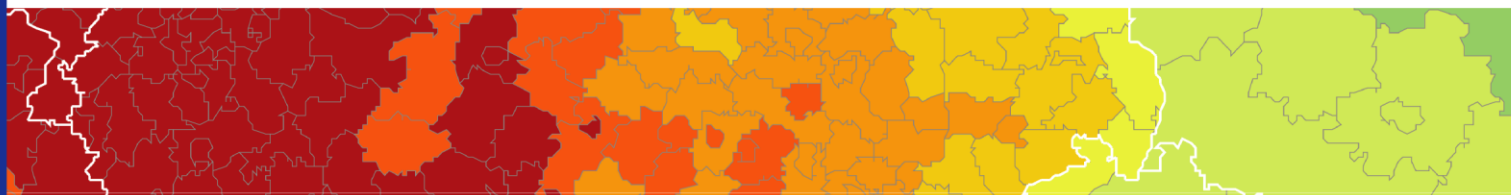


**Inspire policy making by territorial evidence**



# The Geography of New Employment Dynamics in Europe

Applied Research

**Annex to Chapter 6**

**Case Study – ABRUZZO (IT)  
Final Version**

9.3.2018

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## Executive summary

Abruzzo, a region of 1.3 millions inhabitants belonging to the Italian Mezzogiorno, has been selected as an exemplar case of “Cluster 3” regions<sup>1</sup>. Within this class fall 110 European regions with medium-to-low levels of competitiveness, but with some potential in the knowledge economy.

The region has an important history of emigration between the end of the 19th and the first half of the 20th century. Northern Italy, Germany and South America were the main destinations of thousands of emigrants searching for better living and economic conditions abroad. Migration drained the population of Abruzzo mostly from the inner, mountainous areas of the region, while the coastal areas became progressively more developed and attractive.

Investments in the infrastructure and industrial base made by the National State through the ‘Cassa per il Mezzogiorno’ sustained the development of the region, which, from the 1970s, has shown better performance as measured by most socio-economic indicators, compared with the other southern regions, sometimes placing it near or above the national average. This former “sending region” has become, in more recent years, a destination for internal migration, mostly from the other Italian southern regions, but also from areas of Eastern Europe, such as Romania and Albania.

Abruzzo was the focus for various programmes and policies designed to strengthen the knowledge-based economy of the region. Mostly, those programmes were focused on strengthening the internal resources of the area, first of all the industrial base of the region, then (mainly in the 2007-13 programming period) focusing on the innovation and competitiveness of enterprises, the networks among them and research. The strategy appears to have been, at least in part, successful. Until the early twenty-first century, Abruzzo has had better development trends and lower migration rates than the Mezzogiorno areas, setting it around the Italian average, sometimes above, e.g., concerning the rate of early school leavers and the percentage of the population who have completed tertiary education. The presence of three universities has represented an important asset for the knowledge base of the region, with nearly 60,000 students enrolled just before the crisis. The number of foreign students enrolled was also growing, even though growth wasn’t happening at a very fast rate.

It was, however, a fragile structure. When the economic crisis began to hit, all the relevant indicators capturing the regional KE potential collapsed, and Abruzzo’s performance fell dramatically below the Italian and EU28 levels. Various programmes, particularly those financed by the European Regional Development Fund (ERDF) and the European Social Fund (ESF) but also by national funding (such as Garanzia Giovani), have had the goal of retrieving

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<sup>1</sup> Cluster 3 has been defined to include regions that have a stronger knowledge economy than the EU average, as well as a good labour market and context conditions. However compared to the previous cluster, these regions have been more affected by the economic crisis, particularly in relation to youth labour market conditions.

the persons expelled or never entered into the labour market. Regional programmes have also sustained the recruitment of PhDs within enterprises, and provided bonuses sustaining interregional and international training and working experiences.

In 2009, a magnitude 6.3 earthquake caused 309 deaths and completely destroyed the historical centre of the city capital, L'Aquila. Fifty-six other municipalities were affected by the earthquake, and 37,000 public and private buildings, of which 2,000 had historical value, were damaged. Nearly 67,500 people over the 140,000 living in the affected area were evacuated to safer areas. Half of the population who were moved had been living in L'Aquila. The economy of the capital city, a former tourist and economic centre, was devastated, even though the funding available for reconstruction was considerable.

The policy which led to the creation in 2013 of the Gran Sasso Science Institute (GSSI) adopted a different perspective to previous programmes. It focused on the “extraordinary” event of the earthquake and on the unique resources of the territory (the “hard sciences” research potential, e.g. the scientific Laboratories of Gran Sasso, an internationally recognised centre of excellence for research in physics) to attract high-skilled capital from abroad.

One could expect three main outcomes from the policy: an increase in the number of high-skilled, young foreign researchers living in the city for a few years; positive spillovers caused by the presence of students and teaching staff for the local economy and social revitalisation; and the growth of start-ups with high-level technological content.

The recent history of the GSSI doesn't allow for a full appreciation of its results; however, preliminary results appear to be positive. In particular, the number of applications to the 41 GSSI PhD scholarships has grown from 558 in 2013 to 1,300 in 2016. The majority (80%) of applicants are foreign students. The GSSI proudly claims to be the most international PhD School in Italy.

# **1 Motivation for the selection of this case**

Abruzzo, an Italian region of 1.3 millions inhabitants, has been selected as an exemplar case of “Cluster 3” regions. Within this class fall 110 European regions with medium-to-low levels of competitiveness, but with some potential in the knowledge economy.

The case of Abruzzo is interesting because it has followed different phases. Between the end of the 19<sup>th</sup> and the start of the 20<sup>th</sup> century the region experienced one of the largest exoduses in Italian history. As a deprived area, after World War II Abruzzo received massive levels of funding from the national government, aimed at creating and sustaining an industrial base.

Since the 1970s until the first decade of the 21<sup>st</sup> century the region experienced growth in terms of both economic and social conditions, setting it far above the other Mezzogiorno regions. The EU and regional strategies, especially in the 2007-13 period, focused on increasing the knowledge intensity of the local economy.

The economic crisis starting in 2008, and the devastating earthquake of 2009, reversed the situation, shown by a general decline in all socio-economic indicators.

Different programmes and policies have been used to combat the consequences of the economic crisis, mainly aimed at protecting the groups most affected by the crisis (the young in particular), but also at promoting new forms of cooperation between research centres and industry.

The policy that led to the creation in 2013 of the Gran Sasso Science Institute (GSSI), an institute of high-level PhD education set in L'Aquila, is particularly interesting because it adopted a different perspective to previous programmes.

It focused on the “extraordinary” event of the earthquake and on the unique resources of the territory (the “hard sciences” research potential, e.g., the scientific Laboratories of Gran Sasso, an internationally recognised centre of excellence for research in physics) to attract high-skilled capital from abroad. The high standing and reputation of the research centre has been a powerful mechanism for attracting students to the area, reflected by the large number of applications from abroad.





## **2 The hypothesis under analysis**

One could expect three main outcomes from the policy: an increase in the number of high-skilled young foreign researchers living in the city for a few years; positive spillovers caused by the presence of students and teaching staff for the local economy and social revitalisation; and the growth of start-ups with high-level technological content.



### 3 The profile of the area

#### 3.1 Territory

Abruzzo is one of the smaller regions (10,831.84 sq.km) of Italy and one of the least populated (1.3 million inhabitants, about 2% of the national population). From a geographical point of view, Abruzzo is the northernmost region of the Mezzogiorno<sup>2</sup>.

Abruzzois divided into four Provinces (L'Aquila, the capital; Chieti; Teramo; and Pescara) and 305 municipalities.

The eastern border lies on the Adriatic Sea coast: Pescara is the most populated city of the region and a crowded seaside resort during summer. Other coastal cities (Alba Adriatica, Giulianova, Francavilla al Mare) are regularly frequented maritime destinations.

The western border lies 80 km east of Rome, and is characterised by a mountainous area, which includes the mountains of Gran Sasso D'Italia and Majella, part of the Appennines. Thanks to its three national parks, one regional park, and 38 protected nature reserves, Abruzzo is also known as the 'greenest region in Europe': one third of its territory, the largest in Europe, is covered by protected nature reserves<sup>3</sup>. The Parks host many rare or endangered species, including the Marsican brown bear, the wolf of the Appennines and the lynx.

Figure 3.1: The Abruzzo Region in Italy



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<sup>2</sup> Mezzogiorno also includes the southern regions of Molise, Campania, Calabria, Basilicata, Puglia, and the two islands of Sicilia and Sardegna.

<sup>3</sup> The Gran Sasso is part of the National Park Gran Sasso e Monti della Laga, established in 1993. With more than 150,000 ha, the park is one of the larger protected areas in Europe; it covers the provinces of L'Aquila, Pescara, Teramo, in Abruzzo, and Frosinone (Lazio) and Ascoli Piceno (Marche). The National Park of the Majella, established in 1991, is 74,000 ha and includes 39 municipalities in the provinces of L'Aquila, Pescara and Chieti. A more ancient park is the National Park of Abruzzo, Lazio e Molise, instituted in 1922 and covering the province of L'Aquila, Frosinone in Lazio and Isernia in Molise.

Figure 3.2: The Gran Sasso massif (on the left) and the Pescara shore (on the right)



Source: [www.abruzzorafting.com](http://www.abruzzorafting.com) (on the left) and <http://pescara.cq24.it/> (on the right)

L'Aquila (69,753 inhabitants as of 31.12.2015) is the capital of Abruzzo. Located in the inner area of the region, the province of L'Aquila was one of the areas most heavily affected by the earthquake of the 6th April 2009. The magnitude 6.3 earthquake caused 309 deaths and completely destroyed the historical centre of the city of L'Aquila. Fifty-six other municipalities were affected by the earthquake, and 37,000 public and private buildings were damaged, of which 2,000 had historical value. Nearly 67,500 people of the 140,000 living in the affected area were evacuated to safer areas. Half of the population evacuated had been living in L'Aquila.

The economy of L'Aquila has been severely affected by the earthquake and by the destruction of its historical centre. According to analysis of the National Trade Study Centre, the city center of L'Aquila recorded a strong decline both in retail trade (-44.5%), in bars and restaurants (-21,5%) and in hotels (-46.9%) in the period 2008-16. The city's performance was the worst among the 40 medium-sized Italian cities analysed (Confcommercio 2017).

The post-earthquake recovery activity cost 11 billion euros. Tax breaks and exemptions were also provided for the population and businesses (OECD 2013).

Figure 3.3: The earthquake at L'Aquila in 2009



Source: *MeteoWeb* (2016)

In 2016 and 2017 a new earthquake hit the regions of Abruzzo, Marche and Lazio (where the capital Rome is located). In Abruzzo, the earthquake coupled with very heavy snowfall caused

an avalanche in January 2017, killing 29 people and destroying the Rigopiano hotel, a five-star resort located in the mountain behind Pescara.

## 3.2 Population and migration

The population of Abruzzo increased from 1.26 to 1.33 million between 2000-2015. (Source: EUROSTAT). This change represents a 5.6% increase, which is lower than the nationwide population growth rate over the same period (+6.8%) but higher than the EU28-wide population change (+4.4%).

Table 3.1: Population of Abruzzo

	2000	2015	Δ%
Abruzzo	1,261,117	1,331,574	+5.6%
Italy	56,923,524	60,795,612	+6.8%
EU 28	487,250,522	508,450,856	+4.4%

Source: EUROSTAT

However, the overall growth was not mirrored by a similar increase in the youth population. In 2000-2015 the region lost 60,000 people in the 15-34 age group (-17.5%), just below the Italian level (nearly 3 million lost at the national level, -18.8%). The loss of young people is largely due to the very low birth rate both in Abruzzo (8.7 births per 1,000 inhabitants in 2002, below the Italian average of 9.2 and the EU28 average of 10.1. Source: EUROSTAT), and consequently to the ageing of the population. The proportion of people aged 65 and over compared to those aged between 15 and 64 (35.0%) was higher than the Italian average (33.7%) and the EU28 average (28.8%).

Table 3.2: Old-age dependency ratio\*

	2001	2015	Δ%
Abruzzo	30.2%	35.0%	+ 4.8
Italy	26.8%	33.7%	+ 6.9
EU 28	23.5%	28.8%	+ 5.3

Ratio between the number of people aged 65 and over (then age when they are generally economically inactive) and the number of people aged between 15 and 64. The value is expressed per 100 persons of working age (15-64).

Source: EUROSTAT

The growth in population is partially explained by immigration. Even though the percentage of foreigners in the overall population (6.5%) is below the Italian average (8.3%), the number of foreign residents in Abruzzo has increased by 25.6% between 2012 and 2016. More than 30% of the 86,363 foreigners in Abruzzo come from Romania.

Table 3.3: *Foreigners citizens in Abruzzo*

	<b>2002</b>	<b>2016</b>	<b>Δ% 2012/02</b>
	<b>Foreign citizens</b>	<b>Foreign citizens</b>	
L'Aquila	18,974	24,183	27.5%
Teramo	19,794	23,957	21.0%
Pescara	13,783	17,639	28.0%
Chieti	16,210	20,584	27.0%
<b>Abruzzo</b>	<b>68,761</b>	<b>86,363</b>	25.6%
<b>Italy</b>			

Source: ISTAT

The actual number of foreigners is, however, higher: in 2016 in Abruzzo 57,755 residency permits were released to non-EU citizens, especially from Albania (13,174), Morocco (8,150) and China (5,720) (source: ISTAT).

While the population of the region today is slightly increasing, in the last century Abruzzo has experienced a long and intense history of emigration. In the first decade of the twentieth century, Abruzzo had the highest rate of emigrants among all the Italian regions, reaching the peak of 33.7 average annual expatriates for every 1,000 inhabitants (CRESA 2001).

The region also faced high levels of emigration after the end of World War II, with a substantial share of overseas expatriation: in the 1957-1964 period, overseas emigration (83,662 people) was about 50% of the total number of expatriates (161,588). Other typical destinations for emigrants were the more developed and industrial Northern Italy and Germany. The emigration rate substantially decreased after the 1970s.

Past and recent migration drained the population mainly from the smaller, mountainous municipalities: Roio del Sangro nowadays has 106 inhabitants, and 248 citizens registered to the "register of people living abroad" (AIRE – Anagrafe degli Italiani Residenti all'Estero). The AIRE in 2016 recorded 179,715 citizens from Abruzzo living outside of Italy<sup>4</sup>, about 13% of the entire population living in the region today.

In terms of internal migration, the number of people migrating from Abruzzo to the rest of Italy nowadays is slightly higher than the migration towards Abruzzo. The preferred destinations of the Abruzzesi are the Central and Northern regions (particularly Bologna and Milan). The main source of migration into Abruzzo comes from the Mezzogiorno, with Pescara being the main destination.

It is worth noting that the index of social integration (composed from different indicators such as accessibility of the housing market; percentage of population with a high school education; permanent settlers as a percentage of total naturalisations; number of families with a foreign householder) shows good levels of integration of foreigners in the region, placing the region in the middle of the ranking (CNEL 2012).

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<sup>4</sup> Argentina is the country with the highest percentage (22%) of emigrants from Abruzzo, more than 35,000, followed by Switzerland (11.2%), Belgium (9.6%), Venezuela (8.8%), France (8.4%) and Germany (8%).

### 3.3 Economy and labour market

Since World War II, Abruzzo has been one of the targets of the Cassa per il Mezzogiorno, the national development fund with the goal of “*unifying the two Italies*” (the Northern and the Southern parts of the boot). Of all the regions singled out for support, Abruzzo has shown the most rapid development.

Heavy public investments favoured the location of large establishments and sustained employment in the region, particularly in the 1970s. The region developed a diverse industrial base, including manufacturing sectors with intensive use of capital (in particular, the automotive pole in Val Di Sangro), and small-to-medium sized enterprises of the “Made in Italy” brand (clothing, footwear, furniture).

Despite its better performance when compared with the rest of Mezzogiorno, Abruzzo has remained far below the national and OECD development averages (OECD 2013). The economic crisis of 2008 and the earthquake in 2009 worsened the situation.

Table 3.4: Gross domestic product and total intramural R&D expenditure (GERD)

	GDP at current market prices (PPS per inhabitant)			Total intramural R&D expenditure (GERD) as % of GDP		
	2000	2014	Δ%	2000	2014	Var.
Abruzzo	20,300	23,100	13.8%	0.85%	0.99%	+ 0.14 pp
Italy	23,200	26,400	13.8%	1.01%	1.38%	+ 0.37 pp
EU 28	19,600	27,500	40.3%	1.77%	2.04%	+ 0.27 pp

Source: EUROSTAT

In 2014 GDP per capita in Abruzzo was 23,100 euro, below the average rates in Italy and the EU. Abruzzo’s GDP increased by only 14% in fifteen years (2000-2014), while the EU28 GDP increased by 40.3%. The percentage of people at risk of social exclusion has increased significantly, from 21.4% in 2004, less than the Italian and EU28 averages, to 30.1% in 2016, more than the Italian and EU28 average (source: EUROSTAT). A more significant trend has been registered in the total intramural R&D expenditure, which passed by 0.85% of GDP in 2000, at 0.99% in 2014 (Table 3.4 above).

The labour market shows similar trends. At the end of the last century Abruzzo was in a good condition, compared to the Southern and national averages. As an example, in 2002, the unemployment rate was 5.8% while the national average was 9.2% and the EU28 average was 9.0%. The same year, the youth unemployment rate was 10 percentage points below the Italian average and 1 point below the EU28 average.

But by 2015 Abruzzo’s labour market had deteriorated, as measured by all major indicators. Young people have paid the highest cost of the economic crisis. Youth unemployment (people aged 15-24) was below the EU average in 2002, but by 2015 reached 48.1%, more than double the EU28 level (20.4%) and 8 percentage points above the Italian average. Also the number of NEETS (young people not in education, employment or training) has increased severely, from 13.9% in 2003 to 29.8% in 2015.



Table 3.5: Employment and unemployment rates (in percentages)

	Employment rates 15-64			Unemployment rate (overall)			Employment rate 15-24			Unemployment rate 15-24			Neets* 18-24		
	2002	2015	Var.	2002	2015	Var.	2002	2015	Var.	2002	2015	Var.	2002	2015	Var.
Abruzzo	55,1	54,5	-0,6	5,8	12,6	+6,8	20,8	13,3	-7,5	17,1	48,1	+31	13,9	29,8	+15,9
Italy	55,4	56,3	+0,9	9,2	11,9	+2,7	25,7	15,6	-10,1	27,1	40,3	+13,2	20,4	27,9	+7,5
EU 28	62,3	65,6	3,3	9	9,4	0,4	36,5	33	-3,5	18,2	20,4	+2,2	16,8	15,8	-1

\* Neets = young people not in education, employment or training

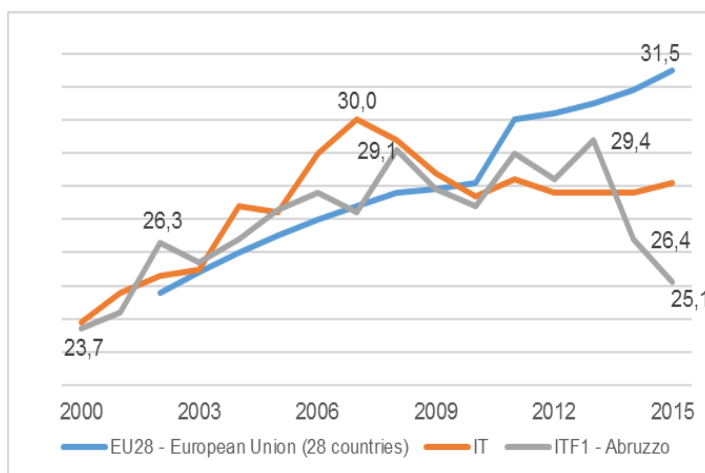
Source: EUROSTAT

By the end of 2016 the economic indicators suggested a slight recovery. The active enterprises in 2015 were 153.756 and the workers 347.813 (Regione Abruzzo-SISTAN 2016). 90% of the enterprises of Abruzzo are small in size and employ fewer than 10 workers.

**Automotive represents the main economic sector**, involving around 30,000 workers, of whom 25.000 reside in the province of Chieti. The sector, which includes **some Global Industries and many SMEs**, has a turnover of 7 billion euros, over 50% of the Abruzzo export.

The number of enterprises with immigrant owners has increased, reaching 13,363 in 2015, while the number of youth enterprises, 15,496 in 2015, saw a decrease of -4.8%, greater than the national rate of decline (-2.5%) (CRESA, 2015). Even though investment in R&D has consistently been below the Italian and EU28 averages, the number of people employed in science and technology in Abruzzo had been higher than the EU28 average until 2009, the year of the earthquake.

Figure 3.4: People employed in science and technology (% of active population)



Source: EUROSTAT

From this year the EU28 average has constantly grown. The figures for Abruzzo show ups and downs, but severely decrease in 201 and 2015.

### 3.4 Education

Abruzzo has traditionally relied on its good potential in terms of human capital. The early leaving rate from education and training in Abruzzo was lower than the Italian average, and the percentage of people with tertiary education higher. The gap between regional and national levels has narrowed in recent years, however, due to improvements in the levels of both indicators at the national level. However, the percentage of tertiary education in Abruzzo still remains far below the EU28 figure (24.9% compared to 38.7% in 2015).

Table 3.6: Drop-out and tertiary education

	Early leavers from education and training (% on the population 18-24)			% of population aged 30-34 with a tertiary education		
	2002	2015	Var.	2002	2015	Var.
Abruzzo	17.0%	12.0%	-5.0 pp	14.4%	24.9%	+10.5
Italy	24.2%	17.8%	-6.4 pp	13.1%	25.3%	+12.2
EU 28	17.0%	13.4%	-3.6 pp	23.6%	38.7%	+15.1

Source: EUROSTAT

The presence of three universities represents an important asset for the region. The role of the university is particularly important for the local economy of L'Aquila, which in 2015/16 hosted nearly 26,000 students, within a population of 69,000 inhabitants.

In contrast to the overall situation in the Southern regions, Abruzzo seems to draw more graduates than those exiting from the region.

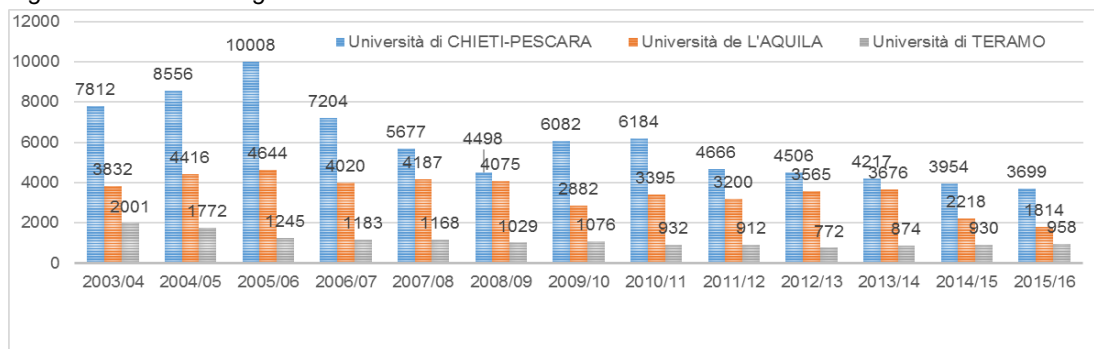
Table 3.7: Graduates (university level) who have migrated for every 100 graduated who have left

	1999	2000	2001	2002
Italy, Total	114.9	162.2	117.3	119.8
Southern Regions	65.2	102.2	67.7	73.5
<b>Abruzzo</b>	<b>106.6</b>	<b>127.1</b>	<b>108.1</b>	<b>104.7</b>
L'Aquila	128.4	n.d.	n.d.	99.7
Chieti	81.3	109.6	n.d.	n.d.
Pescara	124.0	169.3	137.4	113.4
Teramo	103.0	130.9	85.5	113.9

Source: ISTAT

The University of Chieti-Pescara faced a very large increase in student registrations between 2003 and 2006. After this period, the number of registrations severely decreased. L'Aquila saw a reduction, too, but less severe. However, in 2015/16 the three main universities of Abruzzo collectively had fewer students registered, less than 50% compared to 2005/06. In the last ten years, Pescara has lost more than 6,000 registrations, the University of L'Aquila 2,800.

Figure 3.5: Students registered at the three main Universities in Abruzzo



Source: Anagrafe Nazionale degli Studenti - MIUR

The collapse in registrations is in line with the negative trend at the national level caused by the economic crisis, which particularly affected the universities of the Mezzogiorno. In L'Aquila, the

decrease had other causes: the earthquake of 2009; the introduction of closed numbers for various academic courses (biotechnology, psychology, biology and sports science); and the return of registration taxes. These taxes had been suspended for six years after the earthquake, under a framework agreement between the University of L'Aquila and the Ministry of University; even though this represented a facilitation for students, it also indirectly caused a high level of drop out and of inactive students on the total. The closure of the facility reported the percentage of dropouts and inactive students to normal levels. Restrictions on the number of available places explain the reduction in registrations to the Pescara-Chieti University, too.

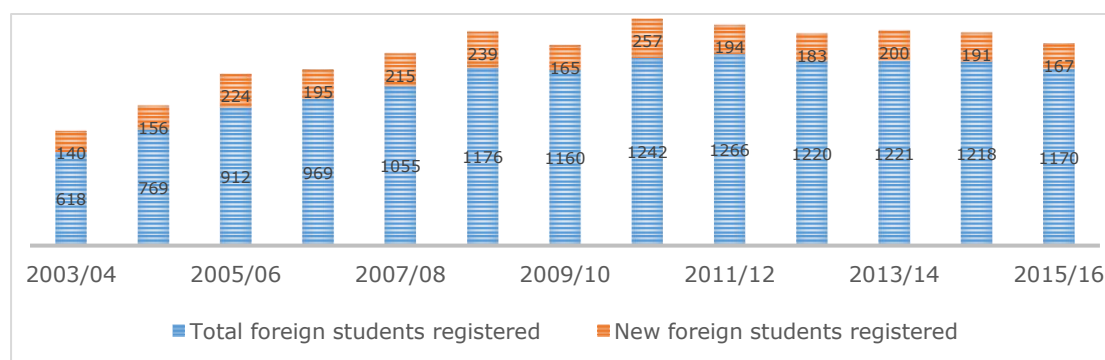
The situation is different with regard to foreign students. Between 2003/04 and 2015/16 the number of new foreign students substantially increased (+19,3%). The peak for registrations was reached immediately after the earthquake. These students are particularly drawn from Greece, Albania, Israel, and Romania, i.e., from the eastern side of the Mediterranean.

The number of foreign students registered in a post-degree course<sup>5</sup> at University has also increased, even though the overall number of students from abroad is still low.

In L'Aquila, the percentage of foreign students in 2015-2016 reached 8.3% of the total number enrolled in a post-lauream course (it was less than 2% in 2006/07). The number of foreign students enrolled peaked in 2013/14, with 92 foreigners enrolled.

The Gran Sasso Science Institute – GSSI, an international PhD school based in L'Aquila and a centre for advanced studies in physics, mathematics, computer science and social sciences, has a special history and is one of the main focuses of this case study. The GSSI was created in 2012, as a centre of excellence for the renaissance of the area after the earthquake. In 2016, the tender for 41 PhD received 1,300 applications, 80% of them from outside Italy.

*Figure 3.6 Foreign students registered in the Universities of Abruzzo*



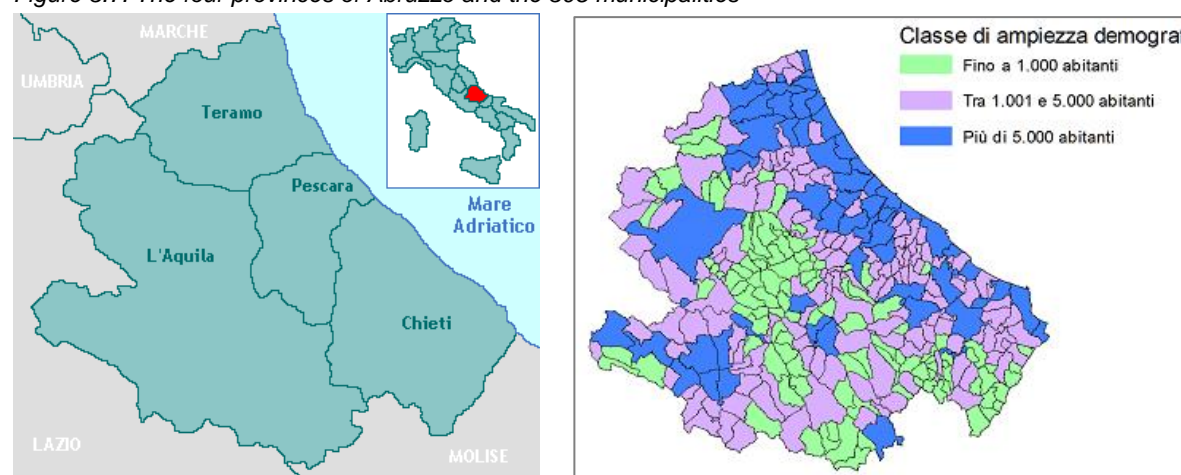
Source: *Anagrafe Nazionale degli Studenti – MIUR*

<sup>5</sup> Including: High Vocational Training Courses, Specialization Courses in Support Activities, Doctoral Program, Master Degree, Specialization Schools.

### 3.5 Institutional characteristics of the area in relation to the KE and skilled migration

The region is divided into the four provinces and 305 municipalities. **Eighty per cent of the municipalities have fewer than 5,000 inhabitants, and 60% are located in mountainous areas** (FORMEZ 2012). Various inter-municipal forms of aggregation (Unions of municipalities; Mountain Communities in mountainous areas) aggregating several small municipalities faces the high level of fragmentation at the institutional level.

Figure 3.7: The four provinces of Abruzzo and the 305 municipalities



Source: FORMEZ 2012

Among their main functions, the municipalities provide fundamental public services at the local level, including urban and mobility planning, social services, public transport and civil protection. None of their functions, however, have influence on the labour market or knowledge economy. Since 2009 the municipality of L'Aquila, the region of Abruzzo and the national government have been involved in the giant, post-earthquake reconstruction effort.

Table 3.8: Municipalities, area and population density in 2016

Province	n. of Municipalities	Inhabitants	Area (sq km)	Population density (persons per kmq)
L'Aquila	60	303,239	5,047.55	60
Teramo	47	310,339	1,954.38	159
Pescara	46	321,973	1,230.33	262
Chieti	104	390,962	2,599.58	150
<b>Abruzzo</b>	<b>305</b>	<b>1,326,513</b>	<b>10,831.84</b>	<b>122</b>

Source: ISTAT

The region has a relevant level of autonomy from the national state (even though restrained by recent laws) and holds legislative power. Labour market and economic development are among the main areas of intervention. The region is also managing authority of various European programmes.

The regions were foreseen by the 1948 Italian Constitution and instituted in 1970. Regions are entitled to carry out programming functions and hold legislative power on all subjects not reserved by the Constitution for the State. However, the Constitution (art.117) also identifies a conspicuous number of topics with a shared competence between the regions and the State. The most relevant ones dealing with the knowledge economy are as follows: international relations and with the European Union; foreign trade; protection and job security; education (with some exceptions); professions; scientific and technological research; and innovation support for productive sectors.

In these areas, the State sets the fundamental principles, and the regions are entitled to legislative power. The **Ministry for Education, University and Research - MIUR** is responsible at the national level for education in schools at all levels, both public and private, and oversees university institutions and state research.

The policy of territorial and economic development of the Abruzzo region has been affected by both regional and national programmes, from the “policy for the Mezzogiorno” promoted by the State since the 50s, to EU programmes managed by the region in the last 30 years.

Other institutional actors are the four Chambers of Commerce, which are responsible for providing services to the enterprises and fostering and promoting the local economy, and, most of all, **the three main universities**. According to the Constitution, art. 33 and the national law of 1989, the universities are autonomous entities.

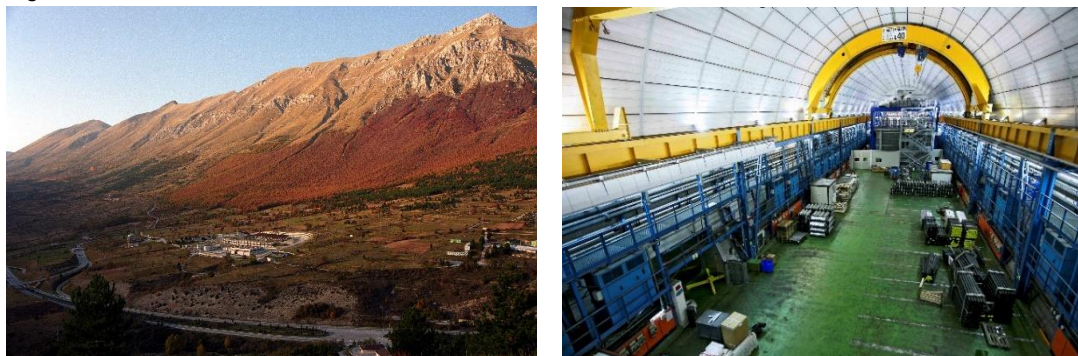
The oldest, University of L'Aquila was founded in 1596 by the Jesuits. Divided into six departments, it is science-oriented and provides courses in engineering, chemistry, physics, medicine and other than human sciences. The University of Chieti-Pescara, founded in 1965, nowadays is the university with the highest number of students, about 26,000 in the last academic year. The university runs courses in economics, law, architecture, medicine, literature and philosophy. The University of Teramo was founded in 1993 by separating the faculties of veterinary sciences, law and political sciences from Pescara-Chieti. A fourth institution, the University telematic non-statal “L. Da Vinci”, has a residual number of enrolled students, about 100 in the last academic year.

The University of L'Aquila was severely affected by the earthquake in 2009. The teaching of the academic year 2008/09 was completed by resorting to emergency structures or, in some cases, to locations outside the city. To promote the university's revival, the Ministry for Education, Universities and Research (MIUR) signed a memorandum of understanding with the university for a period of three years, which stabilised funding for the University and abolished the payment of tuition fees by students until the first instalment of the 2014/15 academic year.

Abruzzo has an internationally recognised centre of excellence in the **National Laboratories of Gran Sasso (LNGS)**. The research laboratories belong to the National Institute of Nuclear Physics (INFN), the Italian research agency dedicated to the study of the fundamental

constituents of matter and the laws that govern them, under the supervision of the Ministry for Education, Universities and Research. The LNGS, a public institution, is in fact the largest underground laboratory in the world and hosts researchers from all over the world, including Nobel prizes such as Carlo Rubbia.

*Figure 3.8: The National Laboratories of the Gran Sasso*



*Source: LNGS webpage*

The National Institute for Nuclear Physics<sup>6</sup> (INFN) is the Italian research agency dedicated to the study of the fundamental constituents of matter and the laws that govern them, under the supervision of the Ministry for Education, Universities and Research (MIUR). It conducts theoretical and experimental research in the fields of sub nuclear, nuclear and astroparticle physics. The INFN workforce includes about 1,800 of its own employees, almost 2,000 university employees involved in INFN research and 1,500 young researchers. All of the INFN's research activities are undertaken within a framework of international competition, in close collaboration with Italian universities on the basis of academic partnerships.

**In 2012, after the earthquake, the Gran Sasso Science Institute (GSSI), an international PhD school and a centre for research and higher education, was created as a part of the INFN in L'Aquila.** The GSSI aims to create a new centre for scientific excellence fostering the skills and highly specialised structures already present in the area, such as the LNGS, the INFN and the University of L'Aquila, facilitating the attraction of high-level resources in the fields of natural and social sciences. The PhD programme (started in the academic year 2013-2014) offers courses of physics, mathematics and computer science and social sciences (management of innovation and regional development). Professors, researchers and students from all scientific areas are selected internationally, following the standards of the best graduate schools worldwide.

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<sup>6</sup>The INFN was founded in 1951 by groups of researchers from the universities of Rome, Padua, Torino and Milan. It consists of 20 divisions, 4 national laboratories and 3 national centres, namely the Centre for Telematics and Informatics (CNAF), the PhD International School Gran Sasso Science Institute (GSSI) in L'Aquila, the Centre for Technology TIFPA in Trento.



## 4 Policy features affecting the performance in relation to the knowledge economy and high-skilled migration flows

Since the 1950s, Abruzzo as part of Mezzogiorno has been one of the main targets for intervention by the national state, in order to foster the development of infrastructures and industry through massive investment. From the 1970s, Abruzzo began to perform better than the other southern regions, with more sustained trends of development and higher employment rates (OECD 2013).

As reported in the previous paragraphs, Abruzzo has not only been a “sending region”, i.e. a region with relevant migration trends to Northern Italy and to other EU and Extra EU areas. In more recent years and to some extent, it has become a destination for internal migration, mostly from the other Southern regions of Italy, but also from areas of Eastern Europe, such as Romania and Albania.

The EU, national and regional programmes have mainly focused on creating the conditions for strengthening the internal resources of the territory, and in particular its enterprises, rather than attracting new/high skilled resources from abroad. The development of resources linked to the knowledge economy (such as fostering innovation and high technological content of production) aimed to enhance the potential of the local economy, and then the employment, but also to raise the educational level of the population.

The following paragraphs describe three main groups of programmes and initiatives fostering some of the dimensions linked to the knowledge economy in Abruzzo.

The first group is composed of policies promoted within the framework of the European structural funds. The second group is made up of two national programmes directly and indirectly aimed at reversing the brain drain (the **fiscal incentives for “brain gain”** and the **Programme Garanzia Giovani**). Finally, Paragraph 4.6.3 presents the policy of attracting high-skilled students within the context of the post-earthquake reconstruction, and to the constitution of the Gran Sasso Scientific Institute.

### 4.1 The priorities of European support related to the knowledge economy and high-skilled migration flows

In the 1994-99 period (but only for the first three years), Abruzzo was part of the group of the Objective<sup>17</sup> southern regions with a GDP less than 75% of the community average. Thanks to its ameliorated economic conditions, in 2000-2006 the Region was included within Objective 2, supporting “*economic and social conversion in areas [with] structural difficulties*”. In that period the performance of the region was promising.

The 2000-06 Regional Operative Programme reported that: “*Abruzzo, more than any other southern region, has accelerated in recent decades the process of integration with the central*

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<sup>17</sup> I.e., the regions at Level 2 of the NUTS classification whose Gross Domestic Product per inhabitant was less than 75% of the community average: Basilicata, Calabria, Campania, Puglia, Sardegna and Sicilia.



*regions of the Country, reaching a level of development undoubtedly higher than that of all the other southern regions, mainly due to the capacity that the region has shown to attract new industrial investments. (...) Also with regard to the labor market, the situation of the region is certainly more favourable than the other southern regions.” (DOCUP Ob.2 Regione Abruzzo 2000-07: 7).*

**The 2000-06 strategy was characterised by a focus on the inner area of the region**, which was more underdeveloped, with the goal of sustaining it and re-adjusting the socio-economic balance within the inner and the coastal areas.

**The 2007-13 ERDF operative programme of Abruzzo had identified innovation and competitiveness as the main focuses** of the development strategy, in line with the two main priorities of the National Strategic Reference Framework of that period<sup>8</sup>. Within this framework, the regional strategy identified the importance of creating high-qualified human resources and jobs as a factor in localisation of investments and regional innovation. Axis I of the ROP ERDF 2007-13 focused on **RS&T and innovation**, with the goals of favouring the competitiveness of enterprises in the internal and external markets, enhancing the technological content of production, and fostering the knowledge economy. The main activities were **the activation and consolidation of networks between enterprises and research centres**, support for enterprises to access RS&T programmes and credit, and support for high-tech start-ups.

This has been mainly fostered through the promotion of **‘innovation poles’ in different sectors**: automotive, health, ICT among the most important ones, with the goal of developing them and creating new jobs. The innovation poles have their own organisation and gather together companies, research institutes and public administrations to develop and fund innovative projects. Bridging pure research conducted within universities with the manufacturing sector is among the desiderata of this strategy.

The 2007-13 programme was also based on the goals of the PICO – the **National Plan for Innovation, Growth and Employment** issued in 2005 with the goal of strengthening the effort to achieve the objectives of the Lisbon strategy. The PICO had, among its goals, the aim of fostering scientific research and innovation, and foresaw the implementation of 12 strategic research plans<sup>9</sup>, 12 laboratories of public-private partnerships in the Mezzogiorno for fostering research in medical diagnostics, solar energy, bio-technologies, etc., and the development of 24 technological districts in sectors with high technological content.

**The 2014-20 strategy has had to face the dramatic worsening of the economic conditions**, which began with the economic crisis in 2008 and was exacerbated by the

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<sup>8</sup> Priority 2 “Promotion, enhancement and dissemination of research and innovation for competitiveness”, and Priority 9 “International openness and attraction of investments, consumption and resources”.

<sup>9</sup> In the sectors of health, pharmaceutical and bio-medical, manufacturing systems, engine construction, shipbuilding and aviation shipbuilding, ceramics, telecommunications, agribusiness, transport and advanced logistics, ICT and electronic components, and microgeneration energy.

destruction caused by the earthquake in 2009. The importance of the knowledge economy as a lever for reversing the crisis appears clearer in the regional strategy. However, the focus seems more concentrated on creating or sustaining high-skilled researchers and workers already present in the territory, within the regional enterprises, instead of attracting new human capital from abroad.

The ROP FESR 2014-20 confirms the importance of research, technological development and innovation as main priorities of the regional strategy. Axis I “research, technological development and innovation” foresaw a focus on the innovation content of enterprises, including the **hiring of high-skilled researchers in technical-scientific sectors within enterprises, working on research and development of innovative products**. The declared goal of the strategy is to counteract the brain drain of the region, and at the same time, to foster innovation in local enterprises.

The ROP 2014-20 FSE includes Axis 1 dedicated to employment and Axis 3 to education and training. Axis 1 focuses on rebalancing the conditions of unemployment of specific groups, such as women, young people, workers with no or limited access to the labour market. Axis 3 focuses on the growth of high-level skills and competencies, and also fostering geographical and transnational mobility of workers.

## **4.2 The national programmes aiming at reversing the “brain drain”**

**The national Programme Garanzia Giovani (“Youth Guarantee”)** is funded by the Ministry for Employment and Social Policy and implemented at the regional level. The programme focuses on the people most affected by the economic crisis: young people aged 15-29 who are not in education, employment or training, also known as NEETs. In June 2014 the Abruzzo region subscribed to an agreement with the Ministry for Employment to implement the programme on the regional level. The regional implementation plan received funding of 31,160,034 euros. The programme includes actions for education, training, and counselling services; it also entails employment bonuses for inter-regional and transnational mobility. According to the region’s programme results, **in 2016 18,202 people were supported by the Garanzia Giovani Programme, with some 2,420 training places provided, 1,325 people given counselling services and 850 employment bonuses awarded.**

The only programme specifically addressing the “brain gain” is an initiative promoted by the Ministry of Economy and Finance, with the publication of a law (law number 238/2010) which established a special regime for the return of workers abroad. **The “brain gain” provision established a favourable tax regime** (with a reduction of the tax base by 70-80%) for workers with executive functions, those with high-level professional qualifications or specialist skills, EU citizens with a university degree who have worked abroad for two years or more, or for EU citizens who have studied abroad achieving a university degree or a post-lauream degree. This fiscal provision was renewed in 2016 for another four years; then, in 2017 the budget law made

this fiscal arrangement permanent. In 2011, 3,838 workers benefitted from the regime, of whom 59% were women<sup>10</sup>. More recent data on the results achieved are not yet available.

### **4.3 The post-earthquake reconstruction and the Gran Sasso Science Institute as a policy for attracting high-skilled capital**

The earthquake prompted a change in the approach to the knowledge economy, and highlighted the necessity of re-creating a hub for attracting high-skilled resources from outside the region, and from the world. The policy which led to the creation of the Gran Sasso Science Institute relied on *reputation of the research system*, as a mechanism for attracting foreign students.

The Gran Sasso Science Institute (GSSI) is one of the major outcomes of the reconstruction of the city of L'Aquila after the earthquake of 6 April 2009. The GSSI was launched in April 2012, with the support of Fabrizio Barca, then Minister for Cohesion and Territorial Development in the government led by Mario Monti. From the very first discussions on establishing a future science institute, the leading idea was to couple reconstruction with development. In this respect, the GSSI had to produce high-level research while keeping an eye on the difficult context in which it was to be settled.

The shock of the earthquake made clear to local actors at the University of L'Aquila and the Gran Sasso Laboratories that the research base needed to attract students and improve territorial development research. The first contact between representatives from the University of L'Aquila and Fabrizio Barca happened when – as a civil servant in the Ministry of the Economy – he was made responsible by his minister for including development issues in the reconstruction process.

Together with other projects aimed at relaunching the local economy (the other hypothesis of intervention regarded the subject of ICT and energy), the GSSI appeared to be a prominent opportunity. Looking at the endogenous potential of the territory hit by the earthquake, the existing Gran Sasso Laboratories stood out due to their worldwide recognition. In this respect, the idea of establishing a new PhD school in basic sciences connected to both the Laboratories and the University of L'Aquila made perfect sense.

The idea was not completely new. Something similar was piloted in Friuli, a region devastated by a magnitude 6.4 earthquake in 1976. The reconstruction effort created the Area Science Park, a science and technology multisectoral park in Trieste, managed and promoted by a national public research institution directly controlled by the Ministry of Research. The goal of the Park was to provide a link between the business community and the many international high-level scientific institutions located in Trieste (IRS, 2006).

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<sup>10</sup> Source: Il Sole 24 Ore (2013).

Thirty years after, in L'Aquila the first discussions on the development side of reconstruction ended in a public meeting "L'Aquila Earthquake: Boosting the economy" held in Rome a week before the 2009 G8 (organised in L'Aquila). The OECD produced a report on the event (OECD 2009) discussing eight projects for redevelopment. The GSSI was included among these and vividly described as "the nest of the eagle's future" (L'Aquila is the Italian for eagle).

However, problems internal to the government – in particular, conflicts between the Minister of the Economy and the Prime Minister (and later the collapse of the Berlusconi government) – complicated and eventually stalled the process. In 2011, however, the three Labour unions – Cgil, Cisl and Uil – attempted to start the process again and recontacted Fabrizio Barca to join in a new discussion over the future science institute. As a result, a new study by the University of Groningen and the OECD (OECD 2012) was produced and a Discussion Forum held at the Laboratories of Gran Sasso in March 2012. The OECD study confirmed the research potential of the region (in particular for 'hard sciences') and the strategic importance of establishing the new science institute as part of a strategy for regional growth and economic attractiveness.

In November 2011, Fabrizio Barca became Minister for Territorial Cohesion with responsibility for reconstruction. At the very beginning of his mandate, he ended the so-called 'extraordinary reconstruction' – completely managed by the national government – and gave back power to the municipalities and local authorities. He also promoted another study, "L'Aquila 2030: a strategy for economic development" edited by Antonio Calafati, aiming at broadening the knowledge base on the long-term strategic policies for the city of L'Aquila and its urban system.

Having Barca – a supporter of the project – as Minister certainly provided important support to the GSSI, which finally opened in 2013.

The GSSI was designed as an experimental project. Until 2015, the school had to be managed by the National Institute for Physics (by the manager of the Gran Sasso Laboratories) but was not an independent institute (i.e. PhD degrees were in fact awarded by partner institutes). After a three-year experimental

period, the GSSI performance had to be assessed by the National Agency for the Evaluation of Universities and Research Institutes (ANVUR) in order to decide on its future.

The 2015 ANVUR evaluation report was highly positive (ANVUR 2015).

Figure 4.1: The GSSI first PHD Thesis defences



#### ASTROPARTICLE PHYSICS PHD THESIS DEFENCES

19-20 December 2016 - GSSI Main Lecture Hall

Source: GSSI webpage

As a consequence, in 2016, the GSSI was established as an independent institute, and its statute eventually approved by decree of the Minister for Education, University and Research (MIUR 2016). The GSSI of L'Aquila is the sixth institute of high-level PhD education in Italy.

The others are located in Pisa (Scuola Superiore Sant'Anna and Scuola Normale), Lucca (IMT), Florence (SUM), and Trieste (SISSA).

Eugenio Coccia is the Director of the GSSI. Coccia is also chair of the Gravitational Wave International Committee (GWIC) and member of the Council of the European Physical Society. An experimental physicist, his field of activity is astroparticle physics, with a focus on the detection and study of gravitational waves. He is recognized for the development of ultracryogenic detectors of gravitational waves.

Coccia was also the former Director of the Gran Sasso Laboratories and, together with Paola Inverardi, dean of the Science Faculty and afterward of the University of L'Aquila, and Piero Mascati, math professor in the same University, was among the group of "hard science" promoters of the GSSI project, since the beginning.

According to interviews, other relevant promoters of the project were the several ministries of the three governments that had power between 2009, the year of the earthquake, and 2013, the year after GSSI was finally created: the Government Berlusconi (2008-11), Monti (2011-2013) and Letta (2013-2014). The agreement was finally signed by the Minister to Education and University, Giannini.

## 5 Testing the evidence: main results achieved and shortcomings

Abruzzo was the focus for **various programmes and policies designed to strengthen the knowledge-based economy of the region**. Most parts of those programmes focused on strengthening the internal resources of the area, firstly the region's industrial base, then the innovation and competitiveness of enterprises, as well as the networks among them and research. The strategy appears to have been, at least in part, successful. A former “sending” region, until the early 21st century Abruzzo has had better development trends and lower migration rates than the Mezzogiorno areas, often close to the Italian average, sometimes above, e.g., concerning the rate of early school leavers and the percentage of the population who have completed tertiary education.

It was, however, a fragile structure. When the economic crisis hit, all the relevant indicators showed that the economy had collapsed, and Abruzzo's performance appeared to fall dramatically below Italian and EU28 levels.

Various programmes attempted to reverse the trend, leveraging the KE sector to that end. In the present case, we have highlighted the main strategies deemed as relevant concerning the KE sector in Abruzzo. They are summarised in Table 5.1 below, including also the contextual characteristics of the socio-economic environment the policy taps into, the type of mechanism the policy is based on, and some of the main results achieved so far.

As an example, the implementation in Abruzzo of the national programme Garanzia Giovani (“Youth Guarantee”) was aimed at contrasting the severe level of youth unemployment and of NEETs in the region. The programme received funding equal to 31,160,034 euros and included actions for education, training and counselling services; it also entails employment bonuses for inter-regional and transnational mobility. According to the region's programme results<sup>11</sup>, in 2017 nearly 40,000 people were supported by the Garanzia Giovani programme, of whom over 10,000 were NEETs involved in traineeship and about 43% of them entered into work. The programme was designed to provide incentives to young people to enter the labour market.

The national programme of tax relief for reversing the ‘brain drain’ was intended to provide **personal incentives** to adopt a different behaviour (to consider working in Italy instead of abroad). However, no data are available so far on the number of people convinced by this provision.

Other programmes were intended to provide **incentives to companies** for hiring high-skilled workers (the ERDF measures for recruiting PhDs). The programme is in its starting phase and results are not yet available.

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<sup>11</sup> <http://www.abruzzolavoro.eu/garanzia-giovani/risultati/> retrieved September 2017

A different case is the regional ERDF programme fostering the creation of innovation poles between firms, universities and research centres. The mechanism embedded in the programme seems to foster (through funding) the perception of opportunity of different actors to cooperate, in a framework of *repeated interactions among actors that normally don't cooperate*. So far 14 innovation poles have been activated, aggregating 973 enterprises. Fourteen projects involving cooperation between firms and universities have been funded so far (Regione Abruzzo, 2017).

Table 5.1: Policy features and results of the more relevant KE-related strategies in Abruzzo

Context features	Policy features	Mechanisms	Results
<ul style="list-style-type: none"> <li>Potentially innovative economic sectors present in the Region</li> <li>University system with well-established scientific areas</li> </ul>	<ul style="list-style-type: none"> <li>Regional programme. Innovation poles between firms, universities and research centres (ERDF 2007-13) for innovation and cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Perception of opportunity (projects funding)</li> <li>Clusterization</li> <li>Repeated interactions to foster cooperation</li> </ul>	<ul style="list-style-type: none"> <li>14 Innovation Poles activated</li> <li>131 projects funded</li> <li>973 enterprises associated to the innovation poles</li> <li>14 projects of cooperation firms/universities funded</li> </ul>
	<ul style="list-style-type: none"> <li>Recruitment of PHDs within enterprises (ERDF 2014-20)</li> </ul>	<ul style="list-style-type: none"> <li>Incentives for firms</li> </ul>	<ul style="list-style-type: none"> <li>No results available so far</li> </ul>
<ul style="list-style-type: none"> <li>High rate of youth unemployment and NEETs after the crisis</li> </ul>	<ul style="list-style-type: none"> <li>National programme Garanzia Giovani (Youth guarantee) (2014) <ul style="list-style-type: none"> <li>Education, training, and counselling services to help young people finding job opportunity</li> <li>Employment bonuses for inter-regional and transnational mobility</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Services, incentives &amp; bonuses for job</li> </ul>	<ul style="list-style-type: none"> <li>39.973 people involved</li> <li>10.523 NEETs involved</li> <li>4.415 NEETs in traineeships, of whom 43,6% transformed into jobs</li> </ul>
<ul style="list-style-type: none"> <li>High level of expatriates (also in KE-related sectors)</li> </ul>	<ul style="list-style-type: none"> <li>National provision of tax relief for reversing the 'brain drain' (2014-16) <ul style="list-style-type: none"> <li>reduction of the tax base by the 70-80%) for workers with executive functions, high-level professional qualifications or specialist skills, EU citizens with a university degree who have worked abroad for two years or more, or for EU citizens who have studied abroad achieving a university degree or a post-lauream degree</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Fiscal incentive to the person</li> </ul>	<ul style="list-style-type: none"> <li>No data available</li> </ul>
<ul style="list-style-type: none"> <li>Earthquake of 2009 as focusing event</li> <li>Local universities specialized in hard sciences</li> <li>Presence of one of the top-4 world laboratory of particle physics</li> </ul>	<ul style="list-style-type: none"> <li>Creation of a high-standing PhD course to attract students from abroad and contrast the de-population of L'Aquila city center</li> </ul>	<ul style="list-style-type: none"> <li>Reputation</li> <li>Idealistic enthusiasm</li> </ul>	<ul style="list-style-type: none"> <li>1,300 applications, of whom 80% by foreign students in 2016</li> <li>the new Ph.D school contributed to relaunch the life and economic activity of the city center, thanks to the activities promoted by its students and teachers</li> </ul>

Source: author's elaboration

**The policy which led to the creation of the GSSI adopted a different perspective**, focusing on the “extraordinary” events and resources of the territory (the earthquake; the competencies and research endowments in the physics field) in order to attract high-skilled capital from abroad.

As already mentioned, the GSSI was to include a growth strategy for the earthquake area and provide a territorial return on investment, possibly an unprecedented task for an 'elite' institute specialised in basic sciences. As presented on the GSSI website, the aims **were to attract Italian and international students; to build the international recognition of L'Aquila as a location for high-level education**; to enable former students settled in the city to create new firms; and to strengthen its link with the productive sector through the production of usable knowledge.

PhD programmes in physics, computer sciences and mathematics – which were part of the project from the very beginning and corresponded to sectors of excellence in the existing research system – were added to with a final programme also including a PhD in urban studies and regional science. This latter PhD was designed to be one of the drivers for linking GSSI research to the redevelopment of the area. In addition, at an administrative level, the GSSI integrated a Knowledge Transfer Office in order to foster links with the entrepreneurial sector.

The source of funding of the GSSI is almost completely public, and derives from the Ministry of University and the National Fund for the reconstruction after the earthquake. There are also some small grants, such as for example a scholarship financed by the European House Ambrosetti. All the available places at GSSI are covered by scholarships, but also **housing is provided by the Institute to all the students**.

The primary success of the policy is its effectiveness in attracting students from abroad. The first few years of activity already produced notable results (ANVUR 2015). Although only 40 PhD students were selected each year, the GSSI received 558 applications in 2013, 588 in 2014 and 750 in 2015. The share of applications coming from international students grew progressively from 47% in 2013 to 70% in the following years. The proportion of selected international students was 30% in 2013 and about 50% in the next two years. The competition for 41 PhDs in 2016 resulted in 1,300 applications, 80% of them from abroad. The GSSI proudly claims to be the most international PhD school in Italy<sup>12</sup>.

*Table 5.2: Post-degree students in 2016*

	<b>GSSI</b>
Available places	40 (Phd), 20 post doc students
Applications	1,300
% of applications by foreign students	80%
Foreign students, enrolled	50%

*Sources: GSSI and University of L'Aquila databases*

Finally, concerning post-doctoral researchers, the GSSI received 413 applications in 2014 and 388 in 2015. In the first year, the number of selected post-doctoral posts was 16 and the second 12 (of which about half were international) (ANVUR 2015).

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<sup>12</sup><http://www.inabruzzo.com/?p=273593>



Even though the GSSI was only recently created, its reputation for “excellence” has proven successful in attracting human resources from abroad, fuelling regeneration in the human capital of the territory.

Other possible elements for assessment would include the spillover effects from the GSSI on the territory. Among them, the first expected outcome would be an increase in the local economy (e.g. rents, services and so forth).

A second expected outcome would be the creation of start-ups by young researchers, but there is no data on start-ups and spin-offs established by GSSI students and research projects yet. The creation of the Knowledge Transfer Office is certainly a necessary organisational step so it can play an active role in fostering the creation of start-ups and spin-offs. In addition to the capacity of such an office, relevant drivers for start-ups might include legislation regulating spinoffs, the entrepreneurial experience of project-leaders, the suitability of the knowledge produced to be readily applied, and the availability of venture capital.

The same would be true for the connection with the productive sector. Data on the return on GSSI research and the links to existing firms in the territory needs to be collected. However, the main variables to be investigated would examine both the capacity of the institute to reach out to the productive sector and the existence of high-level technology firms to be able to profit from the kind of basic science produced by the institute.

The mechanisms that seem to have been triggered in GSSI are both the **reputation** (of the teaching body and of the main promoter of the project, the former Minister of Cohesion policy in Italy), which has convinced many students to apply for the PhD course, together with a sort of **idealistic enthusiasm** of directly participating to the renaissance of the city life of L'Aquila, through a state-of-art project following. The creation of the GSSI, in the city centre of l'Aquila, was intended to revitalise it following the devastation caused by the earthquake with a new, vibrant population.

## 6 Conclusions and lessons learnt for cohesion policy

The policy which led to the creation of the Gran Sasso Science Institute (GSSI) in 2013 adopted a different perspective to previous programmes. It focused on the “extraordinary” event of the earthquake and on the unique resources of the territory (the “hard sciences” research potential, mainly expressed by the scientific Laboratories of Gran Sasso, an internationally recognised centre of excellence for research in physics) to attract high-skilled capital from abroad.

The GSSI has become, after the positive assessment of its experimental phase, the sixth national institute of high-level PhD education of Italy. Dedicated mainly to the hard sciences, the GSSI is the first attempt to reverse the development strategy of the area, **from creating opportunities for residents, to attracting resources from abroad**, with the goal of revitalising the city centre after the earthquake.

**The case is peculiar as it** represents an example of place-based strategy in a remote, rural context, presenting one of Europe’s largest environmental protected areas, **low connections** with the main Italian cities, small and sparsely populated urban centers and a history of **severe outmigration**. In this context, not very keen to attract a KE economy, the creation of the Gran Sasso Science Institute leveraged on the existence of one of the world’s top four laboratories of particle physics as a place-based resource. In other words, in the absence of the KE-related resources typical of large, urban areas, the strategy aimed at building one ‘magnet’ to attract people from abroad.

One could expect three main outcomes from the policy: an increase in the number of high-skilled, young, foreign researchers living in the city for a few years; positive spillovers caused by the presence of students and teachers for the local economy, leading to social revitalisation; and the growth of start-ups with high-level technological content.

The recent history of the GSSI doesn’t allow for a full appreciation of its results; however, preliminary results appear to be positive. In particular, the number of applications to the 41 GSSI PhD scholarships has grown from 558 in 2013, to 1,300 in 2016. The majority (80%) of applicants are foreign students. The GSSI proudly claims to be the most international PhD School in Italy.



## References

### Documents

Calafati A. (ed.) (2012), "L'Aquila 2030" Una strategia di Sviluppo economico. Uno strumento per pensare un ausilio ai processi decisionali. Studio promosso dal Ministro per la Coesione Territoriale, September 2012 <https://giuseppemilano.files.wordpress.com/2013/04/calafati-settembre-2012.pdf> Last retrieved 28th June 2017

CNEL, Indici di integrazione degli immigrati in Italia, VIII Rapporto, 2012

Comune dell'Aquila, Piano Strategico dell'Aquila, Proposta di documento finale, November 2012, [www.comune.laquila.gov.it/moduli/output\\_immagine.php?id=3036](http://www.comune.laquila.gov.it/moduli/output_immagine.php?id=3036) Last retrieved 28th June 2017

CONFCOMMERCIO (2017), M. Bella, "Imprese e città. Demografia d'impresa nei centri storici italiani", 22nd of February 2017, <http://www.confcommercio.it/documents/10180/3599445/Demografia+d%E2%80%99impresa+nei+centri+storici+italiani/bda8fd86-8baf-4bbb-b6cd-45600b5177d2> Last retrieved 28th June 2017

CRESA (2001), Studi demografici sulla popolazione abruzzese, L'Aquila, [http://www.cresa.it/pubblicazioni/popolazione/cap\\_1.pdf](http://www.cresa.it/pubblicazioni/popolazione/cap_1.pdf) Last retrieved 26th June 2017

FORMEZ - Regione Abruzzo (2012), Programma di riordino territoriale della Regione Abruzzo. La dimensione economico-associativa dei piccoli comuni abruzzesi, Rapporto 2012.

Il Sole 24 ore (2013), Sergio Nava, "Rientro dei cervelli: tasse light per 4mila", 13 maggio 2013, [http://www.ilsole24ore.com/art/notizie/2013-05-13/rientro-cervelli-tasse-light-063815.shtml?uuid=AbH1oLvH&refresh\\_ce=1](http://www.ilsole24ore.com/art/notizie/2013-05-13/rientro-cervelli-tasse-light-063815.shtml?uuid=AbH1oLvH&refresh_ce=1) Last retrieved 26th June 2017

In Abruzzo, 2017, "Aq, attira il GSSI", 02 Settembre 2016, <http://www.inabruzzo.com/?p=273593> Last retrieved 26th June 2017

IRS (2006), "Gli effetti e le ricadute industriali e territoriali dell'Area di ricerca di Trieste: un'opportunità di conoscenza e marketing territoriale", research project for the Consorzio per l'Area di ricerca di Trieste. Final report of the research 'Trieste nel mondo'

MeteoWeb (2016), Terremoto L'Aquila: alle 03:32 del 6 aprile 2009 la scossa che devastò l'Abruzzo

<http://www.meteoweb.eu/2016/04/terremoto-laquila-alle-0332-del-6-aprile-2009-la-scossa-che-devastolabruzzo-foto/662101/#JdiAtMQqT1s1P4MV.99>

OECD (2009), Spreading the eagle's wings so it may fly: re-launching the economy of L'Aquila region after the earthquake, <http://www.oecd.org/gov/regional-policy/43307733.pdf> Last retrieved 26th of June 2017

OECD, University of Groningen (2012), Building Resilient Regions after natural disaster, Issue Paper, March 2012

OECD (2013), Policy Making after Disasters. Helping Regions Become Resilient – The Case of Post-Earthquake Abruzzo, OECD Publishing

Presidenza del Consiglio dei Ministri. Dipartimento per le Politiche Comunitarie (2005). PICO-Piano per l'Innovazione, la Crescita e l'Occupazione Piano italiano in attuazione del rilancio della Strategia europea di Lisbona

Regione Abruzzo (2004), Documento Unico di Programmazione Obiettivo 2 (2000-2006), <http://www.regione.abruzzo.it/xeuropa/docs/docup/1Docup190704.pdf>

Regione Abruzzo (2017), Rapporto Finale di Esecuzione 2007-13, <http://www.regione.abruzzo.it/XEuropa/docs/porVerbali/20032017RFE.pdf>

Università di Chieti-Pescara (2016), Piano Integrato della Performance, della Trasparenza e della Prevenzione della Corruzione, Triennio 2016-2018

### Websources

Gran Sasso Science Institute <http://gssi.infn.it/>

Ufficio Speciale per la Ricostruzione dell'Aquila <http://www.usra.it/>

### Acronyms

INFN: Istituto Nazionale di Fisica Nucleare (National Institute for Nuclear Physics)

ISTAT: Istituto Nazionale di Statistica (National Institute of Statistics)

LNGS: Laboratori Nazionali del Gran Sasso (National Laboratories of Gran Sasso)

MIUR: Ministero dell'Istruzione, Università e della Ricerca (Ministry of Education, University and Research)

### **List of people interviewed**

Edoardo Alesse, Director of the Pharmaceutical Pole, 15<sup>th</sup> of March 2017

Lorenzo Allio, OECD consultant, 27<sup>th</sup> of March 2017

Fabrizio Barca, Ministry for Territorial Cohesion 2011-2013, 24<sup>th</sup> of February 2017

Alessandra Faggian, Director of the Social Science area of the Gran Sasso Science Institute, 7<sup>th</sup> of March 2017

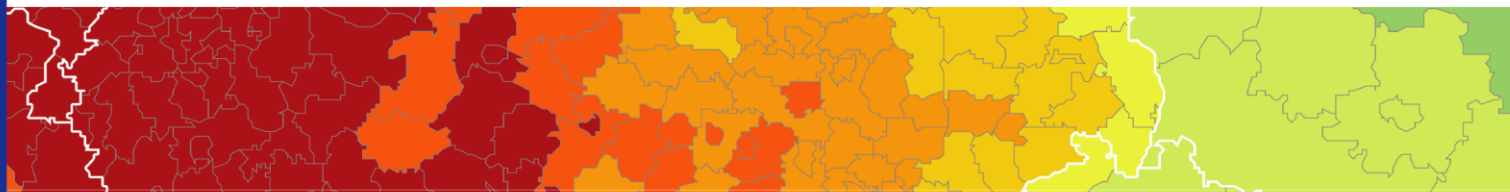
Ioannis Katsavounidis, Senior research scientist, Encoding Technologies, NETFLIX, 29<sup>th</sup> of March 2017

Lars Eric Hientzsch, PhD candidate at GSSI, 17<sup>th</sup> June 2017

Piero Marcati, Scientific director, Mathematics Division, Gran Sasso Science Institute, INFN, L'Aquila, 15<sup>th</sup> of March 2017

Paola Inverardi, Dean of the University of L'Aquila, 7<sup>th</sup> of March 2017

Raffaele Trivilino, Director of the Automotive Pole, 14<sup>th</sup> of March 2017



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