or tasks that are expected to offer better prospects for economic growth or societal welfare than would occur in the absence of such intervention'.* This definition highlights that industrial policies have a horizontal and a vertical dimension, the horizontal dimension stresses the function of enhancing the business environment in general; the vertical dimension stresses the importance of making clear choices concerning the strategic sectors, technologies or tasks that are expected to become a driving force of future regional economic growth.

Table 2: Key regional development policy documents

Policy document	Brief overview	Specific links to industrial policy
Regional Development Programme (Programma Regionale di Sviluppo), Regional Government, 2014-2019	It sets out strategies and objectives that the region aims to achieve during the legislative period, including in the field of industrial policy	This document describes the main regional strategies aiming to improve the overall business environment.
Smart Specialisation Strategy, Regional Government, 2014-2020	This document describes the regional S3 strategy and is the most important regional strategic programming document for the period 2014-2020	This document identifies the priority sectors that are expected to drive regional development during the current programming period.
Operational Programme European Regional Development Fund, Regional Authority (ERDF), 2014-2020	This document describes the objectives and the policies that the regional government aims to deliver through the resources of the ERDF	In particular, axis 1 and 3 are particularly relevant for regional industrial policy: the former concerns policies in the field of scientific research, technologic development and innovation; the latter concerns business support policies.
Operational Programme European Social Fund (ESF), Regional Authority , 2014-2020	This document describes the objectives and the policies that the regional government aims to deliver through the resources of the ESF	In particular, this operational programme describes the objectives and the policies in the fields of employment and vocational training.

Source: Author

All interviewees have been asked to define industrial policy. Most of them tended to focus on the horizontal dimension, that is the creation of the right economic conditions for doing business, creating jobs and for attracting investments. Only one interviewee mentioned the importance of the vertical dimension by emphasising that industrial policy should focus the resources in a few sectors with high growth potential.

The overwhelming importance of the horizontal dimension in the interviewees' opinions reflects the evolution of the concept in the EU policy documents. In fact, while until 2013 EU regional development policy mainly aimed to improve the general business conditions, the new S3 - which was introduced for the 2014-2020 programming period - on the one hand aims to increase the competitiveness of entrepreneurial ecosystems as a whole like in the past, on the other hand calls the regions to make clear choices concerning the sectors and the activities with higher growth potential, in which EU resources must be concentrated. The strong influence of EU policies on the regional definition of industrial policy emerges clearly from the interviews and depends on the one hand on the fact that EU policies set binding rules which force the regions to adjust to the new policy models, on the other on the fact the EU is by far the most important source of funding for industrial policies in Sardinia.

As a result, the industrial policy strategy in Sardinia has both horizontal and vertical priorities. The most important programming document in which the horizontal priorities emerge clearly is called Regional Development Programme[11] (RDP). It sets out strategies and objectives that the region aims to achieve during the legislative period of five years and gets updated every year through the Finance Act (*Documento annuale di programmazione economica e finanziaria*). The Regional Development Programme is financed through resources coming from different sources: regional, national and EU. This is an important innovation, introduced in 2007, since before different resources were programmed trough different documents scarcely coordinated with each other.

The Regional Development Programme 2014-2019 identifies three main horizontal priorities: human capital, innovation and institutional quality. Both the regional policy documents and the interviewees highlight that, in a globalised economy where competition is strong, Sardinia cannot compete on production cost. In fact, other global competitors can take advantage of lower labour costs and cheaper commodity supply - recall that Sardinia is an island and has high transport costs. Since the region is forced to compete on knowledge intensive products and services, human capital and innovation are essential to succeed. Also, good institutions are considered paramount by the plan (less red tape, better public services, simpler and clearer laws), on the grounds that they are expected to attract inward investments and to boost local companies' growth.

The identification of vertical priorities is a recent innovation introduced by the EU in the framework of the Smart Specialisation Strategy (or S3): in the 2014-2020 programming period, each region is required to draft a document called S3, in which the vertical priorities must be clearly identified. Sardinia's S3 has identified the following six vertical priorities:

1. ICT
2. Agrifood
3. Tourism, cultural and environmental goods
4. Aerospace
5. Bio-medicine
6. Smart grids for efficient energy management

[11] *Programma Regionale di Sviluppo.*

The first priority, ICT, is strongly grounded in recent economic history of the region. In fact, as highlighted earlier, the ICT sector in Sardinia developed rapidly in the early 1990s and today represents an important economic cluster, especially in the Cagliari area. Since ICT is a knowledge intensive sector with high growth potential at the global level, further developing this cluster is considered extremely important from a strategic viewpoint.

The second priority, agrifood, is justified by the important weight that the agriculture sector and agrifood manufacturing has traditionally had in Sardinia. With regard to this priority, one of the most important challenges consists in increasing the share of agricultural products which get processed locally, since this would significantly increase their added value.

On a similar vein, also tourism has already achieved a significant level of development but still has high growth potential. In particular, the tourism season should be extended by increasing tourism flows in non-summer months and the average tourist expenditure should be increased by integrating the tourism offer, investing in marketing services (especially web marketing).

On the contrary, the choice of the fourth and fifth priorities, aerospace and bio-medicine, is mainly justified by the important research infrastructure and projects that have already been implemented in Sardinia. Even though according to various interviewees the current number of companies operating in these sectors is low, the strategy relies on the expectation that the presence of high quality research will play a crucial role in attracting private (Italian and international) investments.

Also insofar as the sixth priority is concerned (that is smart grids, which consist in improving the creation and management of renewable energy), according to the interviewees there is a lack of companies but high research expertise. Moreover, thanks to its high levels of sunshine and wind, Sardinia is a particularly suitable location to produce renewable energy. Last but not least, in the past the region has already made significant investments for renewable energy production, so that it ranks seventh (out of 20 Italian regions) for the production of photovoltaics per inhabitant (Mascia, 2016).

It is worth highlighting that the choice of these clusters aims to overcome the industrial development model of the past, based on heavy industry. In fact, as explained by one of the interviewees, the traditional industrial paradigm of the last 40 years (based on the exploitation of the environment, high levels of energy consumption and high transport costs), today does not work anymore and is not sustainable anymore. Therefore, in his opinion, the alternative is exactly the opposite: choosing economic activities which are clean from an environmental viewpoint and which imply low levels of energy consumption (preferably, self-produced locally). All the economic activities which have been chosen through the regional S3 are consistent with this new paradigm.

The regional industrial policy strategy provides for strong integration between clusters, in order to fully exploit their complementarities. For instance, ICT technologies represent a cross-cutting link between clusters, since they can boost innovation and productivity also in other sectors. Another example of integration concerns the agrifood and the tourism sectors: tourists are potential customers of local agrifood products and an extraordinary advertising channel. The objectives set out by the S3 are pursued through resources and policies which are described in the Regional Operational Programmes. In Sardinia there are three Regional Operational Programmes (ROPs) corresponding to the following sources of EU funding:

- European Regional Development Fund (ERDF),
- European Social Fund (ESF) and

- European Rural Development Programme (ERDP).

The last one concerns rural policies and therefore is not relevant for the purpose of this study. On the contrary the ERDF and the ESF are both crucial.

The S3 objectives, particularly in the fields of innovation and enterprise policies, are mainly pursued through the resources of the ROP-ERDF which, for the period 2014-2020, is endowed with €931 million. Investments in education, vocational training and active labour market policies are mainly financed through resources of the ROP-ESF which, for the period 2014-2020, is endowed with over €440 million.

Companies represent the main target of industrial policies co-financed through ERDF resources. In particular, the main goals in this regard consist on the one hand in enhancing local companies' competitiveness, on the other in attracting inward investments.

Innovation is possibly the most important instrument for enhancing company's competitiveness. In fact, innovative companies are usually more competitive than their non-innovative peers. For this reason, a significant share of ERDF resources is devoted to enhancing the regional innovation system (RIS), particularly in the priority sectors identified by the S3. In order to do this, on the one hand the regional government invests in research infrastructure and projects, on the other it seeks to increase collaboration and knowledge circulation between the main actors of the RIS (universities, public and private research centres and companies). Innovation transfer, though, is not the only way through which regional policies support companies. Other paramount objectives in this field consist in favouring access to credit by local companies and in boosting their exports (internationalisation).

Another objective consists in attracting foreign direct investments (FDI), which is considered crucial to boost innovation and to create new wealth and jobs at the regional level. In this regard, the strategy relies on measures for improving the business environment (infrastructure, R&D, social capital, streamlining, human capital and so on) as well as on the creation of a single contact point in Sardinia for extra-regional investors, which should be able to create locational packages, to promote the region abroad and to negotiate the conditions for attracting inward investments with potential investors.

Enhancing human capital through education and vocational training is another key priority of the regional government. This is important since higher levels of human capital on the other hand can boost innovation and companies' competitiveness, on the other can improve individual employability and reduce unemployment. In fact, as highlighted earlier, in Sardinia unemployment (especially youth unemployment) is dramatic. A significant share of ESF resources is invested to increase education and skill levels. Moreover, in the field of labour market policies, it is also worth mentioning the objective of improving the matching between labour demand and supply, by providing modern employment services.

In general, the objectives set out by the ROPs are not only clearly described but also clearly quantified. In fact, in the 2014-2020 programming cycle policies are strongly result-oriented. In this regard, Table 3 reports the main result indicators in the field of industrial policies, which are expected to be achieved through ERDF financial resources by 2023.

Table 3: Target indicators ROP ERDF Sardinia, 2014-2020

Indicator	Unity of measurement	Baseline	Baseline year	Target (2023)
Researchers employed in enterprises in relation to the overall number of employees	%	0.05	2012	0.12
Enterprises which carried out R&D in collaboration with external partners in relation to the total number of enterprises who carried out R&D	%	66.67	2012	70.00
Total R&D expenditure in relation to GDP (current prices)	%	0.74	2012	1.10
Public R&D expenditure in relation to GDP (current prices)	%	0.69	2012	0.90
Private R&D expenditure in relation to GDP (current prices)	%	0.05	2012	0.20
Productive specialisation in knowledge intensive sectors (employees in technology intensive manufacturing sectors and in knowledge intensive service sectors)	%	1.67	2011	2.20
Private investments in relation to GDP (chain-linked volumes)	%	13.01	2011	12.60
Degree of trade openness of the manufacturing sector (Total export + intermediate goods' import in manufacturing sector in relation to GDP - Current prices in Euros)	%	21.60	2012	20.22
Degree of trade openness of the agrifood sector (Total export + intermediate goods' import in agrifood sector in relation to GDP - Current prices in Euros)	%	0.48	2012	0.62
Value of risk capital + early stage venture investments in relation to GDP	Number of employees per 1,000 inhabitants	0.039	2012	0.045
Percentage of global credit exposures between 30.000 and 500.000 Euros used by companies in relation to global credit exposures used by companies	%	24.85	2013	24.91
Bank loans by non-financial companies in relation to GDP	%	38.52	2012	47.34
Tourist numbers municipalities with national and regional parks in relation to the number of residents in these municipalities	%	n.a.	n.a.	+28%
Number of visitors in state and non-state museums	Number	7,000	2011	9,000
Tourist number in accommodation establishments in non-summer months per inhabitant	Days/Inhabitant	1.1	2012	1.5

Source: ROP ERDF Sardinia 2014-2020

There is no formal distinction between short and long term objectives. Nevertheless, as pointed out by the interviewees, there are investments that, by their nature, can be achieved in the short run and others that require longer periods of time (in terms of when outcomes become visible). For instance, investments in human capital are long term investments since while the investment takes place today the private and public returns often come through in the long run. On the other hand, there are other policies that produce results in the short run: for instance, cutting red tape immediately improves the business environment.

Lessons from previous policy cycles

The current approach to regional development policy in Sardinia has resulted from the evolution of both national and EU policy paradigms. In Italy significant economic differences between modern and rich Northern regions and poor and backward Southern regions (so called *Mezzogiorno*) have existed at least since the late 19th century. Therefore, specific policies to boost economic development in the *Mezzogiorno* have been carried out by the national authorities since the 1950s. Two main periods can be identified in this regard: 1950-1992 and 1992-2013. The first period was characterised by a top-down centralised approach, the second period by a multilevel more decentralised approach (Milio, 2010, pp. 61-63). During the first period, the *Mezzogiorno* regions were treated like a single territory, characterised by similar problems and policy solutions. In 1950, a special fund was established, called 'Extraordinary Interventions for the *Mezzogiorno'* ('*Intervento straordinario per il Mezzogiorno'*). This was especially intended to finance growth poles in *Mezzogiorno* regions, through investments in capital-intensive industries, that were expected to create new jobs and to increase regional wealth (so called 'forced industrialisation').

The *Intervento Straordinario* and other similar development policies have progressively been dismissed in the late 1980s early 1990s. Afterwards, a period of major reforms occurred in Italy, which led to the development of a new approach to regional development called New regional programming *(Nuova Programmazione Regionale*, NRP*)*. This new approach resulted from learning. On the one hand many scholars challenged the effectiveness of the *Intervento Straordinario* (see for instance Pigliaru, 2009). On the other hand, its substantial failure is clearly demonstrated by the fact that the economic north-south divide in Italy has not decreased over time - on the contrary, it has further been exacerbated by the recent economic crisis.

The NRP resulted from all these factors and brought about important novelties. For the first time, the need for the active promotion of territorially embedded development resources was acknowledged. In other words, the focus shifted from investments and incentives to create growth poles to investments in basic public services (education, roads, research, etc.) (Cannari et al., 2009, p. 718); from a logic in which civil, social and cultural development was pursued through the accumulation of productive capital to a logic in which economic development was expected to spur from improved civil, social and cultural conditions (Viesti, 2009, p. 106).

In addition to the basic contextual factors recalled above, NRP made the point that the regional economic actors must be endowed with adequate levels of social capital, such as networks of trustworthy relations, ability to cooperate and to comply with laws and contracts. Those factors are traditionally thought to be very low in southern regions (see for instance Putnam et al., 1993). For this reason, specific actions to build social capital have usually accompanied NRP policies (Cannari, Magnani and Pellegrini, 2009, pp. 714-715).

Recently - in the 2014-2020 programming period - a new important period of change in the field of regional policies has come to the fore. According to the new Europe 2020 framework, which was strongly influenced by 'New industrial policy' (see for instance Aiginger, 2012, Rodrik, 2004), the regions (including Sardinia) are called not only to improve the overall business environment like in the past but also to make clear choices concerning the identification of precise economic activities and technological specialisations, in which cohesion and investment funds must be concentrated. This choice shall take place through a process called 'entrepreneurial discovery', in which the regional government should seek to elicit the entrepreneurial knowledge of the companies. In fact, these actors are expected to know market trends and opportunities better than anybody else.

The smart specialisation strategy represents yet another example of learning. In fact, it integrates paradigms that so far had remained separate. According to the OECD (2013) there is nothing really new about the smart specialisation approach, however it has the merit to have brought together into a single and simple framework many different elements which were already evident in a diverse range of literatures but which had not been coherently integrated in any systematic format.

Industrial policy governance

Institutional set-up and responsibilities

Responsibilities in the field of industrial policies are scattered at various levels: EU, national and regional. However, for the purposes of this report the regional level is the most relevant. First of all since academic research has provided clear evidence that the key actors for innovation tend to cluster especially at the regional level[12], these typically include companies, universities, research centres and so on (see for instance Cooke et al., 1997). Second, since in Italy regions have important remits in the field of industrial policies. This is particularly the case since 2001 when, through a constitutional law, the competencies of the regions have been broadened significantly. Moreover, Sardinia belongs to a sub-group of Italian regions, called special administrative regions (*regioni a statuto speciale*), which enjoy a higher degree of autonomy as compared to other Italian regions. Third, also the EU has entrusted regions with increasingly important responsibilities (see for instance Jones and Keating, 1995).

In Sardinia numerous actors and institutions are involved in the design and implementation of industrial policies. A brief review of the most relevant ones is provided below.

The Regional Council is the highest political body. It consists of 60 elected members and is entrusted with legislative powers in numerous areas. Among other things, the Council approves the most important regional documents concerning development policies (in particular the Regional Development Programme) and monitors the political action of the regional government.

The Regional Government is led by the president of the region, which is directly elected by the voters and appoints 12 Assessori (or ministries). Each minister is in charge of one ministry which, in turn, can be comprised of one or more departments specialised by topic. Some of these departments, which are described below, have specific responsibilities in the field of regional policies.

The Department of Industry has 61 members of staff. It shares with Sardinia Researches (a regional agency which will be mentioned later) responsibilities in the management of policies aiming to support innovative start-ups. Other responsibilities concern companies internationalisation (through providing support to local companies to reach foreign markets); streamlining of administrative procedures (through cutting red-tape and making the public administration more business friendly) and managing energy policies (through planning energy production and promoting efficient energy distribution). Finally, it controls and manages companies owned by the region, which mainly operate on extractive industries[13].

[12] In this instance Region is not understood as an administrative or statistical unit, but rather as the functional unit in which institutions and actors tend to cluster for innovating and doing business.

[13] This responsibility represents a legacy of the period in which the state used to make heavy investments to create manufacturing industries which have not yet been dismissed.

The Department of Employment and Vocational Training is in charge of active and passive labour market policies. The General Director of this department is also the Managing Authority of the Operational Programme European Social Fund Regional (which is the most important source of funding for vocational training and other policies aiming to boost job creation). The department, however, does not directly manage all the resources of the ESF. In fact, a significant part of resources is allocated to other departments according to their competencies (this issue will be further discussed later).

The Department of Employment controls a regional agency the Sardinian Agency for Active Labour Policies (ASPAL), which enjoys a high degree of autonomy. The agency is in charge of important regional programmes, especially in the field of student mobility, and coordinates the network of regional employment offices, which are distributed across the entire regional territory. For this reason it has a very high number of employees: about 700.

The Regional Programming Centre (RPC), despite its name, is another department of the regional government. It was established to support the growth of industrial poles in Sardinia (so called *Intervento Straordinario per il Mezzogiorno*) and today it is in charge of drafting the most important regional programming documents (Financial act, Regional Development Plan and so on), including those concerning national and EU policies (*Mezzogiorno*'s development Plan, Community support framework, Smart Specialisation Strategy and so on). These documents, though from a technical viewpoint are prepared by the centre, are usually approved either by the regional council or by the regional government. The managing authority of the European Regional Development Fund (ERDF) is part of the centre and collaborates with other regional departments for the implementation of the ERDF. In 2015, the centre has been entrusted with the coordination of the Executive Committee of the Unitary Programming (that will be discussed later).

One of the RPC's offices is called Evaluation Unit and is in charge of all the evaluation activities carried out by the region. According to the interviewees, this is endowed with just three members of staff.

The RPC directly controls other key actors for industrial policies. In particular: SFIRS (*Società Finanziaria Regione Sardegna S.p.A.*) and Sardinia Researches. SFIRS is a limited company, whose shares are owned by the region. It is in charge of the financial instruments which have been set up by the region to facilitate access to credit by local companies. Sardinia Researches is a regional agency endowed with a high degree of autonomy. It is in charge of managing the regional technological park Polaris and of boosting technological transfer towards local companies (particularly innovative start-ups). Furthermore, they manage specific policies in support of innovative start-ups.

Other very important actors are the regional universities and the public research centres of the Polaris technological park (CRS4 and Porto Conte Researches).

Another important office for industrial policies is called **Statistics Unit** *(Servizio della statistica regionale)*. It is part of the Presidency Department and is in charge of collecting and processing regional statistical data, including in the field of industrial policies. Moreover, it provides statistical support to other offices of the regional government. It can rely on just six members of staff.

Trade unions are a very important actor for industrial policy. In Italy (and, therefore, in Sardinia) there are three main trade unions which, in order of importance for number of members, are: CGIL (Confederazione Generale Italiana del Lavoro), CISL (*Confederazione Italiana Sindacati Lavoratori*) and UIL (*Unione Italiana del Lavoro*). They represent and support workers in their

relations with their employers. They sign collective labour agreements with employers' organisations. Last but not least, they lobby (in behalf of their members) with policymakers, in order to ensure that workers' rights and interests are fully considered in the design and implementation of public policies. Usually, they are consulted by the regional government any time major decisions affecting workers are taken.

Business associations represent another very important actor of industrial policymaking. In Italy, the most important business association for large/medium enterprises is called Confindustria and represents over 150,000 manufacturing and service companies employing about 5.5 million people. With regard to small enterprises (particularly craft enterprises), the most important associations are called *Confartigianato Imprese* and CNA (*Confederazione Nazionale dell'Artigianato e della Piccola e Media Impresa*). The regional secretary of *Confartigianato Imprese* (interviewed in the framework of this research project) reported that at the national level *Confartigianato Imprese* is the largest business association (500,000 companies associated) and that in Sardinia it represents about 6,000 companies. These business associations lobby on behalf of their members and are usually consulted by the regional government when it comes to make choices that could affect their members. Moreover, sometimes they are also entrusted by the regional/national government with the management of specific policies targeting their members (for example vocational training for entrepreneurs).

In Sardinia policymaking in the field of industrial policies takes place in a multilevel system of governance, in which the regional actors coordinate with national and European actors[14]. Usually, EU and national actors set general rules, objectives and strategies while the regions are called to make strategic choices by adapting these general strategies to their distinctive characteristics and needs.

According to the EU rules, a key role in the design and management of structural funds is entrusted to managing authorities[15]. Currently, in Sardinia there are two managing authorities who manage industrial policies[16]: the first one is in charge of ESF resources and is based in the Department of employment; the second one is in charge of ERDF resources and is based in the Regional Programming Centre. It is worth highlighting that until 2006 there was a single managing authority for both funds and that, according to one of the interviewees, this governance system was more efficient. In fact, a single managing authority guaranteed more coordination and a broader strategic vision. The managing authorities are accountable to the regional government and, therefore, the actions of the former reflect the policy priorities of the latter. However, there are also numerous other actors that participate in the policymaking process.

To provide an overview of their respective roles it is worth recalling the phases of the circular policymaking approach which is usually followed for the management of structural funds that is

[14] In particular, at the national level the Ministry of Territorial Cohesion and Mezzogiono, the Ministry of Economic Development, the Ministry of Infrastructure and Transport and the Agency for Territorial Cohesion. At EU level the DG Regional and Urban Policy and the DG Employment Social Affairs and Inclusion are particularly relevant.

[15] A managing authority may be a national ministry, a regional authority, a local council, or another public or private body that has been nominated and approved by a Member State.

[16] If we consider also rural policies and the European Neighborhood Instrument (ENI) Cross-Border Cooperation (CBC) Mediterranean sea basin programme there are four managing authorities.

programming (or agenda setting), implementation, monitoring and evaluation[17]. As will be described below, each phase implies the involvement of different stakeholders.

Phase 1 (programming or agenda setting) is usually carried out by the managing authority through a multi-stakeholder approach which leads to the identification of strategy, objectives, targets, allocation of resources and identification of specific policy tools. The most important (binding) decisions are taken in this phase that, therefore, deserves particular attention and will be further discussed in chapter 3.2.

Phase 2 (Implementation) can be defined as the process which translates the content of the strategic documents into actual policies. Usually, the implementation is entrusted by topic to various regional departments, agencies and universities. For instance in Sardinia student mobility policies (financed through the ESF) are entrusted to the ASPAL; start-up policies (financed through the ERDF) are partly carried out by the RPC and partly are entrusted to Sardinia Researches; cluster policies (financed through the ERDF) are entrusted to Sardinia researches and to the universities and so on. This phase will be further discussed in chapter 4.

Finally, phase 3 (monitoring and evaluation) is usually entrusted to an external consultancy by the managing authority. The results of the evaluations should be submitted to public debate by involving the same stakeholders who had participated to the policymaking process. More details about this phase will be provided in chapter 5.

Agenda setting processes

As highlighted previously, the most important resources for regional policies in Sardinia come from the EU. For this reason in this section the focus will be on the agenda setting process of this type of policies.

The agenda setting process (or in the EU jargon, the programming process) in Sardinia has evolved significantly overtime. From the 1950s to the 1970s it was almost completely top-down: objectives and policies were decided by the national government and implemented in a standardised way at the regional level. The strong centralisation which characterised this phase assumed an all-knowing policymaker, which was expected to have all the necessary knowledge and information to identify problems and set plans and programmes to overcome them. As outlined earlier, this approach led to heavy public investments for creating growth poles in the *Mezzogiorno* of the country.

Progressively, this purely top-down approach became more bottom-up and more open to participation by multiple stakeholders. In this regard, once again, a key role was played by the EU. The latter introduced new policymaking models which, little by little, were integrated in the national and regional programming systems. The uptake of these new models, on the one hand occurred on a voluntary basis, on the other was imposed by the EU as a compulsory requirement for the management of structural funds (so called Europeanisation).

It is worth highlighting that the partnership principle (a key tenet of EU cohesion policy) was introduced in 1989. According to it, the management of structural funds must rely on partnerships

[17] Considering that the circularity of this approach depends on the fact that the last phase (evaluation) should feed into the first phase (analysis) of the next programing cycle. In other words, evaluation should be used to draw lessons about past mistakes and improve future programming cycles.

involving EU, national and regional (or local) levels. This principle was significantly strengthened over time. From 1989 to 1996 it just concerned the collaboration of different tiers of government (so called vertical partnership). On the contrary, from 1996 on also the civil society was involved in the decision-making process: trade unions, business associations, universities and so on (so called horizontal partnership). As a result of this process of Europeanisation, in Sardinia multi-stakeholder participation has become a standard approach to policymaking.

Current EU regional policy is a mix of bottom-up and top down approaches. It is top-down since the EU defines a general framework (containing rules, orientations and objectives) named 'Common Strategic Framework'. However, later, each Member State is called to negotiate a Partnership agreement with the European Commission. This phase is bottom-up, since the agreements result from the consultation of all the tiers of government as well as of private and public stakeholders operating both at the national and at the regional level. Eventually, this multi-stakeholder participatory process leads the choice of investment priorities.

In compliance with the priorities set by the partnership agreement, later the regions define their smart specialisation strategies. Also, this phase is strongly bottom-up, since EU rules force regions to follow a multi-stakeholder approach. In Sardinia the regional government entrusted the Regional Programming Centre to lead, stimulate and coordinate this phase. Initially the process followed a vertical approach (as the collaboration was only between tiers of government): since 2012 the RPC was involved both at the national and at the EU level in a process of coordination and identification of shared priorities. In this period the RPC was constantly in contact with the other regional departments, in order to guarantee that all the branches of the region with responsibilities in the field of industrial and development policies could contribute. Next, also the regional stakeholders were involved (horizontal partnership): research centres, business associations, companies, trade unions, and so on.

However, according to a few interviewees the current multi-stakeholder involvement process is inefficient. For instance one of them pointed out that the (economic and social) partnership meetings, which are organised and managed by the Managing authority, have become very unfocused, since there are too many participants. Moreover, as they are run with no specific participatory methods, everyone can voice its own views irrespective of their knowledge of the topic and of their real representativeness.

Another interviewee pointed out that inclusive processes are long and costly and that, therefore, oligarchical decision-making should be preferred. According to the same interviewee the best way for achieving good decisions consists in gathering a small group of individuals with excellent international careers who really care about Sardinia (Sardinians that currently hold top positions abroad) and asking them to make suggestions concerning regional economic development [18].

Institutional capacity

According to the quality of government index (Charron, Dahlberg, Holmberg, Rothstein, Khomenko and Svensson, 2016) - which is based on a broad survey focusing on both perceptions

[18] Various scholars have shown that migrants tend to keep strong bounds with the sending country/region, which could be exploited for attracting them back or for stimulating their investments in the future – so called brain circulation (see for instance (Hazen and Alberts, 2006, Meyer, 2001, Saxenian, 2006, Saxenian et al., 2002, Vertovec, 2002). A recent study by Crescenzi et al. (2016) found evidence of brain circulation among Sardinian mobile students.

and experiences of citizens in public service areas such as health care, education and law enforcement – the region ranks in the 204th position out of 236 regions.

According to the attachment number eight of the Budget law 2015-2017 (Report about the conditions and the costs of the Region), overall the regional government can count on 2,740 employees, 137 senior managers and 24 general directors. On average, every senior manager coordinates 18 employees. Every year the regional government spends almost €170 million for personnel costs.

In 2013 the youth rate (the share of personnel aged 20-39 among all personnel) was equal to 6.31%, as compared to 10.26% of 2011. This shows that the average age of the regional personnel is high and rising.

The average education level is very low: only 29% of the personnel hold a degree. If ranking the Italian regions according to the share of public employees who hold a degree, Sardinia is placed in the fourth last position out of 20 Italian regions[19]. In addition to this lack of education, due to national measures to cut public expenditure (DL 78/2010), vocational training expenditure has decreased from €130,002 in 2011 to €54,996 in 2013 (-58%). On the other hand, the lack of education opportunities for the regional personnel is also accompanied by the interviewees. In fact, according to one of them, while in the past regional personnel was encouraged (almost forced) to follow training courses (the topic could vary depending on the tasks of each employee), today very scarce resources are available for training. In addition to this, scarce evidence was found that training takes place through alternative initiatives to formal training, such as in-house coaching or exchange with other agencies and or regions.

Besides elderly personnel and low education levels, there are also other problems which have a negative impact on institutional capacity. In particular the interviewees highlighted the mismatch between the skills of the regional personnel and the tasks to which they were assigned. In other words, the current system for allocating the personnel to the various regional offices does not take into due account individual education and professional experiences.

To overcome this problem a two steps strategy has been planned, but not yet implemented, by the regional government. The first step consists in carrying out an in-depth analysis of existing functions and tasks (skill demand) and of the skills of current employees (skill supply). This represents a necessary basis of information to promote efficient skill allocation. The second step consists in boosting cross departmental mobility, in increasing investments in vocational training and in recruiting new personnel based on the actual overall skill needs of the regional offices.

With regard to this last aspect, efficiency in personnel recruitment should be pursued by scheduling regular competitions in order to match the actual skill demand inside the regional offices as they emerge. This did not happen as recruiting new (permanent) personnel has been made very difficult by current national 'turnover-freeze' rules, according to which only about 50% of who retire can be replaced by new members of staff. Moreover, the new recruits have usually been selected through so called staff stabilisations'. In other words, the temporary personnel that were already working in the various offices were turned into permanent staff

[19] The region in the bottom of the rank is Puglia (23%), while Emilia-Romagna is the region in the top position (57%).

through Council's laws. As a result, no public competitions have been released by the regional government since 2006[20].

Staff stabilisations are conducive to inefficiency for two reasons: on the one hand their underlying selection procedures are significantly less scrupulous than in the case of proper public competitions, on the other hand the choice of the professional profiles is not based on careful analysis of the long-term skill needs of all the regional offices but on the temporary needs of single regional offices/departments[21]. Another important source of inefficiency is represented by the old-fashioned organisation of the regional offices, which has remained unchanged for 40 years. In fact, in 1977, the Regional Law n. 1 established that the regional offices shall be divided into 12 ministries (or *assessorati*), each endowed with a precise list of competences. This law did not set any explicit coordination mechanism, besides the fact that all the ministries would take seat in the same political body: the regional government (or *Giunta*). However, since Law n. 1 was approved by the council, both the context and the responsibilities of the region have significantly changed. In particular, modern policies are cross-sectoral and therefore need stronger collaboration and coordination between departments and offices.

For this reason the regional government is planning to change the organisation of the regional offices. In particular, the Regional Development Programme 2014-2019 set the following objective: 'quitting the current rigid vertical organisational model for introducing the decentralisation of decision-making through an inter-organisational principle in which the president can entrust specific sets of policies to the ministries', depending on the overall objectives of the regional government (RDP 2014-2019. p. 153). In other words, the offices will be organised and the competences allocated depending on the regional government's objectives. The new organisation, which is expected to be implemented between 2017 and 2019, will not depend on a pre-set allocation of the remits established by law but will evolve according to political priorities; these changes are planned to take place by 2019.

Policy coordination mechanisms

As outlined earlier, multiple actors contribute to the implementation of industrial policies in Sardinia. Therefore they need to work together in order to guarantee policy integration and coordination.

Specific coordination mechanisms exist both with the national level and with the EU level. With regard to the national level a key role is played by the **Conference of Regions and of autonomous provinces**. The conference aims to define common positions concerning common interests of the Italian regions (and autonomous provinces) in order to lobby the national government, the parliament, and other state and EU institutions.

The conference has a president, a vice-president, a board (*ufficio di presidenza*) and is divided into 11 committees corresponding to as many sectors. The most relevant committees for industrial policies are the following: community and international issues, infrastructure and mobility, education, employment, innovation and research, productive activities.

Each committee is endowed with a coordinator – one of the 20 Italian regions is entrusted by the other regions to coordinate the activities for a time-lapse coinciding with the legislative period of

[20] For the shake of completeness, it is worth motioning that an open competition for hiring 81 additional employees by 2019 has been scheduled by the regional government in 2016.

[21] Temporary staff is usually selected by individual departments to carry out specific temporary projects.

most of the regions[22] – and follows its own agenda and priorities. Regular meetings are organised in order to discuss specific issues and to define specific lobbing strategies. It is worth recalling that, at the EU level, a similar role is played by the Committee of the Regions (CoR), which is an EU advisory body composed of locally and regionally elected representatives coming from all 28 Member States. Through the CoR EU regions are able to share their opinions on EU legislation and to influence the decisions of the European institutions.

Coordination is important both between different tiers of government but also between actors belonging to the same tier of government. Since development policies target and are implemented especially at the regional level, close coordination between regional actors is crucial. In this regard, the interviewees have stressed that, traditionally, in Sardinia the regional offices in charge of policies have struggled to collaborate and to coordinate effectively with each other. This is mainly due to a substantial lack of reciprocal trust and social capital.

To cope with this lack of coordination, in 2015 the regional government has introduced an important reform which improves the coordination mechanism between ministries and departments in the design and implementation of regional policies. This innovation, which was named Unitary Programming (UP), consists in programming all the available resources (EU, national and regional) at once to achieve common objectives. Considering that in the past each source of funding was programmed separately, UP guarantees concentration of resources and coordination (for instance avoiding that the same intervention is financed twice or that policies financed with different funds are inconsistent with each other).

In 2015, two committees have been established to implement this new system of governance: the Steering Committee (Cabina di Regia) and the Executive Committee (Unità di Progetto).

The Steering Committee is a political body which meets on a regular basis to discuss and set strategies concerning specific policy priorities. It is chaired by the president of the regional government and its composition varies depending on the policy agenda (participants are decided by the president). For instance, when the agenda concerns companies' competitiveness, besides the president, all the ministries with competences in this field participate to the meetings. For each policy priority, the Steering Committee drafts specific policy documents which set objectives, strategies, actions and allocate resources.

From a technical viewpoint, the Steering Committee is supported by an Executive Committee whose composition, similarly to what happens for the steering committee, varies by topic. It is coordinated by the general director of the RPC, who invites the other participants (usually regional directors and officials coming from various regional departments and agencies). The Executive Committee is not endowed with own personnel; however it can rely on RPC personnel for secretarial services and on personnel from the various regional agencies and departments, according to the needs. Close coordination between the Steering Committee and the Executive Committees guarantees continuity between the political decisions and actual policy implementation.

Not always external stakeholders to the regional government are invited to participate to the meetings of the Steering and the Executive committees (universities, majors, trade unions). This depends on the fact that on the one hand often they have already been involved at an earlier stage

[22] Art 7.5 of the Conference's Regulation '*Il coordinatore e il coordinatore vicario vengono rinnovati in concomitanza con le elezioni della maggioranza delle Regioni*' (http://www.regioni.it/regolamento/).

of the decision-making process (for instance, in the design of the regional S3), on the other that no clear rules have been established yet in this regard (as this new system of governance is still in a stage of experimentation). Most of the interviewees have provided a very positive assessment about this institutional innovation. In particular, it was pointed out that UP made regional policies more integrated with each other, while in the past collaboration was much more occasional.

Also, additional measures for enhancing coordination have been set up in 2015 and 2016. For instance, Coordination Groups have been created in the departments in charge of both ERDF and ESF. In fact, since the managing authorities rely on other regional departments and agencies for the implementation of these resources, coordination is essential. Each group is in charge of a particular policy priority of the ROPs (for instance innovation) and include personnel from both the managing authority and the departments/agencies in charge of the policy implementation.

Use of policy intelligence

The main office with remits in the field of policy intelligence is the Statistics Unit[23]. One of its main tasks consists in collaborating with Istat in the implementation of the National Statistics Programme[24]. In addition to this, every year it drafts various reports concerning the main regional macroeconomic trends, in particular: labour market, business, exports, tourism, and agriculture. Interestingly it also publishes the main datasets concerning the regional economy, which allows researchers and citizens to carry out independent analyses. Moreover, it provides statistical support to other regional offices in the design of programming documents, policies and analyses. Nevertheless, scarce evidence was found that policy intelligence is used in a systematic way to design and implement industrial policies at the regional level. In this regard two major problems were identified. The first problem, highlighted by the interviewees, is that the Statistics Unit is undersized compared to the significant workload which is expected to carry out (just six members of staff). Secondly, it has not been assigned clear objectives and priorities in the field of policy intelligence. This emerges from the website of the regional government which, when describing the role of the Statistics Unit[25], emphasises the remits concerning the provision of operational support at regional level to Istat but neglects those concerning policy intelligence. For instance it is not clear what policy intelligence work is considered most important, nor when the Statistics Unit should support the other regional offices, nor to what extent it should coordinate the activities of other regional offices in the field of policy intelligence.

Other regional offices with remits in the field of policy intelligence are, in particular, the Evaluation Unit and the Employment Observatory. The former has already been briefly described in section 3.1 and will be further discussed in chapter 5. The latter, which is an ASPAL's office (ASPAL is in charge of coordinating the regional employment offices), is in charge of processing and publishing reports concerning the regional labour market and can rely on a large dataset called Labour information system (*Sistema informativo del lavoro*, SIL) which includes data on labour supply and demand (considering that the SIL is the main data source used by the regional employment offices to match labour demand and supply). In particular, the observatory releases quarterly reports on the main regional labour market trends. Also with regard to this office the interviewees have highlighted similar problems to those of the Statistics Unit: lack of personnel (it is currently endowed with just one member of staff) and lack of clear objectives and priorities.

[23] http://www.sardegnastatistiche.it/

[24] Considering that various national and regional public organisations are involved in the implementation of this three-year plan.

[25] https://www.regione.sardegna.it/j/v/68?s=1&v=9&c=13238&na=1&n=10

Moreover the interviewees pointed out that in many regional offices there is a lack of research and statistics skills and that, therefore, they are unable to collect and process effectively policy intelligence data. This problem should be tackled by the regional government both by enhancing the skills of the existing personnel through vocational training and by recruiting new personnel endowed with specific skills in this field (see section 3.3 concerning the recruitment of new personnel). Moreover, the role of the Statistics Unit and of the other offices with remits in the field of policy intelligence should be significantly strengthened. This could be done by increasing their members of staff and by entrusting them with clearer objectives.

Finally, the interviewees reported that another important problem concerns the serious lack of coordination between the offices in charge of policy intelligence. In particular, there is scarce exchange of data and scarce collaboration. For instance, though both the Statistics Unit and the Employment Office process labour market data, they tend not to collaborate with each other. As a result, policy intelligence information in this field is not integrated and comprehensive. Another example of scarce collaboration concerns tourism statistics. The Department of Tourism holds data on tourist arrivals and bednights, while the department of transport has access to data on passenger flows (by boat and aircraft). However, they do not share these data and, as a result, no comprehensive information is made available regarding the evolution and performance of the tourism sector.

In order to overcome these problems, the creation of a regional statistics and policy intelligence network would be extremely beneficial. In fact, this would allow constant sharing of data, a more efficient division of tasks between regional offices, integration in the use of different data sources and improved and more comprehensive policy intelligence outputs.

Policy mix and implementation

The industrial policy mix in Sardinia centres around the enterprise which, as pointed out in section 2.1., is considered the main driver of regional economic growth.

Table 4 provides an overview of the main industrial policy instruments in Sardinia. The first column, labelled 'Families of policies', identifies two main families of policies. The first family, labelled policies for improving the business ecosystem, concerns policies whose objective is enhancing the general ecosystem for doing business. In fact, a lively business environment should allow local companies to thrive and should attract inward investments (FDI). This family, as specified by the second column, includes different types of policies (for example, infrastructure and human capital). The second family, labelled companies-support policies, concern policies that are directly addressed to support business and, as specified by column two, concern general support measures for companies, specific support measures for innovative start-ups, internationalisation and so on. Finally, the third column, labelled policy instruments, for each type of policy identifies multiple policy instruments (or, sometimes, groups of instruments).

Table 4: Industrial policy mix in Sardinia

Policy families	Types of policies	Policy instruments
Policies for improving the business ecosystem	Infrastructure	ERDF infrastructure Pact for Sardinia Regional Keynesian policies
	Institutional quality	One-stop-shop for business Streamlining law
	Human capital	*Iscola* Financial transfers to regional universities Master and Back C-Lab
	Research and Innovation	Technological park Polaris Top-down clusters Bottom-Up clusters UNICA Enterprise
	Labour market	Supply Side Flexicurity Demand Side Law 190/2014 Law 183/2014 Matching Regional employment centres
Companies-support policies	General companies-support policies	A series of instruments which vary according the size of the investment and companies's life stage.
	Companies-support policies for innovative start–ups	A series of instruments which vary according the size of the investment and company's life stage.
	Financial instruments	Microcredit Venture capital

	Internationalisation	Single programming document Call for clusters Call for single companies Export labs

Source: Author

Policies for improving the business ecosystem

Policies for improving the business ecosystem aim to enhance infrastructure, human capital, institutional capacity, labour markets, R&D and social capital.

Infrastructure

In Sardinia, most of the resources for infrastructure come from the national government and from the EU. Insofar as the EU is concerned, the ERDF has traditionally been the main source of funding. However, since the 2007-2013 programming cycle Sardinia's status with regard to this fund has changed from less developed region to transition region[26]–since Sardinia has exceeded 75% of EU GDP average. This change of status has resulted both in a reduction of EU resources and in a change of the type of projects that can be financed through structural funds – in particular, the focus has shifted from heavy infrastructure to other types of projects, particularly research and innovation.

Insofar as the national level is concerned, also on the wake of the economic crisis and of the high public debt, in recent years the national government has significantly reduced infrastructure investments, particularly in Sardinia. Of course this has further exacerbated a situation which was already very serious as Sardinia is one of the Italian regions with less infrastructure endowment. There are various economic reasons underlying infrastructure underinvestment in Sardinia: on the one hand, low population density enhances per capita cost of infrastructure; on the other hand, insularity plays a key role. A recent study by Cerina et al. (2015) highlights that physical infrastructure (railways, highways, electricity, water, optical fibre) on an island can just serve the local market, while the same infrastructure in a continental region is part of a broader network serving a much larger market. Therefore, the study shows that, by keeping (statistically) constant population size and density, in insular regions the returns to infrastructure investment are lower than in continental regions, discouraging further investments.

This is clearly a market failure that deserves attention of the public authority. For this reason, the current regional government has undertaken a series of actions both at the EU and at the national level to obtain compensation for the disadvantages associated to insularity. At EU level specific actions are underway, in collaboration with Corsica and the Balearic Islands. In particular, these regions are lobbying together the EU institutions to obtain specific policies and resources to contrast the drawbacks of insularity. At national level, some results have already been obtained: an agreement (so called Pact for Sardinia) has been signed in 2016 with the national government, in which important national resources have been allocated to improve infrastructure (about €2 billion for a specific project described in the pact).

Furthermore, in 2015 the regional government has also intensified investments in infrastructure by using its own resources. In particular, a mortgage of €700 million for infrastructure investment

[26] Transition regions are regions that, in the classification of EU regional policy, have GDP per capita between 75 and 90 % of the EU average. As such, they receive less funding than the less developed regions but more funding than the more developed regions.

has been taken out. This, on the one hand is expected to enhance regional infrastructure, on the other should boost economic recovery (so called Keynesian policies). Both the resources of the Pact for Sardinia and those of the mortgage will be devoted to improving roads, railways, energy networks, ports.

Institutional quality

Companies are attracted by business environments with little red tape and with simple and clear regulations and laws. For this reason, significant efforts have been made by the regional government to reduce red tape and to streamline the existing plethora of business regulation and laws.

It is worth mentioning an important regional project called 'One-stop-shop for business' (*Sportello unico attività produttive*). The project, which started in 2008 and is still operational today, consists in a single online platform for the management of the main administrative procedures concerning business. Through this platform, irrespective of their geographical location, regional companies can request authorisations and manage all the administrative procedures concerning their business. Moreover, for each procedure clear deadlines (for the government to react/respond) were set, thereby reducing uncertainty. By creating a single platform for all the municipalities in Sardinia, the project created significant economies of scale.

Also the governance of the new system was particularly innovative. The Regional Department of Industry created the platform and set procedures, forms and services. Next, under its coordination, these tools were shared with the municipalities, which received specific technical support to learn how to use them. A community of practice was also created among the municipalities, in which who was more experienced in the management of the new system would help the least experienced ones. The project was also accompanied by a wide communication campaign to inform companies about the opportunities and advantages of the new system.

This project can be considered a good practice for two reasons. First of all, in 2013 it received an important national prize: the 'E-government SMAU prize: re-use champions', which targets e-government or public administration (PA) digitalisation projects with strong re-use potential (which can be exported to other contexts). Secondly, it has already been exported to another region (Calabria) and was studied by other regions. Moreover, it was assessed very positively by numerous interviewees.

In October 2016 a new important innovation was accomplished in the field of administrative and legislative streamlining. In fact, the regional council, at the instigation of the regional government, approved a law[27] (so called streamlining law) which repealed almost 300 old and obsolete regional laws and improved various administrative procedures, by making them simpler and faster. Moreover, it created a permanent system for monitoring existing laws (and administrative procedures), assessing their impact on business and, if anything, proposing further streamlining. Last but not least, the responsibilities of the one-shop system for business were significantly expanded: it was also entrusted with the management of the authorisations for new housing.

[27] Legge regionale 20 ottobre 2016, n. 24 - Norme sulla qualità della regolazione e di semplificazione dei procedimenti amministrativi.

Human capital

Human capital represents another key asset for business. In fact, especially knowledge intensive companies tend to locate where sufficient numbers of highly skilled individuals are available. Human capital polices concern investments in all levels of formal education (primary, secondary and tertiary education) but also in vocational training.

With regard to primary and secondary education, in recent years both the national and the regional government have intensified their investments in schools. In particular, in 2015 the regional government has launched an ambitious and expensive programme called ***Iscola*** which, over the period 2015-2017, is going to invest over €600 million for school buildings and almost €150 million for improving students' learning (particularly in Italian and mathematics) and for preventing early school leaving (which in Sardinia represents a very serious problem). The programme is very vast and, for example aims to build new schools designed to comply with modern collaborative learning techniques. To combat early school leaving, specific after-school labs and workshops were organised. Moreover, a service of psychological support for both pupils/students and their families was set-up in numerous schools. Finally, for improving students' learning, additional mathematics and Italian teachers were provided to many schools.

With regard to tertiary education the regional government every year transfers significant resources to regional universities for research and teaching (more than €20 million have been allocated in 2016). These resources are important to guarantee the very survival of the two regional universities, since they compensate the national government's cuts during the years of the economic crisis.

The regional government runs specific programmes in the field of both higher education and vocational training. With regard to higher education, in 2004 a programme called Master and Back was launched and is still operational today. This consists in providing vouchers to Sardinian students who have been accepted in the most prestigious Italian and foreign universities. Once they complete their studies, specific economic incentives are also available for who is willing to return and work in Sardinia. This programme, which so far has received over €100 million of ESF investments, on the one hand has enhanced human capital levels of Sardinian students, on the other has favoured inward knowledge flows towards Sardinia. In fact, the recipients, who hold significant study experience abroad, are likely to stimulate collaborations, investments and technological transfer.

A very interesting project aiming to boost the creation of business culture is called Contamination Lab (or just C-lab). This is a small project which did not require large investments but which was able to achieve important results. The idea of creating a network of labs (the contamination labs) for improving business culture and boosting the creation of new innovative start-ups in the regions of the *Mezzogiorno* of Italy was launched by the national government. However, eventually the national government did not finance the C-Lab in Sardinia and the regional government decided to take over through regional resources coming from the ERDF.

The C-Lab, which is at its 4th edition, every year, selects 100 new graduates with different backgrounds. Participants are encouraged to work together, organised in groups and in joint projects. They can rely on both university facilities and the expertise of university tutors and researchers that support them in the design of innovative business ideas. As suggested by the name of the project, learning does not take place through formal teaching but through contamination:

1. Between students from courses / faculties / different universities who come together to develop their awareness and skills to develop innovative business ideas;

2. Between students and teachers of different departments / disciplines, given that contamination is not confined to the C-Lab but ideally enriches the whole university;
3. With partners – first of all the productive life (enterprises, start-ups, investors, chambers of commerce, business associations etc.), But also of the institutions and the third sector – as key elements to enrich the C-Lab platform;
4. With international partners, building partnerships and collaborations with the dual purpose of acquiring the best practices of innovation in education and content generation by students of C-lab and initiate partnerships to encourage mobility of students to and from C-Lab Italy[28].

The C-Lab director (one interviewee of this research project) highlighted that numerous former C-Lab participants have created new start-ups. Moreover she highlighted that also those who did not establish a new start-up have acquired very important skills particularly appreciated by the labour market including proactivity, orientation to results, ability to work in teams, problem solving, and independence. She pointed out that in three editions about 20 new enterprises were created, 4 of which received private investments. Moreover many of these new start-ups received important awards. In particular, Intendi.me[29] in 2016 was awarded the national prize for innovation directly from the President of the Republic and Yenetics[30], which won in 2015, is about to participate to a business accelerator in Israel.

The regional government is also in charge of vocational training. In this regard, two calls have been published in 2016, both financed through resources of the ESF. The first call, named Vocational Education and Training (*Istruzione e Formazione Professionale*), has a budget of €8 million and targets youths (14-17 years old) who are not in formal education anymore. It aims to contrast early school living and supports participants in achieving professional qualifications by fallowing alternative paths to formal education. Overall 22 types of courses are supplied through this call, leading to as many professional qualifications (for example, carpentry, electrician and catering). Courses last for three years and allow participants to return to formal education at any time. They are provided by training institution selected by the Department of Employment through a competitive procedure.

The second call, named Blue and Green economy, is endowed with a budget of over €26 million. It targets unemployed (especially long-term unemployed) below age of 35, NEETs and females. The call consists of two phases: in the first phase training agencies present training proposals to support participants either to enter the labour market or to become self-employed; in the second phase the proposals that get selected by the Department of Employment are implemented. A particularity of this call is that the proposals are developed by the training agencies in collaboration with the local stakeholders (particularly companies) which operate in the priority sectors identified by the regional S3. In this regard, the call should contribute to achieve the overall S3 objectives.

Research and innovation (R&I)

Regional investments in research infrastructure have been very significant and have led to the creation of the technological park 'Polaris' which, as highlighted earlier can count on numerous research clusters that support technological production and circulation in Sardinia. Besides the

[28] Currently eight C-Labs exist in as many Italian universities spread from the north to the south of the country. For further information on the C-Labs network see: http://clabitalia.it/

[29] http://intendi.me/en

[30] http://yenetics.com/

technological park, the regional government has also invested to enhance the research infrastructure of the two regional universities by financing laboratories, university buildings and specific research projects.

It is worth highlighting that, for the regional government, enhancing research capacity is not an objective per se but a means to enhance local companies' competitiveness though innovation and technological transfers. To achieve this objective, the buildings of the technological park host both research clusters and innovative companies. In fact, close geographical proximity is expected to favour cross-fertilisation and innovation.

There are various projects which aim to boost knowledge circulation and technological transfer towards regional companies. In particular it is worth describing two of the most important ones, both managed by Sardinia Researches: top-down and bottom-up clusters. They were both launched in 2009 and, over the programming period 2007-2013, involved about 500 companies for an overall budget of €15 million (about €10 million for top-down clusters and €5 million for bottom-up clusters). In the current programming period (2014-2020) the amount of resources will be roughly the same.

Both policies target clusters with groups of SMEs which operate in the same sector or in related sectors and aim to boost common R&D projects through the technical support of Sardinia Researches. However, they follow two different approaches.

In top-down clusters, first common research project ideas are proposed by the regional research centres or universities, by groups of SMEs or by large companies. Next, through a call for expression of interest, the participants (such as local SMEs) get selected. Finally, the project activities are carried out. The results of these common research projects belong to the regional government that can authorise the regional SMEs to use them freely, irrespective of their participation to the project. Interestingly, the full cost of the projects is payed trough public resources.

In bottom-up clusters the cluster of SMEs is created before the identification of the research ideas, which result from the analysis of participants' needs. Next, research is carried out in collaboration with specific research centres, selected according to their level of expertise in the research topic addressed by the project.

Besides these policies, which have already achieved a good level of maturity (they have been running for several years), there are also new projects which aim to stimulate interaction and collaboration between university researchers and local companies. In particular, one of these projects, launched in 2015, consists in organising an annual exhibition ' UNICA[31] Enterprises' in which university researchers can present their research work to companies. During the exhibition local entrepreneurs can find useful ideas and technologies that could be introduced in their production processes. Various interviewees have mentioned UNICA Enterprises as an interesting experimentation. However, they have also highlighted aspects that need to be improved. In particular, researchers and local companies have not yet achieved a common language. For this reason, especially researchers should try to communicate by using a non-technical language accessible also for non-academics.

Labour market policies

[31] UNICA stands for University of Cagliari.

In order to enhance employment, there are two main types of policies: supply-side and demand-side policies – the former target the job seekers while the latter target the employers.

Supply-side policies

In the past, in Sardinia, passive labour market policies were much more widespread than active labour market policies. More recently, an opposite trend can be observed leading to an increase of resources spent for active labour market policies and a reduction of resources devoted to passive labour market policies. This is probably due to the EU's influence which, in the light of the positive experiences of northern European countries, has tried to disseminate active labour market policies all over Europe and to ESF regulations, which encourage activation policies.

In Sardinia, there are various active labour market policies but one that is particularly significant is Flexicurity**.** It consists in financing internships for unemployed citizens in regional companies. Even though currently this policy just targets individuals who have recently been laid off and who are not entitled to receive unemployment benefits, according to one of the interviewees, in the future the target will be extended to all unemployed citizens. The internship lasts six months and, during this period, the intern receives a voucher of €600 per month as a reward for its work. Since during the internship the intern is expected to acquire important skills, at the end of the regional support the companies should be interested to hire him/her. Moreover, to further incentivise companies to hire interns, the regional government has also made available specific economic incentives: each company which recruits an intern which has participated to the regional programme can receive up to €7,500 as a one-off payment. The programme, which was endowed with a budget of over €26 million, has led to the activation of 1,260 internships, 158 of which have turned into new jobs (Ufficio stampa della regione, 2016, p. 13).

Demand-side policies

Besides supply-side labour market policies, it is worth providing also a few examples concerning demand-side policies. In particular, in 2014 the state introduced a very generous non-conditional hiring incentive (Law 190/2014) which covered all new permanent workers hired by any companies from January to December 2015, provided the worker did not have a permanent contract in the previous six months. The incentive is a three-year exemption from social security contributions up to a threshold, which is quite high compared with the average contributions typically paid by companies to workers (according to the government's estimates the incentive should fully cover the social security contributions of almost 80 percent of new hires)' (Sestito and Viviano, 2016, p.11). Note that conversions from fixed-term to permanent job contracts within a given companies are also subsidised.

Moreover, the Law 183/2014 by the Italian government, named 'Jobs Act', has significantly liberalised the labour market through the following innovations: i) a new contract type has been introduced for new hires – '*contratto a tutele crescenti*' -, removing any form of obligation for workers' reinstatement in case of companies invalidly firing them, ii) the weakening of the legal constraints for companies intending to monitor workers through electronic devices of various kinds, iii) the use temporary contracts is facilitated by the elimination of previous restrictions on their adoption - before the Jobs Act implementation, companies were allowed up to a maximum of 20% temporary over the total amount of contracts (Fana et al., 2015, p.2).

Matching policies

In Sardinia the most important tool for improving the matching between jobseekers and job vacancies is represented by the regional employment offices' network. These centres gather information concerning both the job seekers (education, past job experiences, skills and

competences) and the job vacancies (job tasks, level of education required). Based on this information, they should direct each jobseeker to the best job offer for his/her profile. Moreover, they should also advise them to undertake further education, self-employment, and internships.

Until 2016 each of the eight regional provinces had its own centre(s) which did not coordinate neither with the national level not with each other at the regional level. In order to improve coordination, the regional government has laid down a reform (Regional Law n. 9 of 17 May 2016) which has transferred the competences in this field from the provinces to the region (ASPAL) and that, at least at the regional level, should improve coordination. Moreover, a modern system of unemployment profiling has been introduced in 2015 and a common regional data information system will shortly be introduced.

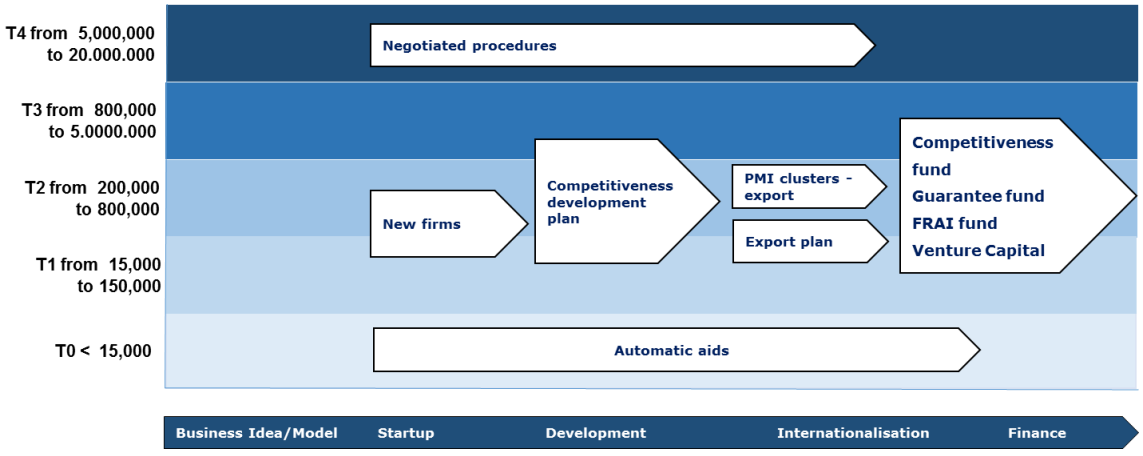
Companies-support policies

General companies-support policies

Most of the regional companies-support policies are financed through the ROP ERDF. In particular, Axis 3 'Competitiveness of the production system' aims to boost private investments, modernisation of the territorial production systems and companies internationalisation. This axis is endowed with a budget of €214 million over seven years, corresponding to 23% of the overall ROP budget.

Sardinia can count on a very wide and comprehensive range of companies support policies, which are characterised by high levels of flexibility and cover the full company lifecycle. These policies target companies operating in various sectors (for example in agriculture, manufacturing, tourism, services) and, depending on the sector, are managed by different regional departments. Nevertheless, in order to guarantee a common strategic approach, common guidelines have been set by the regional government[32]. Figure 6 shows a graphical representation of the existing regional companies-support instruments. The vertical axis reports the size of the investment (from a minimum of just a few thousand to €20 million), while the horizontal axis represents the stage of the companies' lifecycle (from the identification of the business idea/model to internationalisation and leveraging of financial resources in the capital market).

Figure 5: Companies-support instruments by companies' lifecycle phase and investment size



[32] See the Government's Decision n. 49/11 of 13 September 2016.

Source: RPC

As can be seen, the smallest instrument is called T0 (which stands for Type 0) and targets small companies looking for light financial support or services (up to €10,000). Resources are allocated through a fast automatic procedure, consisting in the selection of the applicants on a first come first served basis.

T1 to T3 instruments concern heavier financial projects ranging from €15,000 to €5,000,000. These resources are allocated through competitive calls and, therefore, lead to the assignment of scores and to the definition of a ranking list. In general, the aspects that get evaluated in this procedure concern company's history, project idea, financial soundness, target market and so on. Moreover, particular attention is payed to the economic sustainability of the investment.

Finally T4 concerns very complex projects, usually (but not necessarily) involving multiple actors, which can cost from a minimum of €5 to a maximum of €20 million. These resources are allocated through negotiated procedures, consisting in the co-definition of the project by the regional government and by the proponent.

Current regional companies support policies result from past mistakes and learning. In fact, numerous innovations have been introduced as a result of the criticisms emerged in the previous programming cycles. In this regard one of the interviewees reported that the system of public policies to boost company's investments was recently reviewed. In particular, the approach was segmented according to companies' size and to business target market. For small companies the procedures were significantly streamlined: funds are granted on a first come first served basis, instead than through traditional calls. In order to do this, medium-high entry thresholds are set, which make companies selection almost automatic and very fast. Of course, for larger investments this light selection procedure is not sufficient since more detailed analyses of the investment are required. However, also insofar as large companies are concerned, with investments above € 5 million, the procedure was innovated by using negotiated procedures instead of traditional calls. This type of procedure applies for both local companies and for attracting FDI.

Support policies for innovative companies

In Sardinia support policies targeting innovative companies are managed by the regional agency Sardinia Researches, which has created a very comprehensive set of policy tools for innovative start-ups (that is, according to Law 3/2015, innovative companies established for no more than 60 months). As shown by the table below, innovative start-ups policies cover three phases of company's development: discovery, validation and efficiency/scale.

Table 5: Support policies for innovative start-ups, 2016

Phase	Instrument	Policy budget	Budget per project	Target for the first call
Discovery	Insight	€400,000	Max €10,000	40 team
Validation	Voucher start-up	€3.5m	Min €15,000 – Max €100,000	70-80 start-ups
Efficiency and scale	New innovative companies	€3m	Min €100,000 - Max €700,000	8-10 new companies

Source: Author's own elaboration, on Sardinia Researches information.

In the first life stage, called discovery, start-ups are focused on the understanding of whether or not their idea or concept has value, seeking to understand whether anybody would pay to get what their idea or concept would provide. The instrument which has been created by Sardinia Researches for this stage is called Insight and consists of a grant of up to €10,000 which can be used to further testing and developing the business idea.

In the second phase, called validation, start-ups attempt to sell the product or service and gauge the potential market and its value. Support in this phase consists of a voucher from €15,000 to €100,000. The voucher is partly a loan and partly a grant. The share of grant usually depends on the business idea: for instance business ideas which are expected to have a positive social impact are entitled to receive a higher share of grant.

Finally, in the phase efficiency and scale, customers must be acquired efficiently, products must be deliverable at a profit and business models must be fine-tuned. In this phase projects can range from €100,000 to €700,000 and the share of grant is usually lower as compared to the previous phases.

For the phase efficiency and scale, also another very innovative policy tool was devised by the regional government. It is called Venture Capital and will be discussed below.

Financial engineering instruments

In the past, companies support policies in Sardinia consisted in grants which covered most of the investment. These policies were financed both by the national government (in order to attract investments in the *Mezzogiorno*) and by the EU (in the framework of EU regional policies). However, since the 2007-2013 programming period (but even more so in the current programming period) things have changed[33]. On the one hand the percentage of public grants out of the total private investment has decreased (it is usually no more than 50%); on the other hand grant policies have been replaced by loan policies, financed through so called financial engineering instruments.

Financial engineering instruments consist in lending money to local companies in addition to (or in place of) banks. In fact, as highlighted by various interviewees, regional companies have great difficulties to borrow money through the traditional credit channels. Considering that Sardinia is the Italian region with the highest cost of borrowing money (according to the Bank of Italy, average interest rates at the end of 2014 were equal to 9.78%, as compared to 8.36% of the Italian average).

The use of financial instruments was also encouraged by the EU, according to which: 'Financial instruments are increasingly important due to their leverage effect on the European structural and investment (ESI) funds, their capacity to combine different forms of public and private resources to support public policy objectives, and because revolving forms of finance make such support more sustainable over the longer term' (EU regulation n. 1303/2013).

As highlighted by one of the interviewees, due to the drop of public resources, in Sardinia introducing revolving funds – as soon as the loans are returned new loans are immediately granted to new companies – was the only choice. As a result, in the 2007-2013 programming

[33] The change was due both to budget constraints and to the fact that Sardinia's GDP per capita has exceeded 75% of the EU average (this implies more restrictive rules for the allocation of state aids).

period, in Sardinia financial engineering instruments could count on about €121.5 million (corresponding to 18% of the EFS budget).

Microcredit

The most important financial instrument in Sardinia is called Microcredit and in the 2007-2013 programming period was endowed with about €78 million. It consists in lending money with no interests to support individual projects of self-employment for unemployed people. Even though these loans are very small, up to €25,000, they can be hugely important to help unemployed to escape poverty and social exclusion.

So far the call microcredit is at its 4th edition (in spring 2017 the fifth call will be issued). Overall more than 4,000 micro companies have been created. According to monitoring data, as far as call 2010 is concerned, the rate of survival after five years is 70%. Therefore, enterprise deaths correspond to 30% (23% do not manage to return the loan).

The interviewees have provided a very positive assessment of this policy. However, they have also highlighted that there is scope for improvement. In particular, more attention should be paid to assisting the new companies in the aftermath of their creation. In fact, this is a very delicate stage of life, in which the entrepreneurs are still unexperienced and need external support. For this reason, the managing authority is considering how to best provide this type of support in the next call.

Venture capital

Venture capital represents another financial engineering instrument set out by the regional government, which targets innovative start-ups. This instrument, which for the first call in 2016 had a budget of €10 million, consists of two stages. The first stage aims to select venture capitalists interested in investing in Sardinia. The second stage aims to select the start-ups that need financial support. Interestingly, the selection of the start-ups is made by the venture capitalists, while the role of the regional government is confined to co-financing the private investment up to 50%[34]. The new selection mechanism introduced by the venture capital instrument represents an important innovation.

Even though most interviewees agreed that this policy tool represents an important and positive innovation, one of them highlighted a criticism. In particular, venture capitalists are already endowed with huge capital; therefore the limited financial resources made available by the regional government might not be sufficient to influence their investment decisions. In this regard, policies to make Sardinia more attractive for venture capitalists might be more effective than economic incentives.

Internationalisation

Low exports are one of the main weaknesses of Sardinia's economy. For this reason, the Department of Industry has been entrusted by the regional government to implement specific policies to increase regional companies' exports. In order to achieve this objective, the Department of Industry has worked in four directions that will be briefly outlined below: programming, financial support, training and international promotion.

Programming

[34] The share of public co-financing is expected to reduce risk for private investors and, therefore, to incentivise investments.

In the past, in the field of internationalisation, there was an almost complete lack of programming, the interventions were scarcely coordinated and did not have clear objectives. In 2015, for the first time a single Regional Internationalisation Programme was drafted by the Department of Industry (with the participation of all the main stakeholders) and approved by the regional government.

Financial support

Two calls have been published in 2016 to support companies' internationalisation. The first one targets clusters of companies[35]. In other words, since on average companies are very small in Sardinia, they were encouraged to coordinate with each other by presenting joint projects. The second one targets single companies which have already achieved a sufficient size and which, therefore, can afford to set out an independent export strategy[36].

Training

The lack of specific skills concerning internationalisation is one of the causes of scarce internationalisation. For this reason, through an agreement with the Institute for Foreign Trade (*Istituto del Commercio con l'Estero*, which is the Italian organisation in charge of boosting foreign trade), specific seminars called Export Labs have been organised across the regional territory in order to enhance companies' export skills[37.] The labs, which target 50 SMEs (but also consortiums or enterprises networks), consist in nine months of training divided into three phases: a first phase of classroom training, a second phase of mentoring and a third phase of business incubation abroad.

International promotion

Finally, international promotion and cooperation activities have been coordinated and financed by the regional government including participation to international exhibitions, international cooperation projects, commercial, and investment agreements.

[35] http://www.regione.sardegna.it/j/v/1725?s=1&v=9&c=389&c1=1241&id=51968

[36] http://www.regione.sardegna.it/j/v/1725?s=1&v=9&c=389&c1=1241&id=56254

[37] http://www.regione.sardegna.it/j/v/1725?s=1&v=9&c=389&c1=1241&id=52062

Monitoring and Evaluation

Earlier it was highlighted that the current framework to design regional development policies in Sardinia is a legacy of the EU. The same claim holds for monitoring and evaluation.

Monitoring

The regional managing authorities monitor on a regular basis the projects co-financed by SIE funds, since this is a formal EU obligation. In order to do so, all beneficiaries (individuals, companies and public bodies) are required to provide timely data concerning the implementation of the projects.

These monitoring activities aim to monitor the levels of both expenditure and achievement of the objectives set out in the official programming documents (the ROPs). With regard to the first aspect, the EU rules set clear expenditure targets and deadlines. If these deadlines are not met, the EU resources which have not been spent in time must be returned to the EU. With regard to the second aspect, EU policies aim to achieve pre-set objectives specified in the official programming documents. Even though the achievement of the results is usually evaluated at the end of the programming period, monitoring allows to judge whether or not the result indicators are moving in the desired direction and, if anything, to adjust the design of the relevant projects underway.

Monitoring data are paramount also to make the managing authority more accountable towards the regional stakeholders and the EU institutions. For this reason they are submitted on a regular basis to the monitoring committee and to the EU institutions. In particular, every year the managing authorities are required to send a monitoring report called Annual Implementation Report to the European Commission.

Interestingly, in addition to compulsory monitoring activities described earlier, the regional ERDF managing authority has also created a web portal called 'Stories of projects'[38] which, by using pictures, descriptions and data, provides information about the projects co-financed by the ERDF in the region.

Despite the presence of this structured system for generating and collecting monitoring data, for the reasons that have already been discussed in Section 3.5, the latter are still insufficiently used as a source of policy intelligence. Another problem is the lack of integration between different monitoring information systems. Currently, in the field of industrial policies there are two main information systems: the SMEC (*Sistema monitoraggio e controllo*) for ERDF policies and the SIL (*Sistema informative del lavoro e della formazione*) for ESF policies. These systems do no communicate with each other and therefore do not provide a comprehensive and integrated picture concerning the state of play of regional industrial policies.

In order to overcome this problem, the regional government has decided to create a single monitoring system that should cover all the policies, irrespective of their source of funding. For this reason, in 2016, the RPC was entrusted by the regional government to achieve this objective.

[38] http://www.sardegnaprogrammazione.it/monitoraggio/it

Evaluation of policy

Traditionally, the regulations of EU structural funds have provided for three main types of evaluations: ex-ante, ongoing and ex-post evaluations[39]. Moreover, since the current (2014-2020) programming period, like other EU regions managing SIE funds, Sardinia is also required by the EU to carry out evaluations on specific policies, which are considered particularly relevant and representative. In particular, the official documents set out for two types of evaluations: theory-driven evaluations and impact evaluations[40].

In the past Sardinia has carried out ex-ante, ongoing and ex-post evaluations. In particular, two large ex-post evaluation studies have been carried out, focusing respectively on the 2000-2006 and 2007-2013 programming periods. These evaluations were entrusted to an independent evaluator through a public call and relied on input-output macroeconomic models where the policy investments represented the input, while various sectoral economic indicators represented the outputs. However, these types of evaluations are characterised by important limitations: on the one hand they assess the policy-mix as a whole and do not provide indications concerning specific policies, on the other they are unfit to separate the impact of the programmes from that of other (confounding) factors (Barca, 2009, Morton, 2009).

To overcome these problems, further evaluations focusing on specific regional policies were also carried out by the regional government. In 2008 the Evaluation Unit drafted an evaluation plan[41], where specific evaluation questions were identified in collaboration with the main regional offices in charge of policy management. Some of these evaluation works were carried out by the Evaluation Unit's personnel in collaboration with external evaluators; others were completely entrusted to external evaluation consultancies. Insofar as industrial policies are concerned, the most relevant evaluation reports are summarised in Table 5.

Table 6: Most relevant evaluation works in Sardinia over the period 2007-2013

Sector	**Study**
Research and innovation	The impact of regional policies for scientific research and companies'' technological innovation
Labour market policies	The evaluation of Sardinia's public labour services.
Education	Master and Back report The impact of regional policy to contrast early school leaving
Enterprises	Microcredit report

Source: Author

[39] Ex ante evaluations aim to check the state of the art of a given area in a given time (before the beginning of a new programming cycle) by setting baseline indicators, in order to guarantee that the programmes really match the regional needs. Ongoing evaluations concern evaluations carried out during the programming period in order to adjust policies underway, according to existing empirical evidence. Ex post evaluations aim to assess the ability of the policies to achieve the objectives that had been set by the official programming documents (the ROPs) and should be the main source of learning for policymakers.

[40] Theory-driven evaluations, which rely on qualitative and case study techniques, aim to grasp a detailed understanding of how the expected links within the theory of change are operated and performed; counterfactual evaluations are based on quantitative data and aim to single out the impact of specific policies from other confounding factors through so called counterfactual methods (that is, by using control groups).

[41] Evaluation plan of the unitary regional policy for the programming period 2007-2013 (*Piano di valuatazione della politica regionale unitaria per il periodo di programmazione 2007-2013*).

Even though describing the findings of these reports would go beyond the scope of this study, some general comments can be made. They focused both on policy implementation and on policy impact. With regard to policy impact, they represent a first experimentation at the regional level. In fact, even though when they were carried out impact evaluation was not yet compulsory according to the EU rules, the regional government decided to converge toward these new methods on a voluntary basis, by anticipating the official obligations.

Unfortunately, these experimental studies are characterised by major weaknesses. Impact evaluations require pre and post intervention data (that is, the indicators that are expected to be improved by the policy must be measured before and after policy implementation). For this reason, the data collection system should already be in place when the policy gets implemented. This did not happen: data collection took place only post policy implementation and this has significantly reduced the reliability of the results. Moreover, impact evaluations always need a control group: that is, the target of the policy (for example individuals, companies' or other) is usually compared to units which are statistically identical to the target group except for the fact that they did not receive the policy. This did not happen either.

Another major problem of current evaluations is the lack of debate about the results. Even though the evaluation reports were published, no debate took place afterwards. Moreover, we did not find any evidence that the evaluations were used to improve future policies. Only one of the interviewees mentioned evaluation results as a source of learning in the design of new policies.

Another issue raised during the interviews is the lack of evaluation skills: the Evaluation Unit was the only office endowed with skilled personnel in this field. Moreover, it was too small compared to the evaluation workload (it has just three members of staff). This has pushed the offices to outsource most of the evaluation activities. However, also outsourcing implies significant internal skills both to draft the tender specifications and to oversee the work of the independent evaluators.

Finally, evaluation is not yet a fully-fledged phase of the policymaking process. There are no clear and binding rules about numerous crucial issues: how the results should be submitted to public debate, how they should feed into the design of future policies, how the evaluators should collaborate with the policy designers.

Assessment of the regional industrial policy capacity and its transferability

Sardinia is characterised by indicators of economic development below both the EU and the Italian average. This type of regions (and Sardinia is no exception) is usually characterised by a substantial lack of policy capacity – lack of skilled personnel, low administrative capacity, low levels of social capital. Nevertheless, the region has made significant efforts for improving its policy capacity and, in some fields (governance, policy design and policy mix), has also achieved positive results that can be recorded as good practices (see table 6 for an overview of the main good practices and of the conditions that should be met for their replication in other contexts).

Table 7: List of regional good practices

Criteria	Good practice	Short description	Transferable elements to other regions
Governance – Cross institutional collaboration across ministries	Unitary programming (UP)	UP consists in organising regular meetings at both the political and technical level, in order to coordinate and to take common decisions concerning the main policy issues which affect multiple ministries. This new system can be considered a good practice since it allows concentrating all the resources available at the regional level according to the policy priorities and objectives. Moreover, it significantly improves policy programming.	This good practice can be transferred to other regions with low levels of policy coordination, which have important remits in the field of industrial policies and which manage multiple sources of funding. Strong political commitment and highly skilled personnel are required.
Policy design – Adopting an integrated strategic approach	Integrated programming system	Sardinia is endowed with a comprehensive regional development strategy which combines horizontal policies for improving the overall business environment with vertical policies for supporting particular sectors identified through the regional S3 strategy. The overall strategy results from various policy documents which are tightly integrated with each other (the Regional Development programme –RPD – and the S3 strategy are the most important ones), which cover relatively long time periods (5 years for the RDP and 7 years for the S3 strategy) and which are characterised by medium/long term objectives.	The exportability of this good practice depends on the system of governance and remits of the receiving region in the field of development policies. Moreover, significant expertise in the design and management of regional policies is required.
Policy design – Balanced industrial policy design	Comprehensive companies support strategy	Currently Sardinia is endowed with a very comprehensive set of companies support policies which vary according to companies' lifecycle stage, sector and size. Supporting innovative start-ups (especially in the ICT sector) represents an important priority for the regional government. For this reason, a specific sub-set of companies support policies has completely been devoted to innovative start-ups.	Even though in principle the Sardinian system of companies support policies could be exported to other regions, it should be adapted to the characteristics and policy objectives of the receiving region/s. Significant expertise is required for the management of this complex system of policy tools.

Policy mix – Practical skills enabling industrial change	C-Lab	The C-Lab aims to improve business culture and to boost entrepreneurship among its participants (about 100 graduate students per year). In order to achieve this objective, participants are encouraged to work together, organised in groups and in joint projects. They can rely on both university facilities and the expertise of university tutors and researchers. Learning does not take place through formal teaching but through contamination and collaboration.	This good practice can be exported to regions whose development strategy aims to boost innovative start-ups. The presence of a university (willing to experiment non-traditional collaborative teaching techniques) and of a favourable business environment are required.
Policy mix – Service innovation and new business models as a source of industrial change	One-stop-shop for business	One-stop-shop for business consists of a centralised, standardised and computerised system to provide public services to local companies. This new system made life easier for local companies and improved the attractiveness of Sardinia for extra regional companies.	This good practice can be exported to other regions characterised by excessive red tape and unfavourable institutional environments for business. Significant adaptations might be required, depending on how the remits in the field of business services are divided among the different tiers of government in the receiving region (that is, regional government, municipalities, etc.).
Policy mix – Infrastructure	Technological Park 'Polaris'	The technological park 'Polaris' was created in the 1990s and, since then, has constantly received regional financial support. This investment in research infrastructure has allowed the development of an important business cluster in the ICT sector.	This good practice cannot be easily exported elsewhere, especially in less developed regions, whose companies lack absorption capacity of new technologies.
Policy mix – Adapting the financial mechanisms	Financial engineering instruments	Financial engineering instruments are revolving funds and have been introduced to compensate the scarce willingness of the local bank system to lend money to local companies. Moreover, by leveraging private investments, they represent an answer to the drop in available public resources.	The Sardinian experience in the design of innovative financial engineering instruments can be exported to other contexts that experience similar problems, in particular: scarce bank credit and scarce public resources. Great attention should be paid to the local economic structure and to the administrative capacity of the offices that will be entrusted with the management of these financial instruments.

Source: Author

The next sub-sections will be devoted to discuss both strengths and weaknesses of current policy regional industrial policy.

Industrial policy objectives

Sardinia has achieved significant expertise in the definition of industrial policy objectives. In fact, also thanks to the influence of the new EU policy paradigms, it has developed a well-integrated strategic approach which can be considered a good practice. The overall strategy results from various policy documents which are tightly integrated with each other (the RPD and the S3 strategy are the most important ones). This covers a relatively long time period (five years for the RDP and seven years for the S3 strategy) and, therefore, is characterised by medium/long term objectives and by a series of integrated actions which, little by little, should allow their achievement.

It combines horizontal policies for improving the overall business environment with vertical policies for supporting particular sectors identified through the regional S3. According to the interviewees, the horizontal priorities are particularly wide and comprehensive, since they cover the main factors that are expected to influence the business environment, in particular: education, innovation, labour market and institutional quality. The regional strategy was further strengthened through the identification of six vertical priorities (S3). Two of them (tourism and agrifood) reflect traditional regional specialisations. One of them (ICT) reflects a recent regional specialisation arisen in the 1990s. Finally, the last three (smart grids, biomedicine and aerospace) represent sectors in which the region has developed research infrastructure and expertise but for which the number of enterprises is still negligible. Therefore, insofar as these last three sectors are concerned, the effectiveness of the regional policy strategy will depend on the ability of the regional government to attract inward investments, able to compensate for the lack of companies at the regional level. Otherwise, the regional R&D investments might not result into new jobs and wealth as expected.

The exportability of this good practice depends on the system of governance and remits of the receiving region in the field of regional development policies. Sardinia has strong remits in this field; therefore its policy strategy can be wide and comprehensive. On the contrary, regions scarcely endowed with this type of powers might have to opt for less ambitious strategies.

Moreover, significant expertise in the design and management of regional policies should be in place in the receiving region. Sardinia designs and manages EU regional policies since the 1980s and, therefore, has achieved significant expertise in this field. For this reason, the exportation of this good practice should be preceded by a careful assessment of the institutional capacity of the receiving region and, if anything, by specific actions to strengthen it in advance.

Another good practice is represented by the regional companies-support strategy which is well-balanced, comprehensive and varied according to companies' lifecycle stage, sector and size. Numerous interviewees have provided a positive assessment of these policies which result from decades of learning in the management of industrial policies and are tailored to the characteristics of the regional companies system as well as to the objectives of the regional government for industrial policy.

Even though in principle the Sardinian system of companies support policies is fit to be exported to other regions, significant adjustments might be required depending on the characteristics and policy objectives of the receiving region. For instance, in Sardinia supporting innovative start-ups (especially in the ICT sector) represents an important priority for the regional government. For this reason, a specific sub-set of companies support policies has been devoted to innovative start-ups. Moreover, Sardinia is characterised by a business context with low levels of entrepreneurship. Accordingly, the regional strategy aims to boost entrepreneurship especially

among graduate students (think of the project C-Lab). Therefore, in case of transfer of this good practice, the receiving region should make adjustments according to the peculiar characteristics of its business system and of its policy objectives which, most likely, will be different from Sardinia.

Moreover, due to the width and complexity of this system of instruments, significant expertise is required from the public offices in charge of their management (in Sardinia both the RPC and Sardinia Researches have expertise in this field). In this regard, as already pointed out for the previous good practice, careful assessment of the institutional capacity of the receiving region is required. Moreover, depending on the results of this assessment, also specific capacity building activities might be needed.

Industrial policy governance

In the field of industrial policy governance both strengths and weaknesses exist in Sardinia. According to various interviewees, one of the main weaknesses is represented by the fact that the regional offices are organised according to an old-fashioned hierarchical and rigid model which dates back to 1977. Also for this reason, cross-institutional collaboration is still weak. In particular, it was pointed out that often the regional departments tend to work alone and that, therefore, both collaborations with other regional departments and with external stakeholders should be improved.

Nevertheless, interviewees highlighted that an important step forward has been made in this field thanks to the introduction of a new system of coordination named Unitary Programming (UP). UP consists in organising regular meetings at both the political and executive level, (recall the steering and executive committees described in chapter 3.4) in order to make common decisions concerning the main policy issues which affect multiple ministries and/or stakeholders.

This new system can be considered a good practice since it allows concentrating all the resources available at the regional level according to the policy priorities and objectives. Moreover, it significantly improves policy programming for the following reasons:

- all relevant actors participate in the main strategic decisions;
- conflicts and overlapping between policies are minimised;
- it allows the creation of social capital and favours mutual learning.

UP can be easily transferred to other regions characterised by low levels of policy coordination, which have important remits in the field of industrial policies and which manage multiple sources of funding. In fact, it only requires political commitment and the presence of skilled personnel in the executive committee (the committee that should provide technical support to the decision-makers). On the contrary, for regions that do not have one or more of these characteristics UP might be unfit.

On average, the current regional personnel is characterised by low levels of education and high age. Moreover, the current system for allocating the personnel to the various offices does not guarantee a good matching between individual skills and job tasks. All these factors deserve attention, since they are likely to reduce administrative capacity.

In particular, these problems should be tackled by recruiting new skilled personnel. However, due to national expenditure restraints, only a part of who retire (about 50%) can currently be replaced through new recruitments. In addition to this, the new recruits are usually selected through so called ‘staff stabilisations’, which do not take into account the overall skill needs of the regional offices (that is, it is not based on a careful analysis of skill demand).

Policy mix and implementation

With regard to the regional industrial policy mix, despite the presence of various good practices, in many fields of policy intervention there is still considerable scope for improvement.

For instance, an important good practice concerns the regional investments in research infrastructure which, after the establishment of the CRS4 in the 1990s, gave impetus to the rise of a brand new sector that did not exist before: the ICT sector. Investments in research infrastructure have continued in the following years, targeting both the regional research centres and the regional universities.

The success of these investments in Sardinia was determined by a series of fortunate coincidences. On the one hand the presence of brave entrepreneurs, able to commercially exploit the technological innovations of the public research centres. On the other hand the investment was made in a period in which the ICT sector was in its early stages at the global level and, therefore, competition was not yet as strong as it is today. Finally, the presence of world class researchers allowed Sardinia to be a prime mover in various fields of cutting edge research and to collaborate with top ranking researchers from all over the world.

This suggests that this type of good practice cannot be easily exported elsewhere, especially in less developed regions, whose companies lack absorption capacity of new technologies and whose characteristics make them scarcely attractive for highly skilled individuals (in particular low wages and limited career opportunities). According to the interviewees, the best way to get the returns from investments in research infrastructure in less developed regions consists in developing effective policies for attracting private inward investments. Moreover, strong institutional actors should be in place, able to create comprehensive locational packages (favourable taxation, economic incentives, availability of human capital and R&D facilities) and to negotiate terms and conditions of foreign investments.

According to the interviewees, in Sardinia the existing research expertise and infrastructure is still insufficiently exploited. One of the main problems is represented by a substantial lack of collaboration between different research institutions. For instance, the interviewees reported that, due to scarce reciprocal trust, collaboration between universities and regional research institutions is still unsatisfactory. Moreover, it was highlighted that there is scarce technological transfer between research centres and local companies. In fact, on the one hand local companies, especially due to their small size, are unable to absorb innovation; on the other hand local universities and research centres are too much self-referential and do not make sufficient efforts to build bridges towards the business sectors.

It was also pointed out that both local companies and research centres are insufficiently integrated in international knowledge flows (they have little international collaborations). As a result, they are often unable to access EU resources aiming to boost research (such as Horizon 2020) and SMEs (such as Cosme). In fact, participation in both these programmes requires the creation of strong international networks of research centres and/or SMEs.

Service innovation is a source of efficiency and change, able to improve the business environment. In Sardinia an important good practice in this field is represented by the One-stop-shop for business, which significantly streamlined the relations between companies and public administration. This new system computerised and standardised a significant number of services provided by the public administration to the regional companies. Moreover, clear deadlines were set for each procedure. In short, the new system made life easier for local companies and improved the attractiveness of Sardinia for extra-regional companies.

This good practice can be exported to other regions characterised by excessive red tape and unfavourable institutional environments for business but whose public administration is open to innovation. However, it is worth highlighting that the project might need significant adaptations depending on how the remits in the field of business services are divided among the different tiers of government (regional government, municipalities, etc.).

Policies in the field of education and training are paramount for improving the business environment. In this regard, the interviewees highlighted that there is scarce integration between the regional industrial strategy and tertiary education. This is mainly due to the fact that the remits in the field of tertiary education lie at the national level while those in the field of industrial policies lie especially at the regional level. In addition to this, there is lack of information concerning the skill needs of the labour market. Moreover, also when this information is available, universities are very slow in updating their education supply according to the evolution of the local economic system. For instance, in informatics job vacancies are considerably higher than the number of new graduates of the local universities (this was highlighted by various interviewees). Despite this, due to rigidities for hiring new teachers and setting up new courses, local universities did not manage to increase the number of new graduates to match demand.

Important weaknesses seem to exist also in the field of vocational training. In fact, despite the investments of the regional government for providing training opportunities to early school leavers and unemployed, a regional vocational training system able to cope with the modern challenges does not exist yet. In the past in Sardinia vocational training resources were assigned to a small group of vocational training centres through procedures that did not allow for competition and were characterised by a lack of transparency. Because of that, according to the former President of the Regional Government (Renato Soru) this system was 'illegal'. Moreover, in his opinion these courses have 'stolen students to formal education'[42], in fact the vocational training centres were very active in recruiting new students also by relying on economic incentives paid through the regional resources. For these reasons, during Soru's presidency, the regional training system received significant cuts of resources. However, according to the interviewees, the regional government never managed to create a new, alternative, and more efficient system. As a result the current system is still unfit to meet the modern challenges of the knowledge economy. There are various criticisms that should be highlighted. First of all, there is no assessment/analysis of the regional training demand. As a result, there is no guarantee that training supply will meet the real needs of the labour market. Secondly, there is still a lack of a valid system to certify the quality of the training centres which receive public resources. Thirdly, there is no evaluation of the training courses and, as a result, there is no sufficient information about what worked and what did not.

Despite the important weaknesses, also good practices have been identified in the field of education and training. One of them is the Contamination Lab (C-Lab). This is a small and non-expensive project which, nevertheless, achieved important results. In particular, it improved the business culture of its participants (that is their propensity to become entrepreneurs and ability to work in private companies) and provided them with important business skills including proactivity, orientation to results, ability to work in teams, problem solving, and independence. Moreover, various C-Lab participants have created new innovative start-ups. This is extremely relevant from an economic point of view, since innovative start-ups can grow fast by creating jobs and wealth.

[42] http://www.regione.sardegna.it/j/v/24?s=102366&v=2&c=57&t=1&c1=360¬¬¬¬

This good practice can be exported to regions whose development strategy aims to boost innovative start-ups. This project is managed by one of the two regional universities (University of Cagliari), therefore the presence of a university (or another institution endowed with broad expertise and knowledge in fields potentially interesting for business) in the receiving region is required. Moreover, this university should commit to support the project through expert personnel and facilities (that is through mentoring services by internal professors and researchers and by providing rooms, labs, and technological equipment). However, what is most important is the presence of a favourable business environment: clusters of innovative companies, good public services and incentives for companies. In fact, specific opportunities should be available at the regional level to transform the business ideas developed inside the C-Lab into new start-ups.

Another field where there is scope for improvement, concerns the network of employment centres. Until 2016 each province had its own employment office(s). They lacked coordination with both the national level and with each other at the regional level. For this reason, it is not surprise that according to Istat, in 2009 in Sardinia only 5.53% of newly employed found their new job through the public employment services (the Italian average was exactly the same), while informal networks (that is friends, relatives and acquaintances) proved significantly more effective: 42% in Sardinia, 44% in Italy (Nucleo di valutazione e verifica degli investimenti pubblici, 2013).

In order to improve coordination in this field, in 2016 the regional government approved a reform which transferred the competences from the provinces to the region (ASPAL). This is an important, but still insufficient, step forward. In fact, though the reform will likely improve coordination at the regional level, the labour market goes way beyond the regional borders. Therefore coordination should take place at the national or (even better) at the European level.

In 2016 a constitutional reform was made by the national government, according to which (among other things) the remits in the field of employment services shall be moved from the regional to the national level. However, it was repealed by the vote of the Italians in the occasion of the constitutional referendum of 4 December 2016. For this reason, in Italy the network of employment offices will most likely remain fragmented and scarcely coordinated also in the coming years.

In the legislative period 2014-2019, the regional government has deployed important policy instruments for internationalising regional companies (that is, to boost their exports). In particular, in the field of company internationalisation, programming was significantly improved and specific companies support instruments were made available for both individual companies and clusters of companies. According to the interviewees, the real limitation of current internationalisation policies lies in the fact that there is not sufficient coordination with the national level. It was highlighted that trade delegations abroad should be organised at the national level, by involving regional companies and institutions. In fact the regions (especially the smallest ones) do not have sufficient critical mass and expertise to lead effective strategies of commercial expansion on their own.

Another topic which deserves attention concerns attraction of inward investments. In fact, this policy field is particularly important for Sardinia: on the one hand since its enterprise system does not have large amounts of capital for new investments; on the other hand since the regional S3 heavily relies on the expectation that the presence of research infrastructure and expertise will attract FDI.

The endeavours made by the regional government to improve the business environment are very relevant for attracting inward investments. This is one of the reasons why in 2014-2016 very

important foreign investments have been attracted to Sardinia (in particular Microsoft and Huawei). However, this has resulted from initiatives of the president and other regional ministries, while a technical structure in charge of this task currently does not exist. According to the interviewees, this is a serious problem since regional governments last a maximum of five years while FDI policies need long term strategies and institutional continuity.

In Sardinia important progress has been made also in the field of financial engineering instruments, so much so that they can be considered a good practice. Revolving funds have been introduced to compensate the scarce willingness of the local bank system to lend money to local companies. Moreover, by leveraging private investments, they represent an answer to the drop in available public resources.

The Sardinian experience in the design of innovative financial engineering instruments can be exported to other contexts that experience similar problems, in particular: scarce bank credit and scarce public resources. However, also in this case great attention should be paid to the local economic structure and to the administrative capacity of the offices that will be entrusted with their management. In fact, on the one hand these instruments should be designed according to the size and sectors of the existing companies, as well as to the regional policy strategy. On the other hand, this kind of instruments can work only insofar as there are institution able to pick the winners that is to allocate the resources to business ideas with strong potential and to companies or individuals providing sufficient guarantees of commitment and competence. In Sardinia, this job is done by Sfirs, which is a financial intermediary whose shares are fully owned by the regional authority. An institution endowed with similar expertise and capacity, entitled to operate in the financial markets, should be in place also in the regions interested in replicating this good practice.

Monitoring and evaluation

The regional authority has achieved significant expertise in policy monitoring. In particular, this is due to the fact that monitoring has traditionally represented a formal EU obligation for the management of structural funds. Nevertheless, also important weaknesses exist in this field. In particular, there are too many information systems scarcely integrated with each other.

Like other EU regions which manage structural funds, Sardinia is used to carry out ex-post evaluations which, like monitoring, are a standard EU obligation. However, this type of evaluations is characterised by major weaknesses: in particular they are unable to single out the impact of the policy from that of other confounding factors.

In the current (2014-2020) programming cycle, EU regional policy is strongly result-oriented. For this reason, the EU has introduced stricter rules concerning the type of evaluation that should be carried out by the managing authorities. In particular, for the first time the EU regions have been asked to assess the main regional policies through counterfactual impact evaluations and through theory driven evaluation. This represents an important challenge for EU regions (including Sardinia), which are called to use new tools of analysis and that, therefore, must be able to increase their institutional capacity in the field of policy evaluation.

Sardinia is still unprepared to meet this new challenge for various reasons. First, the Evaluation Unit (that is the office with remits in the field of policy evaluation) is significantly undersized. Second, the system of governance for policy evaluation is still weak. In particular, how the evaluation unit, the other offices with remits in the field of policy evaluation and the policymakers should collaborate and interact with each other is not clear. Third, the regional offices in charge of policy implementation lack evaluation culture, and often are scarcely informed about the role and merits of policy evaluation. Fourth, a system for collecting evaluation

data before and after policy implementation is not in place yet. Fifth, no clear rule exists yet concerning how the evaluations should be used to trigger public debate and to improve future policies.

Policy pointers

Industrial policy governance

With regard to industrial policy governance, in Sardinia one of the most important problems is represented the fact that the regional personnel is characterised by a high average age and low levels of education. Moreover, the current system for allocating the personnel to the regional offices does not guarantee a good matching between skill supply and demand[43].

In order to overcome these important criticisms, the following is recommended:

- Creating a constantly updated information system containing both skills demand and skill supply,
- Enhancing personnel mobility,
- Undertaking regular recruitment procedures to fill main vacancies for which there is currently a lack of skills.

With regard to this last point, it is worth stressing that if recruitment procedures were organised on a regular basis by the regional government, the number of temporary staff would be significantly lower than it is today and, as a result, there would be no need to make continuous 'staff stabilisations'. In fact, usually 'staff stabilisations' do not take into account the overall skill needs of the regional offices and, as a result, might have a negative effect on institutional capacity.

The excessive fragmentation of the remits in the field of industrial policies is another important criticism. This problem, which was already tackled through the introduction of the Unitary Programming, deserves further attention. In particular, considering that the organisation of the regional offices reflects the state of the art of the regional competencies when the regional law n. 1 was issued in 1977. A reform in this regard has already been scheduled in the RPD, according to which the new organisation of the regional offices should reflect the policy priorities of the regional government. This reform is crucial for improving policy capacity. For instance, the competences concerning companies support policies are currently allocated across a plethora of different offices (RPC, Ministry of Industry, Sardinia Researches, and Ministry of Tourism). In this regard, the interviewees suggested that this fragmentation should be overcome through the creation of a single ministry in charge of all policies concerning business support.

The use of policy intelligence is quite weak. This results in a substantial lack of information and affects the quality of policy design and implementation. The elaboration of policy intelligence studies and analyses are in the remit of various offices scarcely coordinated with each other. In this field the most important regional office is the Regional Statistics Unit. Though endowed with skilled personnel, this office is undersized (just eight members of staff) and does not have clear objectives concerning the type of studies that should be carried out in order to support regional policymaking.

Improving policy intelligence is essential and urgent. In particular, the Statistics Office and the Employment Observatory should be strengthened and should be given clearer objectives. Moreover, coordination among all the offices that collect and process statistical data (as well as other relevant data for policy intelligence) should be significantly improved by setting up a regional statistical network.

[43] In addition to this there might also be a shortage of personnel. However, this issue can be tackled only after an efficient allocation of the existing personnel has been achieved.

Industrial policy mix and implementation

With regard to education, it was reported that there is scarce coordination between university supply of tertiary education and regional industrial policy strategy.

In recent years the EU has strongly stressed the importance of updating skill supply according to the current (and future) structure of the labour market (think of the 'New skills for new jobs' initiative). This requires careful analysis of both skill demand and supply and programming of educational supply accordingly. So far in Sardinia none of this exists. Therefore, addressing this problem is urgent. In particular, the regional government should set up an observatory able to collect the relevant information concerning skill demand and supply. Based on this, it should negotiate with the local universities responsible for the design of education supply in order make it more consistent with the needs of the local labour market. In order to do this, a system of incentives/disincentives should be set up, by relying on the important financial resources which every year the regional government transfers to local universities.

Similar problems and solutions apply to vocational training policies. According to the interviewees future vocational training policies should take into consideration both the needs of the labour market and the characteristics of each single beneficiary. For this reason, on the one hand the use of policy intelligence to program vocational training policies should be strengthened; on the other hand training should be more tailored to the characteristics and needs of the recipients. For instance one of the interviewees suggested to launch a new policy based on the allocation of training vouchers that shall be used not only in Sardinia like today but also in other Italian regions, since this would significantly increase the range of training opportunities for the regional trainees. However, from a political point of view this is quite problematic. In fact, this would imply cutting resources to local training centres which represent a source of income for many families and are highly influential at the political level.

Despite important steps forward have been made with regard to internationalisation policies, the interviewees highlighted that there is still scope for improvement. In particular it was highlighted that the regional level is unfit to reach international markets. For instance, according to one of the interviewees, countries which are good in international trade, when they are to promote their exports organise delegations of national entrepreneurs led by the prime minister. On the contrary, internationalisation policies carried out at the regional level risk to be ineffective due to lack of critical mass and expertise. In this regard, the regional government should try to improve collaboration with the national institutions. Moreover, specific lobbying activities should be carried out in collaboration with the other Italian regions in order to push the national government to provide further support and coordination to the regional authorities.

Sardinia lacks private capital. For this reason it is forced to attract extra regional capital. Important efforts have been made by the regional government to improve the attractiveness of the region for extra-regional investors (R&D infrastructure, human capital, streamlining, and venture capital). In this regard, despite the fact that in recent years various important multinational companies have invested in Sardinia (in particular Huawei, Amazon, Microsoft, Avenade and Accenture), these investments have mainly resulted from the initiatives of the president of the regional government and of single ministries, while a permanent system for attracting inward investments does not exist yet.

In this regard, the interviewees emphasised the importance of creating a specific office in charge of this task, able to negotiate with potential investors the conditions of their investments and to provide technical support. They pointed out that foreign investors make their location decisions

based on the assessment of numerous and heterogeneous factors (including taxation, institutional efficiency, human capital, R&D) that need to be aggregated into single locational packages.

Two interviewees pointed out that, though in the past economic incentives had been a crucial tool for attracting inward investments, multinational companies are already endowed with huge financial resources. Therefore, international marketing, coordination and streamlining are much more important than money for attracting inward investments.

As highlighted by one of the interviewees, all the main official laws and documents concerning business should be translated into English, since this would make life easier for potential international investors. This already happens in various regions and countries which are already well progressed in the field of FDI attraction like, for instance, Slovenia and many eastern European countries.

It is worth mentioning that, though not implemented yet, the actions planned by the RDP in the field of inward investment attraction are quite consistent with the interviewees' suggestions. In particular, the RDP provides for the creation of a coordination system between all the offices in charge of inward investment attraction, which should provide support to potential investors, especially with regard to the following issues:

- human capital – supporting potential investors in order to find the right skills locally;
- R&D – favouring contacts and collaborations between regional research centres, universities and investors;
- institutions – supporting investors in their interaction with the local bureaucracy in order to speed up the administrative procedures and cut red tape.

The RDP also highlights the importance of cooperating with Invitalia (the national organisation in charge of attracting inward investments) in the framework of the programme 'Destination Italy'[44], which was designed to attract inward investments to Italy through tax credits for research and development, closer collaboration between the tax authorities and investors, implementation of the national energy strategy to lower electricity and gas prices, strengthen the business tribunal and so on.

Monitoring and evaluation

The regional authority has acquired significant expertise in policy monitoring, thanks to its participation to numerous EU programmes in which monitoring was a formal obligation. Despite this, there is still scope for improvement. In particular, monitoring data should be further used to support policymaking. Moreover, the current information systems should be integrated with each other. In this regard it is worth recalling that in 2016 the RPC was entrusted with this task by the regional government and that, therefore, it is since then working in this direction.

Policy evaluations are expected to be one of the main sources of policy intelligence. Unfortunately, in this field the regional authority is considerably lagging behind. For improving in this field this study suggests the following priorities:

- **Lack of skills** – Definition of staffing needs, professional profiles and recruitment of new staff in the field of policy evaluation.

[44] http://www.mise.gov.it/index.php/it/commercio-internazionale/2029984-destinazione-italia-63441770

- **Governance** - Creation of a system of governance by defining what office(s) is in charge of evaluation activities, which this is accountable to and how it shall collaborate and interact with other offices and with all the relevant stakeholders.
- **Institutional framework** - An institutional framework more evaluation friendly should be created. In this regard, all the regional offices should receive basic training about the role and goals of evaluation. Moreover, specific rules should be set concerning the terms and the timing of the collaborations between who is in charge of policy implementation and the evaluation office(s) (the data collection system for evaluation should already be in place before the implementation of the policy and the design of the policy should take into account the need for a control group).
- **Information systems** - Creation of a single and efficient information system for collecting and managing evaluation data.
- **Use of evaluation** - Finally, clear rules concerning the use of the evaluation results to trigger public debate and to support policymaking should be set. In particular, the evaluators should be involved in the policymaking process in order to make sure that the evaluation lessons are actually used for improving new policies.

The regional government is aware that there is much that can be done for improving in this field. According to the RDP 2014-2019, evaluation is crucial both to enhance public expenditure's efficiency and to increase accountability. Therefore, it plans a series of innovations that in part coincide with the priorities summarised earlier. In particular, it suggests creating a regional evaluation system with two poles (or offices). The first one should be created inside the regional council and should support the council in the evaluation of the policies implemented by the regional government (these evaluations should improve the accountability of the regional government towards the council). The second one should be located inside the regional government (in this regard the plan sets out to strengthen the existing Evaluation Unit, which was established in 2006).

Moreover, the RDP sets out to create a regional evaluation network. Each regional department should identify a contact person responsible for evaluation who should collaborate with the evaluators. Finally, it establishes to make all the data collected during the evaluations available open source (of course with respect for individual privacy). This is in order to increase transparency and to allow independent researchers (or citizens) to use them.

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All Eurofound publications are available at www.eurofound.europa.eu

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