



# Policy Making after Disasters

HELPING REGIONS BECOME RESILIENT

The Case of Post-Earthquake Abruzzo



# Policy Making after Disasters

HELPING REGIONS BECOME RESILIENT

The Case of Post-Earthquake Abruzzo

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

**Please cite this publication as:**

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

<http://dx.doi.org/10.1787/9789264189577-en>

ISBN 978-92-64-18954-6 (print)

ISBN 978-92-64-18957-7 (PDF)

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

**Photo credits:** Cover © CRESA (Centro regionale di studi e ricerche economici e sociali).

Corrigenda to OECD publications may be found on line at: [www.oecd.org/publishing/corrigenda](http://www.oecd.org/publishing/corrigenda).

© OECD 2013

---

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgement of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@cfcopies.com](mailto:contact@cfcopies.com).

---

## Foreword

Countless people across the world live in places at risk of earthquakes, hurricanes and floods. Natural disasters have, by definition, a territorial impact, damaging the physical capital of the places where they strike. Yet economic consequences go far beyond the affected area and require responses from regional and national resources, technical capacity and human organisation.

The challenge facing governments after a natural disaster is how to deliver rapid relief to those worst affected while ensuring that the investment required for reconstruction strengthens the capacity of the region concerned to face future shocks. At the same time, reconstruction offers an opportunity to do things better – improve access to health services, raise the quality of education, upgrade infrastructures, and so on.

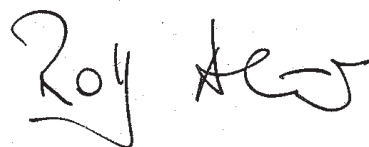
*Policy Making after Disasters: Helping Regions Become Resilient* is the first OECD case study on cross-sector strategies in post-disaster regions. It provides evidence-based recommendations on how to move recovery efforts forward in Abruzzo after the 2009 earthquake struck the regional capital L'Aquila and its surroundings. The report identifies several key priorities on which the national and local governments need to converge to build a common strategic vision.

Building on more than one year of policy dialogue in Abruzzo, and gathering experts' view on post-disaster experiences in Japan, New Zealand, Turkey and the United States, this report provides valuable lessons to rethink regional development in places vulnerable to natural disasters. Two central themes emerge:

- A comprehensive approach of integrating recovery efforts into a coherent strategy of social and economic development focused on the long-term potential and job creation must be pursued.
- Innovative public governance solutions are crucial to mobilise the community and co-ordinate actors at different levels, across different departments and from the public and private sectors.

The eight recommendations in this report can become a benchmark to monitor good practices in policy implementation among OECD countries, to increase the resilience and the well-being of regions and local communities.

This work was undertaken by the OECD Public Governance and Territorial Development Directorate, whose mission is to help governments at all levels design and implement strategic, evidence-based and innovative policies to strengthen public governance, respond effectively to diverse and disruptive economic, social and environmental challenges and deliver on government's commitments to citizens.



Rolf Alter  
Director, Public Governance  
and Territorial Development Directorate

## *Acknowledgements*

The OECD report *Policy Making after Disasters: Helping Regions Become Resilient* was prepared by the OECD Directorate of Public Governance and Territorial Development (GOV), with the support of the Department for Development and Economic Cohesion (DPS) in the Ministry of Economic Development (National Operational Program “Governance and Technical Assistance ERDS 2007–2013”). Special thanks are due to Fabrizio Barca (Minister for Territorial Cohesion) whose knowledge and engagement greatly contributed to this study, Sabina De Luca (Head, DPS) for her help on Territorial Cohesion Policy and Flavia Terribile (DPS) who provided valuable comments all along the study period. The OECD Secretariat would like to thank the local team from *Comitato Abruzzo* for the co-operation with this study: Fabio Spinosa Pingue and Antonio Cappelli (Confindustria L'Aquila), Gianfranco Giorgi (CISL L'Aquila), Giuseppe D'Amico (Confindustria Abruzzo), Gianni Di Cesare (CGIL Abruzzo), Umberto Trasatti (CGIL L'Aquila), Maurizio Spina (CISL Abruzzo), Roberto Campo (UIL Abruzzo), Michele Lombardo (UIL L'Aquila). We are also grateful for the openness and willingness to participate in the project shown by many individuals and stakeholders in L'Aquila, the Abruzzo region, and other regions of Italy.

The report benefited from the insight of international experts in countries that have experienced natural disasters recently: Paul Dalziel, Lincoln University (New Zealand), Emin Yaşar Demirci, Eastern Anatolia Development Agency (Turkey), Kazuko Ishigaki, Ministry of Land, Infrastructure, Transport and Tourism (Japan) and Allison Plyer, Great New Orleans Data Centre (United States).

The report *Policy Making after Disasters: Helping Regions Become Resilient* is the first OECD case study on cross-sector strategies in post-disaster regions produced by the OECD Regional Development Policy Division under the direction of Joaquim Oliveira Martins, Head of Division.

The work and the report were carried out by an OECD team co-ordinated by Monica Brezzi (OECD) which included Lorenzo Allio (Allio-Rodrigo Consulting), Alberto Bazzucchi (CRESA), Claire Charbit (OECD) and Paolo Veneri (OECD) in collaboration with an international team of academics, who received support from *Comitato Abruzzo* (National Business Association and Unions), co-ordinated by Philip McCann (University of Groningen) and included Alessandra Faggian (Ohio State University), Simona Iammarino (London School of Economics), Lelio Iapadre (University of L'Aquila), Andrés Rodríguez-Pose (London School of Economics), Matthias Ruth (University of Maryland), Maria Savona (University of Sussex), Riccardo Scarpa (University of Waikato), Marco Valente (University of L'Aquila) and Frank Vanclay (University of Groningen).

Key contributions to this report were provided by Karen Maguire (OECD) and Antonio Calafati (Marche Polytechnic University). Joanne Caddy (OECD) led one of the community events organised for this study and Valerio Mancini (University of Teramo) provided background research on community engagement in L'Aquila. Kate Lancaster and Carol Thornton offered editorial comments and Erin Byrne and Gemma Sheen prepared the report for publication.

## *Table of contents*

<b>Acronyms and abbreviations</b> .....	9
<b>Executive summary</b> .....	11
<b>Assessment and recommendations</b> .....	15
<b>Chapter 1 Regional trends and development challenges in Abruzzo</b> .....	29
The economy of Abruzzo .....	30
The territorial organisation in the Abruzzo region .....	44
The region and the natural disaster .....	55
Abruzzo towards 2030: Challenges .....	58
Notes .....	65
Bibliography .....	66
<b>Chapter 2 A renewed governance system to improve regional policy in Abruzzo</b> .....	69
Introduction: An integrated regional development strategy for Abruzzo .....	70
Reshaping territorial relationships .....	72
Regional and local capacity for strategic planning .....	77
Addressing the governance challenges .....	84
Conclusions and main recommendations .....	84
Note .....	85
Bibliography .....	86
<i>Annex 2.A1</i> .....	88
<i>Annex 2.A2</i> .....	90
<b>Chapter 3 Open policy making to build a resilient Abruzzo</b> .....	93
Introduction .....	94
Community engagement in post-disaster regions .....	94
Community engagement in L’Aquila after the 2009 earthquake .....	96
Towards a new governance of reconstruction .....	97
Democratic deliberation for informed decision making .....	99
Conclusions and main recommendations .....	103
Notes .....	104
Bibliography .....	105
<i>Annex 3.A1</i> .....	106
<b>Chapter 4 Regional innovation strategy</b> .....	107
Introduction .....	108
Upgrading and restructuring the regional economy .....	109
Connecting businesses .....	121
Skills and employment .....	132
Conclusions and main recommendations .....	138
Notes .....	140
Bibliography .....	143

<b>Chapter 5 Improving the use of the cultural heritage and natural environment</b> .....	147
Introduction .....	148
Natural conservation and regional development in Abruzzo .....	149
Improving and expanding the production of tourism goods and services .....	152
Conclusions and main policy recommendations .....	159
Note .....	160
Bibliography .....	161
<b>Chapter 6 An agenda for L’Aquila towards 2030</b> .....	163
Introduction .....	164
L’Aquila as a knowledge-driven city: Higher education and research .....	166
L’Aquila as a “smart city” .....	170
L’Aquila as a creative city .....	178
L’Aquila as an open and inclusive city .....	181
Conclusions and main recommendations .....	184
Notes .....	186
Bibliography .....	187
Annex 6.A1 .....	193
Annex 6.A2 .....	201
Annex 6.A3 .....	215
<b>Chapter 7 Lessons for policy making in post-disaster regions</b> .....	219

## Tables

Table 1.1. Values of innovation-related variables in Abruzzo, Italy and the OECD average, latest available years .....	37
Table 1.2. Trade balances in goods and services as a % of GDP (average 1995-2005) .....	43
Table 1.3. Number of municipalities of Abruzzo by classes of altitude and of population growth rates, 1951-2010 .....	47
Table 1.4. Local labour systems of Abruzzo: Basic socio-economic statistics .....	49
Table 1.5. Threats, implications and challenges in Abruzzo .....	62
Table 2.1. Typology of national municipal merger policies .....	75
Table 2.2. Number of regional laws and regulations in force (as of 31 December 2008) .....	82
Table 2.3. Key priorities and governance arrangements to overcome challenges .....	84
Table 4.1. SWOT of the Abruzzo innovation system .....	109
Table 4.2. Tasks for building an effective regional information and policy intelligence system .....	116
Table 4.3. Abruzzo’s regional innovation poles .....	119
Table 4.4. Types of university-business collaborative linkages .....	128
Table 4.5. Number of students enrolled in all degree courses, by university .....	129

## Figures

Figure 1.1. Administrative map of the Abruzzo region .....	31
Figure 1.2. Employment dynamics in the industrial sector (including construction), 1951-2007 .....	32
Figure 1.3. Main economic indicators in Abruzzo and Italy compared to OECD area .....	33
Figure 1.4. Unemployment rates in Abruzzo, compared with the average rate in Italy and in OECD regions .....	33

Figure 1.5. Share of employment in the industrial sector (excluding construction), 2011 .....	34
Figure 1.6. Sectoral specialisations in the Abruzzo region.....	35
Figure 1.7. Share of employment by size of firm in Italy, Abruzzo and its provinces, 2009 .....	36
Figure 1.8. Employment in knowledge-oriented services, 2008 .....	38
Figure 1.9. Geographical connectivity through co-patenting among inventors.....	39
Figure 1.10. Abruzzo’s share of Italian exports by sector .....	41
Figure 1.11. Rate of FDI openness by region, 2010 .....	42
Figure 1.12. Share of foreigners in total resident population, 2003-2011 .....	44
Figure 1.13. Average number of inhabitants in municipalities.....	45
Figure 1.14. Size distribution of municipalities with less than 10 000 inhabitants .....	46
Figure 1.15. The local labour systems (LLSs) of Abruzzo.....	48
Figure 1.16. Population density and population growth rates (2001-2010) in Abruzzo’s local labour systems .....	50
Figure 1.17. Population densities in Abruzzo’s local labour systems, 2010 .....	51
Figure 1.18. Population growth rate (1951-2010): Local labour systems and their core municipalities ...	52
Figure 1.19. Commuting interactions among the major local systems in the Abruzzo region .....	54
Figure 1.20. Municipalities of the <i>cratere</i> , by local system .....	56
Figure 1.21. Municipalities of the <i>cratere</i> , not including L’Aquila .....	57
Figure 2.1. EU Quality of Government Index: Perception of citizens.....	78
Figure 2.2. Institutional mapping (QSN, 2007-13; Abruzzo’s PAR FAS, 2007-13).....	83
Figure 3.1. Spectrum of public participation .....	95
Figure 3.2. Participation in the collective decision-making process.....	98
Figure 3.3. Information channels on the reconstruction choices .....	99
Figure 4.1. Sectoral and technological complementarities .....	110
Figure 4.2. Organisation and main functions of Abruzzo Sviluppo .....	114
Figure 4.3. Abruzzo regional innovation system actors .....	115
Figure 4.4. Regional innovation system linkages: From the micro to the meso.....	121
Figure 4.5. Regional innovation system: Typology of external and internal linkages .....	122
Figure 5.1. Natural parks in Abruzzo .....	150
Figure 6.1. Which slogan would you choose to re-brand L’Aquila?.....	167
Figure 6.2. Objectives for a smart city agenda in L’Aquila.....	172
Figure 6.3. Domains of most importance to guide development policies for L’Aquila .....	183





## Acronyms and abbreviations

<b>APQ</b>	Framework programme agreements
<b>CasMez</b>	<i>Cassa per il Mezzogiorno</i>
<b>CIPE</b>	Inter-ministerial committee for economic programming
<b>CUSR</b>	State-regions joint conference
<b>EU</b>	European Union
<b>EC</b>	European Commission
<b>EIB</b>	European Investment Bank
<b>FAS</b>	Fund for under-developed areas
<b>FDI</b>	Foreign direct investments
<b>FUA</b>	Functional urban area
<b>GDP</b>	Gross domestic product
<b>GIS</b>	Geographical information system
<b>GSSI</b>	Gran Sasso Science Institute
<b>KIS</b>	Knowledge-intensive services
<b>ICE</b>	Italian trade promotion agency
<b>ICT</b>	Information and communication technology
<b>INFN</b>	National Institute of Nuclear Physics
<b>ISTAT</b>	Italian National Institute of Statistics ( <i>Istituto nazionale di statistica</i> )
<b>HMT</b>	High and medium-high technology manufacturing
<b>LLS</b>	Local labour system
<b>MNE</b>	Multi-national enterprise
<b>PPP</b>	Public-private partnership
<b>QSN</b>	National strategic framework for regional policy
<b>R&amp;D</b>	Research and development
<b>SMEs</b>	Small and medium-sized enterprises
<b>SPAN</b>	Swiss Public Administration Network



## Executive summary

On 6 April 2009, Abruzzo was hit by a devastating earthquake centred in the regional capital, L'Aquila. As well as causing terrible personal suffering, including the death of 309 people, the earthquake was a significant economic shock, destroying the historical centre of L'Aquila, disrupting the social fabric, and jeopardising the long-term growth prospects of an already vulnerable region.

The OECD has assisted the government of Italy in designing a forward-looking strategy to re-launch the economy of the Abruzzo region after the earthquake. This report offers proposals for making the local economy sustainable, and strategy options for the region to both recover from the disaster and emerge stronger than it was before.

The report draws from the experiences in other OECD regions, either where natural disasters have caused the rethinking of the development model, or where long-term decline has forced such a rethink and outlines common guidelines for other OECD regions. It also helps design preventive strategies by providing an in-depth analysis of the various components of recovery policies. These shared experiences can provide valuable lessons to others: governments, decision makers, opinion leaders and community residents who want options and instruments for implementing change in their own localities. These common guidelines can provide a framework for countries to monitor experiences and good practices for policy making after a natural disaster.

### Key findings

Abruzzo has faced declining economic growth and a reduction in subsidies from the national government and EU since the 1990s, in addition to an ageing population and emigration from its rural areas. Increasing knowledge-intensive activities in its manufacturing sector is urgent if Abruzzo is to regain global competitiveness.

Universities and knowledge-driven institutions have a key role to play in building a lasting recovery in post-disaster regions. For L'Aquila, this means realising the full potential of its university and other knowledge bodies. They are key assets for generating income and employment.

The shock of the earthquake and its aftermath can be seen as an opportunity for Abruzzo to overcome its historic administrative, institutional and economic fragmentation. A renewal of its governance arrangements will need to include information sharing and effective incentives to enhance consistency in public action among policy makers in the area.

In the three years since the earthquake, community engagement in the strategic choices for the future of L'Aquila has been very weak. This has worsened social fragmentation and community distrust of local governments. International experiences show that community engagement and deliberation has a valuable role in post-disaster regions. It can help decision makers to formulate a strategic vision for redevelopment and

can help ensure that solutions fit local circumstances, thus creating a sense of community ownership.

## Key recommendations

The OECD recommends that Abruzzo design an integrated strategy for redevelopment that strengthens the dialogue among stakeholders and raises the profile of needed reforms and quality of decisions. This strategy should cover four key areas:

### Regional governance

- Foster inter-municipal co-operation to improve delivery of services in small municipalities and enhance regional initiatives for innovation activities and investment.
- Foster public deliberation, by engaging civil society and the private sector, as a regular part of the regional development strategy and its implementation.
- Improve accessibility and quality of information on reconstruction criteria and expenditure to restore trust in institutions and increase efficiency of public spending. Use policy evaluation and focus on results in order to improve capacity of local administrations.

### Regional innovation strategy

- Prioritise regional innovation poles in order to strengthen innovation leaders, upgrade existing technologies and diversify the knowledge base.
- Facilitate inter-firm linkages among multinationals and SMEs as well as their relationships with universities.
- Improve the use of skills and the matching of intermediate-level skills in the labour market by expanding vocational training.

### Cultural heritage and natural environment

- Integrate natural environment and cultural heritage management into regional development projects.
- Improve and expand the supply of tourist goods and services related to the natural resources and the cultural heritage of Abruzzo.

### Redevelopment of L'Aquila after the earthquake

- Help L'Aquila become “knowledge driven”, a city fully benefiting from its knowledge base, by raising the share of residential students, focusing on research excellence in natural and basic science and engineering, and strengthening the links among research centres, cultural institutions and local firms.
- Enhance the city's attractiveness by promoting key innovative services for energy efficiency, sustainable forms of transport, delivery of health services and information sharing.

- Use the reconstruction of the historical town centre to transform L’Aquila into a “creative city”, one that fosters cultural life and commercial offerings for creative investors and entrepreneurs (art, design, media, marketing, advanced engineering solutions, restoration, etc.).
- Develop a participative well-being index to monitor progress of society and recovery achievements.



## Assessment and recommendations

### Resilience and long-term regional development

On 6 April 2009 a large part of Abruzzo, Italy, was hit by a devastating earthquake (magnitude 6.3). The area affected amounted to 10.8% of the population and 22.2% of the region's territory, and the epicentre was in L'Aquila, a city of about 70 000 people and the capital of the region. The earthquake was a devastating shock to the region, killing 309 people, destroying the historic city centre of L'Aquila and tearing the social and economic fabric. After such a disaster, what does a region do to recover and to move on to become even stronger than before?

Abruzzo is a relatively low populated region of 1.3 million inhabitants, lying at the north edge of the Italian *Mezzogiorno* area (southern Italy), a macro-region that since the 1950s has received national and European support due to its persistent economic underperformance. Among the regions of the *Mezzogiorno*, Abruzzo was already the most developed in the 1950s and still has the highest *per capita* income. However, in the decade prior to the 2009 earthquake, its economy was slowing down. During that period its growth rate was lower than that of the rest of Italy and the OECD area; unemployment has increased and by 2011 the unemployment rate was up to 8.5%, a value higher than the national and OECD averages.

The magnitude of the shock of the earthquake, the economic and institutional effects it has provoked, and the previous state of the regional economy, make the case of Abruzzo particularly interesting for addressing a question which is of general relevance for all post-disaster regions, namely the resilience of regional systems. The resilience of a regional system is here defined as the ability to withstand, and to recover from, external, adverse shocks through adjustment processes that re-establish or enhance the previous state of the system. It follows that a sufficiently high degree of resilience is essential to maintain or enhance the long-term well-being in places that are exposed to the threat of natural disasters, the occurrence of which can abruptly force a re-allocation of resources and demand a shift towards a new development model.

This report also addresses the question of building resilience, which means to help a community to become less vulnerable to external shocks, so as to achieve a better long-term standard of living. The resilience of a regional system certainly depends on the capacity of private agents – households and firms – to conceive and implement appropriate adjustment strategies. Yet the role of public authorities, in particular their control over budgets and institutional development, is also of the utmost importance. Consequently, the resilience of a regional system deeply depends on the quality of how both the public and private sectors respond to social or natural shocks. And, as this report strongly emphasises, policy responses to natural disasters require an appropriate governance system based on community engagement and participation, in order to address their complex and long-lasting redistribution effects.

A natural disaster has, by definition, a territorial impact, destroying or damaging the physical capital of a place and its social fabric. Yet natural disasters rarely remain confined



within the boundaries of the place in which they happened. Any response to disaster requires the resources, capacity and organisation of both regional and national actors. As such, investigating the degree of resilience of regions at risk of a natural disaster, or after one, requires a place-based approach to policy.

Like most natural disasters, the 2009 earthquake had a specific regional dimension. Abruzzo is now a post-disaster region, both from an economic perspective, in so far as the 2009 earthquake destroyed a significant part of its physical capital and economic processes, and an institutional one, since regional governments in Italy have the responsibility to assess and counterbalance the local impact of social or natural shocks by relying on their own financial and organisational resources. Even if the physical and economic reconstruction of L'Aquila and all other municipalities affected by the earthquake is to be carried out also with the support of the central government, the amount of financial and organisational resources required to restore Abruzzo may turn out to be substantial. This will affect the entire economy of the region. From this view it is justified to describe the entire Abruzzo region as a post-disaster region and not to confine this definition to the area directly affected by the earthquake.

This report addresses four issues that are critical when building the resilience of a post-disaster region:

- First, there is the question of sharing the social cost of the natural disaster between the local, regional and national levels. The complexity of this issue depends on the strength of the shock as well as the institutional framework of each country. In the case of Abruzzo, for instance, and differently from previous earthquakes which have occurred in Italy in recent decades, a large historic city centre of exceptional architectural and historical value was destroyed. Private and public actors are confronted by one of the most difficult physical reconstruction efforts in Italy in a century. This is a task that goes largely beyond the financial and organisational capacity of the Abruzzo region, and many other OECD post-disaster regions also face this problem of being overwhelmed by the scale of their disasters, greater than their own capacity to respond.
- Second, there is the question of the overall net effect on the competitiveness of a place affected by a natural disaster. Indeed, the physical and economic reconstruction policy may profoundly change the economic incentives that were rooted in the place. National and regional governments need to identify and implement new frameworks to enable improvements to existing firms and to attract new enterprises and jobs to support recovery.
- Third, there is the question of affected regions whose economies were already struggling before the natural disaster. In this case, a natural disaster may be the catalyst to understand which strategic choices are available to break with the historic development path and ultimately to regain economic growth.
- Finally, since the full recovery from a natural disaster will take time, policy makers should also identify the actions with the greatest potential of having a rapid impact on the economy and society as the region attempts to recover.

There is a large literature base in the disaster studies field that deals with issues relating to the trauma experienced by communities in the wake of natural disasters (Benson and Twigg, 2007; Rodriguez, et al., 2007); these matters are well beyond the remit of this report, however. Similarly, this report does not deal with matters relating to physical reconstruction or rebuilding. Rather, we identify good practices for policy making in the wake of a disaster for long-term development, particularly for regions already facing economic challenges. The

report also discusses ways in which such regions can get back on a track to growth after a significant shock.

Finally, the external shock discussed in this report is that of a natural disaster. Different regions across the OECD, and beyond, are susceptible to different forms of natural disasters: earthquakes, cyclones, floods, hurricanes, forest fires, water shortages, drought or other. However, many of the governance and strategy issues discussed in this report also provide powerful lessons for regions that are not particularly susceptible to natural disasters, but are potentially vulnerable to other kinds of shocks. This includes regions that are vulnerable to the major economic shocks associated with globalisation, such as the closure of large factories, the collapse of local production systems or the loss of trade opportunities. OECD countries will find in this report many lessons for helping regions to cope with external shocks that are well beyond the capacity of the local administration to control. Eight guiding recommendations for building resilient regions after a natural disaster are presented in Chapter 7.

### The Abruzzo earthquake of 2009

The earthquake of 6 April 2009 hit the regional capital L’Aquila and other 56 small towns in the centre-west part of the Abruzzo region. It encompassed an area (*cratere*) of about 22% of the total regional surface. The earthquake caused 309 deaths; additionally, around 67 500 of the 140 000 people living in the area were displaced. Most of the damage was concentrated in L’Aquila, which alone counts for half of the population of the *cratere*.

Thirty-seven thousand buildings were damaged, of which 1 000 were public buildings, 2 000 were of historic or architectural value, and the remaining 34 000 private establishments. The renowned historic centre of L’Aquila was severely damaged and its reconstruction has proven difficult. Around EUR 3 billion was spent on the emergency relief in the aftermath of the earthquake and an additional EUR 8 billion has been allocated for the physical reconstruction of private and public buildings. Additional costs in the form of fiscal advantages, tax waivers and other services are also forecast.

## Social and economic assessment of Abruzzo

The 2009 earthquake heavily damaged 57 municipalities, including L’Aquila. More than 67 000 people were displaced and 37 000 buildings damaged. Around EUR 3 billion were spent on emergency relief and an additional EUR 8 billion have been allocated for the reconstruction of private and public buildings.

In addition to the economic impact of the earthquake, there have been four important changes in the economic and institutional context in which Abruzzo has operated in recent years:

- First, starting from 1999 the Abruzzo region is no longer entitled to receive the large amount of national and European aid linked to the European Cohesion Policy for “Objective 1” regions that had shaped its earlier strategic behaviour, and, consequently, its economy and quality of life in previous decades. The reduction of money available for investment and public incentives has radically modified the location advantages that had fostered exogenous and endogenous economic growth in the past, and promises to mark a new phase in the economic history of this region.
- Second, since the 2008 global economic crisis the financial resources available to Abruzzo’s local authorities have been sharply reduced by the stabilisation policy put in

place to fund the Italian public debt. The constraints on public spending also impact budget re-allocation measures between policy areas with differentiated effects at the local level.

- Third, during the 2000s, the Italian economy was characterised by stagnation, which has adversely and significantly influenced the economic performance of Abruzzo by reducing its domestic demand. Along with most European economies, there is no expectation of a significant increase in the growth rate of the Italian economy in the near term.
- Fourth, the increased internationalisation of the European and Italian markets that has followed the introduction of the EU single market and of the common currency has put further pressure on the local economy of Abruzzo, and particularly on its manufacturing sector, by changing its competitive base. This is an issue of great relevance for a region that, as a result of the public incentives provided since the 1950s, hosts a number of multinational manufacturing enterprises. These firms tend to evaluate the location advantages of their operations in a global context, and this has a major impact for the small and medium-sized firms in the traditional manufacturing sectors.

The consequences of the institutional, economic and natural shocks briefly described above need to be taken into account when investigating the Abruzzo region's resilience and its long-term development trajectory. Indeed, Abruzzo has to confront the four main threats arising from the long-term effect of the economic crisis and the 2009 earthquake.

- A shrinking manufacturing sector. Globalisation and increased international competition, together with reduced external aid, are putting pressure on the region's manufacturing base, both in terms of total employment and productivity per worker. As a result, it has been challenging for Abruzzo to maintain or improve upon its current manufacturing performance. This will not easily be offset by the dynamism of the region's other sectors, such as tourism, advanced services, and agriculture, whatever a realistic estimation of their expansion potential in the next decade might be. Indeed, the shrinking manufacturing sector could likely cause further economic decline in Abruzzo.
- Increasing territorial polarisation. Since the 1960s, the Abruzzo region has undergone dramatic polarisation: only 5 out of its 19 "local economic systems" have experienced population growth. The presence of rural and mountainous areas, as well relatively small urban agglomerations, is also a cause of youth outmigration. The most important negative economic outcome of territorial polarisation in a mountain region like Abruzzo is the amount of physical, cultural, ecological, human and relational capital – collectively termed "territorial capital" – that has remained unused and that has therefore started to decay. By disrupting or leaving unused important elements of the local capital, territorial polarisation substantially reduces the potential contribution of agriculture and tourism to the local economy.
- Decreasing attractiveness of urban areas. The large urban areas in Abruzzo, and in particular the reconstructed L'Aquila, should upgrade their energy efficiency and sustainable modes of transport, as safety, vitality and attractiveness are increasingly important factors for people and firms deciding where to live and situate themselves. If a city cannot keep pace with the expectations of residents and visitors in terms of urban quality, its attractiveness will gradually decline and investments and innovation will decline.
- Limited knowledge generation and transmission. Knowledge is central to the economic growth and the development potential of all advanced economies. The most successful regions are those that mobilise all of their local knowledge assets in ways that best drive local and regional development. In particular, human capital investment appears to be one

of the most robust elements supporting growth in all types of regions. Gains in productivity depend on the presence of skilled workers as well as better use of their skills and of the knowledge produced there or elsewhere (OECD, 2011). In order for regions to reach their development potential, it is essential to configure institutional and governance arrangements so that knowledge flows as freely and effectively throughout the region as possible, and also to ensure that the knowledge is used as effectively as possible by all actors. Openness, engagement, co-ordination and co-operation are key features of resilient regional systems.

## **Main recommendations for implementing an integrated regional development strategy in Abruzzo**

The design of an effective development strategy for the Abruzzo region and for the areas affected by the 2009 earthquake requires a new vision for, and rethinking of, the region's potential. The need for such a rethinking arises not only because of the impact of the earthquake but also because of the long and slow downward trend the region experienced during the preceding decade. In this context, Abruzzo needs to focus on local resources to build its development strategy and, at the same time, to increase the openness of the regional system to attract more immigrants, entrepreneurs, students and external capital. This fosters economic development and improves the quality of life. The integrated development strategy presented in this report, therefore, may represent a useful framework for Abruzzo's long-term policy-making process.

This regional development strategy is a single, integrated and holistic framework for action in Abruzzo, made up of four main inter-locking pillars: improve the regional governance system; implement a regional innovation strategy, improve the use of cultural heritage and natural environment, and increase the attractiveness of cities through technologies to deliver quality services. These four pillars have synergies: transparent and inclusive decision making, for example, can strengthen networks between economic actors and help innovation transmission; the natural, cultural and heritage resources of the region are a major asset for producing innovative services; and a major benefit of the "smart city" agenda for cities is to foster governance innovation, by combining technology-led innovation with institutional innovation across the private, public and civil society sectors.

No single pillar alone will produce the desired outcomes, but rather their integrated action offers the best possibilities for development. This holistic approach is also underpinned by the logic that while small individual actions at first appear to contribute little to the overall outcome, a range of small actions and interventions undertaken across a broad front can collectively begin to have a larger impact. Hence the monitoring, reporting and communication of these outcomes is very important for driving progress.

An overall regional strategy should draw on the development strategies of the local economic systems, designed by leading local authorities who have identified their specific priorities and designed implementation strategies at the local level. This report focuses on the local development strategy of L'Aquila and its functional urban area. L'Aquila was dramatically hit by the 2009 earthquake and is one of the places in the region most in need of a long-term development strategy. As stated previously in OECD (2009), this long-term development plan should build upon L'Aquila's knowledge dimension and foster a knowledge-driven, creative, smart and open city as described below.

### ***Strategic pillar 1: Improve the regional governance system***

While the Abruzzo regional government will continue to play a key role in designing and implementing the development policies of the region, new multi-level governance arrangements are necessary to cope effectively with the threat posed by the current economic environment and possible future threats. Changes to the territorial governance system are required in the following three directions:

- Reshape the territorial governance of the region to overcome administrative fragmentation and strengthen the largest functional urban areas.
- Improve the quality of decision-making processes by engaging community deliberation in the definition of regional development strategies.
- Improve the capacity of administrations in multi-sectoral planning, the transparency and accountability of policy making and the dialogue with public and private stakeholders.

Attempts to introduce changes in the Italian legislation concerning the system of local governments and governance were introduced very recently with the aim of reducing the number of municipalities and provinces by integrating the small ones, and recognising the institutional functions of large metropolitan areas (Law 95 of July 2012). Abruzzo should make the best use of this reform to establish more robust forms of governance. Because of the high number of small municipalities in the region, inter-municipal co-operation would greatly enhance the effectiveness of policy intervention in Abruzzo. Similarly, the two main urban areas of Pescara and L'Aquila should strengthen the integration of policies with the surrounding municipalities (their functional urban areas). Reshaped governance would also improve the efficiency of the regional innovation system and the co-ordination with other levels of government.

Improving the regional governance systems means above all upgrading the quality of decision making by turning it into an open, participative, accountable and transparent process. Community engagement can provide reasoned public input in difficult strategic decision making, and can therefore be useful to help decision makers to better understand the multi-dimensional aspects of the problem, identify solutions for the implementation, and ensure that the strategy fits the set of circumstances that people experience. For this reason, open and inclusive decision making should become part of defining a regional development strategy.

The institutional setting put in place after the earthquake, which envisaged the appointment of Commissioners for the reconstruction in addition to the ordinary administrations, was in place for more than three years. Such a long period of governance in the emergency appears to have somewhat hindered the dialogue between institutions and citizens, increasing distrust and preventing effective community participation to the decision-making process. The new governance approach set up by the central government in 2012 has established a clear path of transparency and information regarding the reconstruction that should contribute to restoring civil and social trust and increasing the efficiency of public spending. Such a path should now be supported with the lead of regional and local institutions in producing and disseminating information to all (through for example a centralised website and a one-stop-shop office), and to improve mechanisms for democratic deliberation.

All information produced must be perceived by local decision makers and citizens as being credible, salient and legitimate (Cash et al., 2003), and good communication, translation and mediation must become standard tools for operating in the local context. The use of these tools and open dialogue can best be facilitated by the establishment of local institutions comprised of a range of local stakeholders and citizens, as well as people with professional expertise in these roles who can lead the monitoring and the communication of societal progress.

### **Main recommendations for improving the regional governance system**

**Abruzzo should develop an integrated approach to redevelopment after this natural disaster**, by building on a strategic vision for the region, one that strengthens the dialogue among stakeholders and raises the profile of needed reforms and quality of decisions. The process of decision making should be accompanied by the identification of the conditions for the implementation of the strategy, the actors involved and the different responsibilities. Bearing the social cost of a natural disaster is a burden that largely goes beyond the financial and organisational capacity of the affected region. Therefore co-operation among public-private actors and different levels of government is needed to help the community to rise to a better level than before.

**Abruzzo should exploit the opportunity to redesign the horizontal structure of its governance system**, by designing flexible co-operation schemes for small municipalities and integrate spatial, economic and social interventions in the functional urban areas of Pescara and L'Aquila. This new arrangements would improve the delivery of services in small municipalities, increase the efficiency of the entire region also with regards to the innovation strategy and improve the co-ordination with other levels of government (regional and central).

**Public deliberation should become a regular component of the regional development strategy**. Identify possible channels for democratic deliberation, clarify where the results of the deliberation will be seen, and create also physical spaces for civic participation. International experiences suggest that measuring the key outcomes of a region's strategy, chosen by the community, is critical to monitoring progress, motivating citizens and policy action. Flexible systems of governance prioritise partnership and engagement, and this is crucial for fostering the types of co-operation and collaboration which can help with the monitoring of regional performance and the adjustment of strategies and plans. The aim of all forms of local and regional leadership should be to build a local and regional setting where common purpose and widespread stakeholder engagement over the medium and long-term become the norm.

**Abruzzo should restore trust in public governance, by increasing the accountability of policy making and improving the capacity of administrations**. To start with, efforts should be made to secure the improvement of the accessibility, quality and disclosure of information on reconstruction expenditures, its criteria and timelines. Then resources – skills and funds – should be invested to provide information systems for gathering and sharing key outcomes of the regional development strategy. Targets of accountability, transparency dialogue with private stakeholders and civil society, as well as multi-sectoral planning cannot be achieved without a co-operation pact of all interested actors. Policy evaluation has a decisive role in offering insights on conditions, causalities and bottlenecks for the implementation of policies and in suggesting ideas for how to revise objectives, re-allocate resources and identify the tools to deliver results.

### ***Strategic pillar 2: Implement a regional innovation strategy***

The creation and diffusion of knowledge and entrepreneurial activities is at the core of a development strategy for Abruzzo. Economies which have performed poorly over the last two decades are generally those in which such transmission mechanisms for knowledge have been weak or fragmented, resulting in limited ability to adapt new technologies to the local context (OECD, 2011).

Abruzzo has an opportunity to build on its regional advantages and diversity to support economic restructuring and regional growth. These advantages include the region's manufacturing base, its abundant natural, cultural and artistic resources, and the presence of three universities. However, several weaknesses need to be addressed to avoid decline. The

systemic dimension of the regional productive structure and innovation assets is extremely fragile. The lack of internal and external connectivity is a priority which must be addressed in regional and local strategies through different brokering and collaboration-promoting instruments and institutions. Furthermore, the firm base of many low-technology small and micro-enterprises, including family-owned firms, results in low levels of innovation capacity due to lack of firm scale and skill gaps. Efforts to stimulate the demand for innovations among the region's firms are therefore an imperative. The recent regional development law (July 2012) is an important step to overcome the fragmentation of public and private stakeholders. The previous fragmentation had prevented the identification of a coherent and integrated development strategy and the alignment of objectives and priorities at the various level of governance.

The process of reconstruction of regional advantage should be based on the concept of the regional integrated platform, which should aim to achieve *i*) technological upgrading and sectoral structural change on the basis of *ii*) related variety and *iii*) a diverse knowledge base. This could be achieved through the set-up of an evidence-based policy platform able to facilitate inter-sectoral linkages and knowledge flows across the entire economy.

### **Main recommendations for a regional innovation strategy**

To improve and restructure the economy, **Abruzzo will need to make targeted strategic priorities and address fragmented governance.** The increasing number of innovation poles at the core of the current regional strategy requires prioritisation based on the most promising avenues for economic upgrading through related variety. Abruzzo Sviluppo, the regional innovation public agency, has been designated by the Abruzzo region as an important public actor for implementing regional actions. Its capacity and networking role should be strengthened to help address the dispersed public governance within the region across different provinces and municipalities. Building on the Abruzzo Development Pact, ongoing strategy guidance from public, private and non-profit actors could also serve to unite regional innovation system actors around the regional goal. Regional efforts will also need to be supported by better data and policy intelligence, to which the regional universities could contribute. The strong strategy and more coherent governance will allow the region to better engage with national policy makers and beyond, such as in the Adriatic Ionian Macro region.

**Regional policy instruments need to cultivate inter-firm linkages among multi-nationals, SMEs and universities; and to upgrade firms that are not innovation-ready.** The various policy tools in place – notably the innovation poles – are oriented in the right direction for supporting a transition through related variety. However, they will succeed only insofar as they are able to ensure strong connectivity and openness. Such connectivity is needed within and beyond the region by developing and strengthening inter-firm and inter-industry backward and forward linkages, and knowledge networks among different types of actors (e.g. business firms, universities, educational system). Universities have a range of opportunities for university-business linkages that can be increasingly tailored to the economic development needs of the region.

To increase employment and make a better use of skills, **the region needs to promote adapted higher education and vocational training that will support better opportunities for an effective use of skilled graduates and workers.** Universities have an important role to play in the regional economy as drivers of economic development, such as the role of the University of L'Aquila for the city, but also as providers of education, training, and research of relevance to regional labour market and innovation needs. Given the education-job mismatches in Abruzzo, both more sophisticated vocational training and more relevant university education are critical. Finally, more efforts are needed to ensure jobs that make use of skilled graduates to retain those formed in the region and attract more.

### ***Strategic pillar 3: Improve the use of cultural heritage and natural environment***

Abruzzo has a particularly rich cultural heritage and attractive natural environment, two elements of territorial capital on which a strategy of integrated and sustainable touristic development can be based. The creation of two large national parks in the early 1990s and the expansion of the existing National Park of Abruzzo was a watershed in the tourist development policy of the region, which became the leading region in Italy with regard to the conservation of natural environment and human landscapes. The subsequent institution of a further two regional parks was another step in this direction. Even if a large number of tourists visit the natural parks and the potential of skiing in Abruzzo mountains is exploited, there is still a very large territorial capital that could be put to better use in the tourism sector.

The territorial capital in Abruzzo is constituted often by small elements (towns, architectural values, rural landscape, etc.) highly dispersed in the territory of the region. This is one of the fascinating features of the Italian Apennines Mountains, and it is particularly evident in the case of Abruzzo. To develop tourism systems formed by small and dispersed elements means to design and implement hundreds of small development projects in a co-ordinated way, as to increase the economic return. This of course adds a measure of complexity for the regional development plan.

There are a number of touristic goods that can be produced or expanded in the mountainous areas of Abruzzo, such as naturalistic tourism, cultural tourism, temporary residence, neo-rural production processes, high quality agriculture, etc. In order to produce high-valued tourist goods and services, organisational efforts are needed to co-ordinate and network the various experiences and the different elements making up the touristic goods (quality of the lands, biodiversity, architectural values, etc.).

#### **Main recommendations for improving the use of cultural heritage and natural environment**

**Abruzzo should develop an integrated plan for its natural environment and cultural heritage that better connects the fragmented small development projects.** Building on the past experiences of conserving its natural environment, Abruzzo should acknowledge the small and scattered nature of its territorial capital, and focus on the social and environmental quality of each local project to develop a sustainable tourism strategy. The territorial specificity of the cultural assets and ecological systems is a challenge to tourist policies in Abruzzo and should be addressed with an appropriate governance mechanism to generate effective policies and actions.

**Abruzzo could produce extremely high quality tourist services on the basis of the existing territorial capital.** Abruzzo should put together the high variety of valuable elements (landscape, architectural values, biodiversity, etc.) to produce marketable tourist products. Even though this may result in a challenging task, it would give Abruzzo a stable niche in the national and international markets.

### ***Strategic pillar 4: Increase the attractiveness of cities through technologies to deliver quality services***

There is a large gap between the actual and potential technological organisation of cities, as only a portion of the vast array of new technologies available is currently applied. The introduction of new available technologies could potentially radically



change: *i*) the energy efficiency and environmental sustainability of a city, *ii*) the provision of private and public services, and *iii*) the learning potential of individuals and organisations. The **smart city** concept emphasises the inter-relationships between new technologies and new systems of activities, organisation and governance. These can be identified, harnessed, and fostered in beneficial ways for social progress. The objectives for a smart city agenda require a specification of the optimal spatial scale at which to apply the smart city concept, whether one focuses on transport, energy, mobility or health-care provision. This report suggests that the smart city agenda should refer to the main functional urban areas of the region.

There is no single template for a smart city. Different places are experimenting with different approaches. In each locality, the smart city challenge is to identify the appropriate social, economic and environmental priorities which the local smart city agenda is designed to respond to, and to identify the best ways to achieve the desired outcomes. The process of policy-prioritisation necessarily involves processes of deliberation between all interested local stakeholders, and such local and bottom-up approaches mean that a smart city vision cannot be imposed from outside. A widespread and strong sense of ownership by the local community is essential for any smart city programme to be sustainable and successful. L'Aquila can use the available resources to adopt smart technologies in the reconstruction and become a benchmark for other cities in the region and in Italy.

#### **Main recommendations for increasing attractiveness of cities through technologies to deliver quality services**

**The main functional urban areas in Abruzzo should pursue a smart city agenda.** Three main pillars could form the backbone of the smart city agenda: *i*) to configure new energy and sustainable environmental management systems; *ii*) to establish information technologies to improve the delivery of health services to the population and the active engagement of seniors; *iii*) to set-up information and communication technologies to improve information flows in the city.

**Governance innovation should be encouraged to better design and implement a smart city programme.** Smart systems generally imply new modes of co-operation, because they span traditional sectoral, institutional or jurisdictional arenas. They also combine technology-led innovation with institutional innovation across the private, public and civil society sectors. Such innovation will reshape the information flows in the city, responding more effectively than in the past to the community's needs and demands.

### **L'Aquila as a paradigm for local and regional policy**

As outlined above, the report recommends a regional strategy based around four main components. There is a regional dimension to the recommendations, since their implementation is expected to have an impact on all places in Abruzzo, albeit to varying degrees, depending on each area's specific qualities and socio-economic structure. Abruzzo, for example, has a territory which is highly fragmented in administrative terms and markedly differentiated in economic and social terms. Therefore each locality, besides understanding how the regional strategy would impact on its territory, should also identify development strategies on the basis of its specific trends and assets. The regional development strategy would then be generated by the mutually beneficial interaction of regional and local policies.

In the case of L'Aquila the development strategy proposed in this report is built around the vision of the “city of tomorrow” or “L'Aquila towards 2030”. Such a vision could turn into a set of policies and interventions leading the city of L'Aquila to fulfil the ambitious objective of becoming a city with a very high quality of life by 2030. The quality of life is interpreted as correlated both to the well-being of the population and as a critical factor of attractiveness and economic success in a globalised world.

L'Aquila can serve as a model for 21<sup>st</sup> century living in the Abruzzo region and Southern Italy: a place which builds on, links to, and celebrates its heritage, its culture, its environment, and its science and technology, and does so with the express intention to involve all of society in the creation of high-quality living for future generations. L'Aquila can become a “living laboratory” of how a community can come together to engage in the re-design, the re-thinking, and the re-launching of its own future. Such a strategy for L'Aquila is encapsulated around four components: **knowledge-driven, smart, creative and open city**.

### **Main recommendations for L'Aquila as a knowledge-driven, smart, creative and open city**

**L'Aquila should aim at becoming a university city** by raising the share of resident students, turning the University of L'Aquila into a key pillar of the local economy in terms of employment and income generated. There are solid grounds to set this ambitious goal for L'Aquila. Before the earthquake the university was highly regarded in the natural sciences, the applied sciences, and engineering. Moreover, the presence in the city of the world-renowned Gran Sasso National Laboratory and the newly launched inter-disciplinary Doctoral School Gran Sasso Science Institute – significantly add to the academic reputation of L'Aquila as a place of higher education and research. Strengthening the links between research centres and firms is also a priority.

**L'Aquila should aim to become a smart city**, configuring sustainable environmental systems; adopting ICT technologies to deliver local services and improve the information flow in the city. L'Aquila could become a laboratory of innovation and promote demonstration effects for the region and other cities.

**L'Aquila could rapidly become a creative city** that fosters cultural life and commercial offering to creative investors and entrepreneurs (art, design, media, marketing, advanced engineering solutions, restoration, etc.). The physical reconstruction of the historic centre will offer the opportunity to attract highly skilled labour able to command advanced technologies and specialised knowledge. The university can play a major role in driving a creativity-led local and regional development agenda by connecting more with the civil society, the private sector and other public sector organisations. Along with the university, other relevant cultural institutions already established in the city – such as the Academy of Art, the Music Conservatory and the outstanding theatrical tradition – all provide great potential for re-establishing L'Aquila as a creative city, in which the applications of knowledge, research, design and development all underpin local economic activities.

**To develop a lasting recovery in L'Aquila, community engagement and deliberation should be supported.** When communities affected by a natural disaster are allowed to embark on a participatory process, this facilitates a lasting recovery as the complex redistribution effects of the disaster will be addressed. L'Aquila could develop a participative well-being index to publicly monitor progress of society and accomplishments of results beyond the recovery period.

## Methodology of the study and structure of the report

This OECD study was undertaken at the request of the Department for Development and Economic Cohesion in the Ministry of Economic Development (National Operational Program “Governance and Technical Assistance ERDS 2007–2013”), following previous work carried out in the aftermath of the 2009 earthquake for the re-launching of a sustainable development agenda for L’Aquila (OECD, 2009). The OECD work was carried out in collaboration with a group of ten academics from six countries and three additional external experts from two other countries, all co-ordinated by the University of Groningen, who received a request for the study from the Regional Business and Unions Associations (*Confindustria*, *CGIL*, *CISL* and *UIL*). During the period of the study a Steering Committee was established, comprising the two institutions that requested the report and representatives of regional and local administrations. Preliminary results and progress of the report were discussed during the five meetings of the Steering Committee.

This report offers proposals to improve sustainability of the local economy and provides strategy options for the region to both recover from the disaster and emerge stronger than it was before. The study not only assessed the views of various stakeholders, but also aimed to build the strategy as a collective good, mirroring the variety of stakeholders’ perspectives. As such, some of the research team’s proposals were discussed through local public debate and reformulated, before being disregarded in some cases or receiving support from the local community in others. Different methods were employed to ensure a participative process:

- More than fifty face-to-face interviews were undertaken with national, regional and local institutions, civil society, firms, business and trade-union organisations.
- Two participatory events to gain a sense of local priorities from the perspective of the community and building commitment to change (16 March 2012; 6 July 2012).
- A public forum “Abruzzo Towards 2030: On the Wings of L’Aquila” (17 March 2012) attended by more than 300 people representing local and regional institutions, including the President of the Abruzzo region and the Mayor of L’Aquila, the Head of the University of L’Aquila, the business sector and civil society. The forum discussed priorities for a regional development strategy and the rebirth of L’Aquila after the 2009 earthquake on the basis of an issues paper prepared by the research team (OECD and the University of Groningen, 2012). The forum was chaired by the national Minister for Territorial Cohesion and concluded with comments by the Italian Prime Minister, Mr. Mario Monti, together with the Minister for Research, Education and Innovation, and the Minister of Interior. Guest speakers from Japan, New Zealand, Turkey and the United States shared their experiences of redevelopment of regions after a natural disaster. The forum has helped to create a strong momentum for change.
- A workshop on “Firms’ Networks, Skills and Competences: Linkages between Universities, Research Centres and the Business Community” was hosted by the University of L’Aquila. (5 July 2012) The workshop discussed conditions, actors and instruments for a long-term economic development strategy in Abruzzo with representatives from the University of L’Aquila and University of Teramo, Gran Sasso physics laboratories, main representatives of firms, and regional authorities in charge of regional innovation strategy.

- A community survey in L’Aquila to collect information regarding the perceived knowledge of and participation to post-earthquake reconstruction choices; long-term expectations for jobs and quality of life in the rebuilt L’Aquila; and the strategic choices for the development of the region (June and July 2012).
- A survey on public governance targeted at central, regional and local administrations responsible for those policy areas that are considered as bearing significant potential for local and regional development (February 2012).

The report is structured as follows: Chapter 1 provides a description of the economic and social performance of the region, its territorial organisation and the challenges ahead. Chapter 2 describes the integrated regional development strategy for Abruzzo and the governance system needed for its implementation. Chapter 3 provides a description of democratic deliberation processes undertaken to support development strategies in post-disaster regions. Chapters 4, 5 and 6 detail the policy actions of, respectively, the regional innovation strategy, better use of cultural heritage and natural environment, and the development strategy for L’Aquila. Finally, Chapter 7 outlines lessons for policy making in post-disaster regions. These lessons provide a guiding framework to monitor experiences and good practices for policy making after a natural disaster.

## *Bibliography*

- Benson, C. and J. Twigg, (2007), *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations*, ProVention Consortium, Geneva.
- Cash, D., W. Clark, F. Alcock, N. Dixon, N. Eckley, D. Guston, J. Jager and R. Mitchell (2003), “Knowledge Systems for Sustainable Development”, *Proceedings of the National Academy of Sciences*, Vol. 100, No. 14, United States.
- OECD (2009), “Spreading the Eagle’s Wings so it May Fly: Re-launching the Economy of L’Aquila Region after the Earthquake”, [www.oecd.org/gov/regionaldevelopment/43307733.pdf](http://www.oecd.org/gov/regionaldevelopment/43307733.pdf).
- OECD (2011), *Regions and Innovation Policy*, OECD Reviews of Regional Innovation, OECD Publishing, doi: 10.1787/9789264097803-en.
- OECD and University of Groningen (2012), *Building Resilient Regions after a Natural Disaster: Abruzzo towards 2030: On the Wings of L’Aquila*, issues paper presented at the OECD Forum, L’Aquila, 17 March 2012.
- Rodriguez, H., E.L. Quarantelli and R. Dynes (eds.) (2007), *Handbook of Disaster Research*, Springer, Heidelberg.



## *Chapter 1*

### **Regional trends and development challenges in Abruzzo**

*Abruzzo is a small region in Southern Italy. It has been experiencing substantial socio-economic stagnation since the early 1990s and is struggling to recover from a devastating earthquake that hit its capital city of L'Aquila and the surrounding area in 2009. The region, close to and highly connected with Rome, has also been challenged by the ongoing economic crisis as well as by its demographics. This chapter looks at Abruzzo's economic base and the impact of the 2009 earthquake on it. It asks how Abruzzo can regain competitiveness, in the context of the catastrophe and given the region's territorial organisation and its administrative and institutional fragmentation.*

This report takes as starting point for the analysis the social costs a natural disaster imposes upon a region. It focuses on the **resilience** of affected regions; that is to say on the capacity to recover from the effects of a natural disaster.

The report does not discuss the capacity of a given region (or place) to minimise the effects of a natural disaster. Obviously, resistance is a critically important attribute of territorial systems. The higher the resistance, the lower the social costs imposed by a given natural disaster. Improving the resistance of a territorial system, through pre-disaster planning, should be regarded as a fundamental policy objective in any region.

The resilience of a regional system largely depends on the resources that can be re-allocated to deal with the social consequences of the natural disaster and on the cognitive capacity of the territorial system to design and implement appropriate adjustment strategies. Consequently, after a natural disaster (or prior to it) a key priority is to assess the economic and cognitive resources that it possesses to react effectively to the imbalances brought about by the natural disaster.

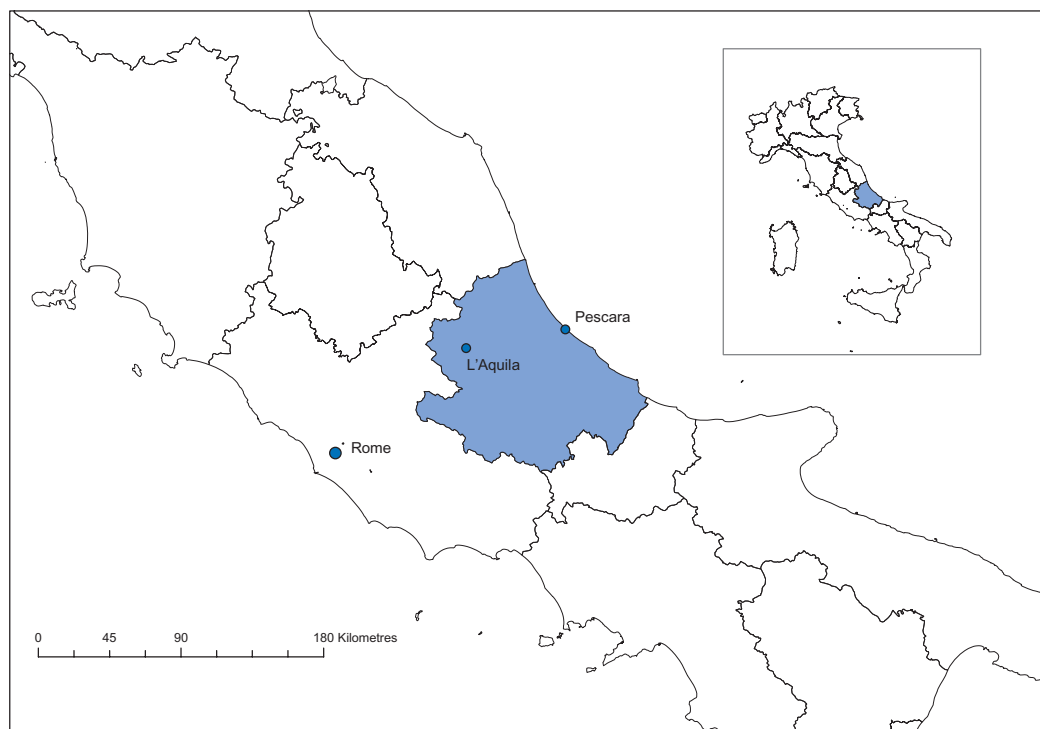
This chapter conducts an assessment of the resilience of the Abruzzo region, with regard to the disequilibria generated by the 2009 earthquake. The economic strength of the Abruzzo region, and of the sub-region (*cratere*) directly affected by the earthquake, will be discussed first. Secondly, the political-administrative and functional organisation of the region will be analysed to highlight the importance of an effective governance system for regional development in Abruzzo, and more generally in post-disaster regions. Finally, this chapter will also address the adjustment processes required by Abruzzo to cope with the economic and institutional changes that have been affecting its development trajectory in the past decades. If the region was coping with economic difficulties by making structural adjustments before the natural disaster, it is crucial to understand how the effects of the natural disaster will impact the adjustment processes in the future.

## The economy of Abruzzo

*As with other regions of Mezzogiorno, the economic trajectory of Abruzzo was shaped by the National incentive schemes of the Cassa per il Mezzogiorno*

With its 1.3 million residents, a total employment of 493 600 units and a territory of 10 753 km<sup>2</sup>, Abruzzo is one of the least populated Italian administrative regions (*OECD Regional Database*, 2011). In the standard macro-regional partition of Italy, it belongs to southern Italy (*Mezzogiorno*) – that is, to a macro-region whose economic under-performance has been since the Italian re-unification at centre stage in the political agenda and whose *per capita* GDP is still nowadays around 68% of the Italian one (that of Abruzzo is around 85%). Geographically, it is located in the central-southern part of the country, overlooking the Adriatic Sea in the eastern side and the metropolitan area of Rome on the western side (Figure 1.1).

Figure 1.1. Administrative map of the Abruzzo region



*Note:* This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

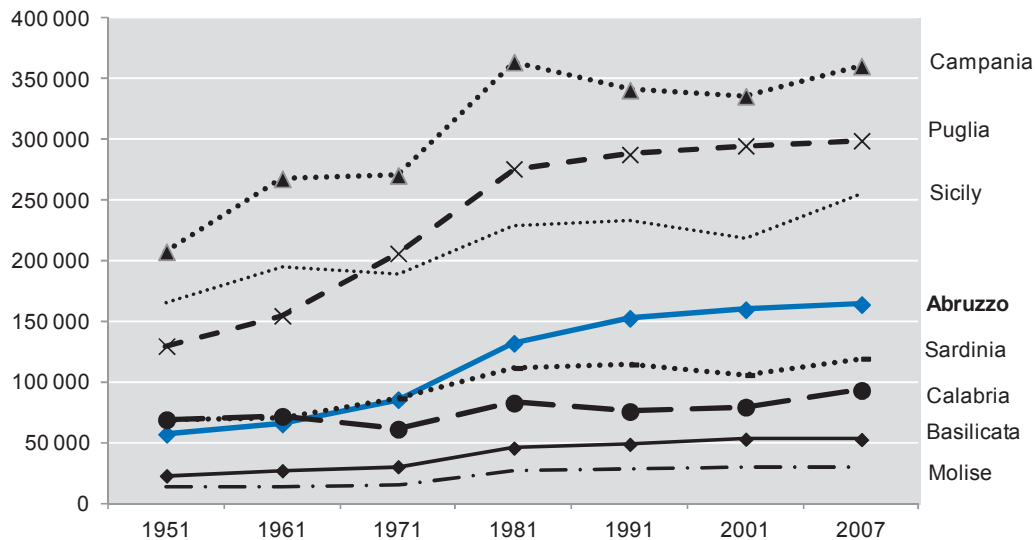
*Source:* Italian National Institute of Statistics (ISTAT).

Together with other regions located in Southern Italy, Abruzzo benefited from the *Cassa per il Mezzogiorno* (CasMez) national development program in the period 1950-1984 and successively from the *Agenzia per lo sviluppo e la promozione del Mezzogiorno* (AgenSud) until its closure in 1992. By its nature the incentive schemes administered by the CasMez stimulated direct investments from other regions and countries, and fostered the localisation of large plants within its boundaries.

The programme of public incentives provided by the national government since the 1950s has undoubtedly affected the employment dynamics of Abruzzo. Looking at total employment in industrial sectors (manufacturing and construction), Abruzzo showed its largest increase of jobs during the 1970s, while the number of people in employment has been stable since the beginning of the 1990s (Figure 1.2). When compared with other regions of the *Mezzogiorno* (Campania, Puglia and Sicily), Abruzzo's rapid growth of employment did not start in the 1950s, but later in the next decade, following the pattern of the other small (in terms of population) regions.



Figure 1.2. **Employment dynamics in the industrial sector (including construction), 1951-2007**



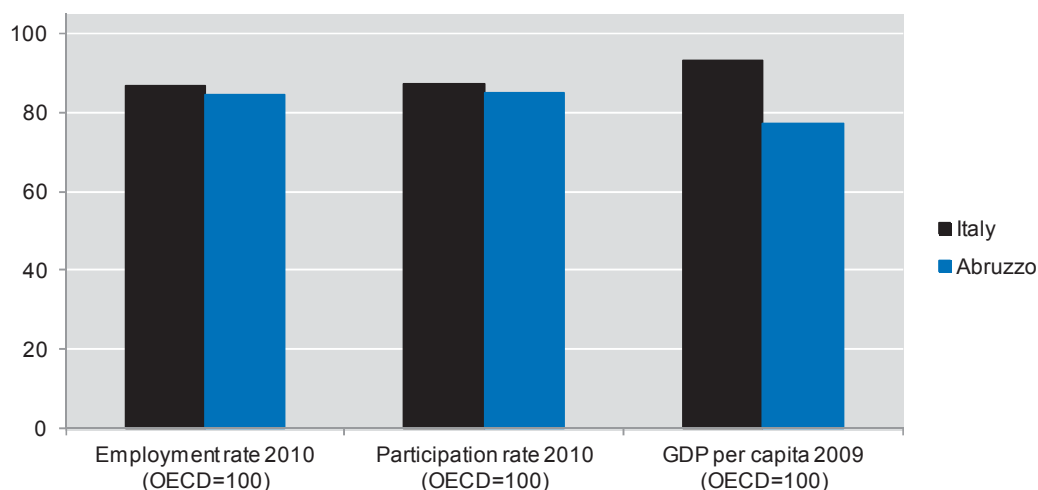
Source: OECD elaboration on ISTAT data.

Over the period considered Abruzzo developed a diversified industrial base, spread across several poles including those located in the Pescara Valley and in the Sangro Valley and in the cities of Teramo, L'Aquila, Avezzano, Sulmona. More specifically, while many areas – especially in the provinces of L'Aquila and Chieti – benefited from exogenous investments in capital-intensive manufacturing sectors (e.g. electronic, pharmaceuticals, automotive industrial plants, etc.), the northern part of the Abruzzo region experienced endogenous industrial development through the set-up of small and medium-sized firms in traditional sectors of the “Made in Italy” brand (clothing, shoes, furniture).

***Since the 1990s, Abruzzo’s economy has been growing slowly. However, the economy of this region has been outperforming those in other regions of the Mezzogiorno.***

Notwithstanding the support received in the past decades, and its previous position as the fastest growing region in the *Mezzogiorno*, the economic performance of Abruzzo continues to stand significantly below the national and OECD averages in terms of activity rate, employment rate and GDP *per capita* (Figure 1.3).

Figure 1.3. Main economic indicators in Abruzzo and Italy compared to OECD area

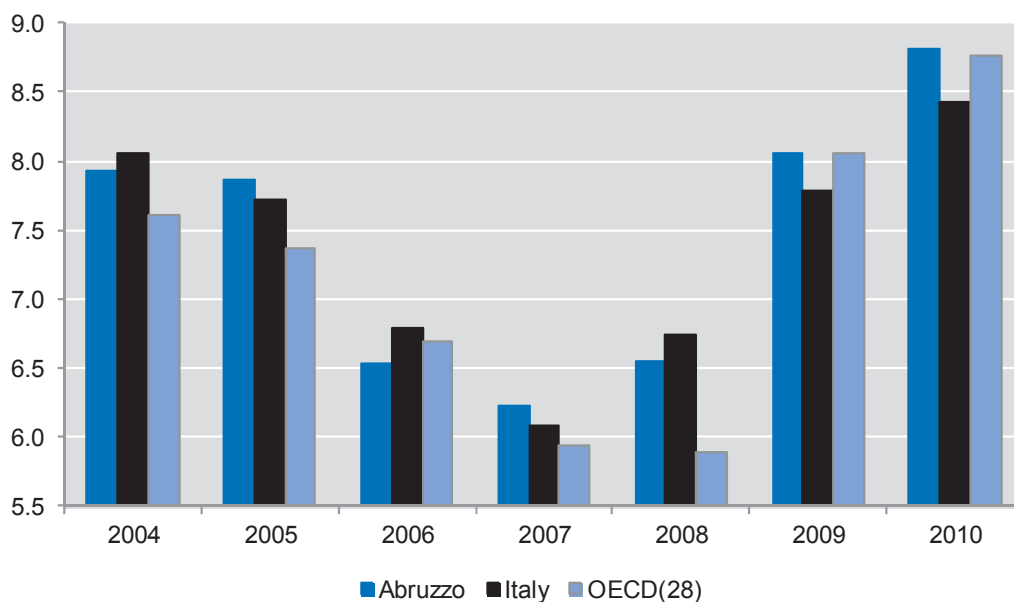
Employment, activity rate and GDP *per capita*, latest available years

Note: OECD average comprises the 34 OECD countries.

Source: OECD Regional Database.

Abruzzo's GDP *per capita* had been below Italy's average (around 85%) for the whole decade prior to the 2009 earthquake and worsened in the years 2008-2009. Similarly, unemployment has risen in the most recent years considered, reaching 8.7% in 2010 (Figure 1.4). Figure 1.4 shows clearly the outcome of the current economic crisis, after a period of falling unemployment rates.

Figure 1.4. Unemployment rates in Abruzzo, compared with the average rate in Italy and in OECD regions

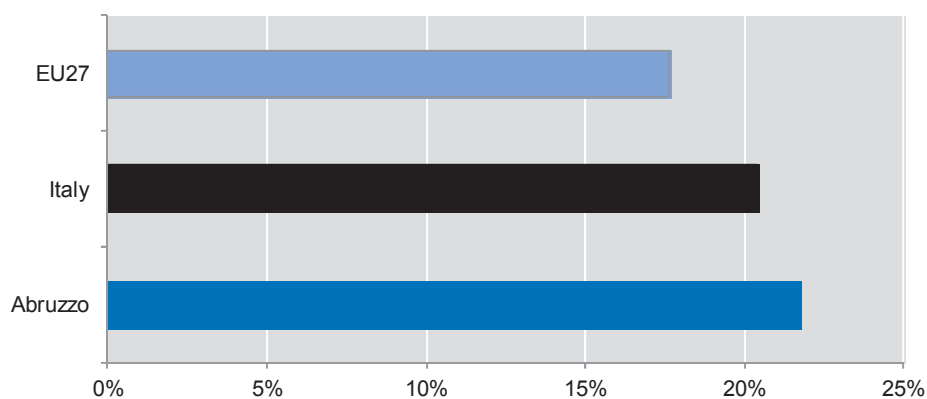


Source: OECD Regional Database.

***Abruzzo is a small manufacturing region, with a highly differentiated industrial structure***

In 2011 the industrial sector (including mining, manufacturing, public utilities and construction) employed over 158 000 people in Abruzzo, which accounts for 31.2% of total regional employment, much higher than the *Mezzogiorno* average (21.8%) and even above the national average (28.5%) (ISTAT, Labour Force Survey, 2012). Even excluding the construction industry, the share of employment in the industrial sector is well above the national and EU27 average (Figure 1.5). It is clear that the industrialisation process was more successful in Abruzzo than in the rest of the *Mezzogiorno*, due to the region's relative proximity to the main manufacturing markets in central-northern Italy and in Europe.

Figure 1.5. **Share of employment in the industrial sector (excluding construction), 2011**



Source: OECD, based on Eurostat data.

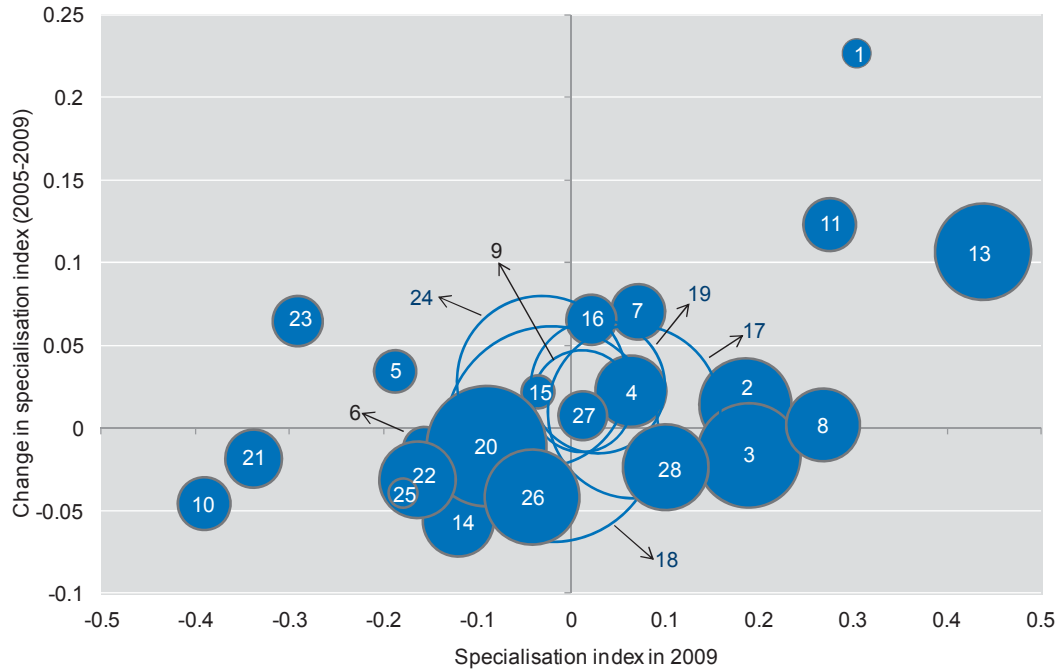
The tertiary sector – public and private services – is relatively less important in Abruzzo than in other regions, employing in 2011 about 329 000 workers (65% of total employment, against a national average of 67.8%), including about 108 000 workers in trade, hotels and restaurants. The employment share of agriculture is 3.8% in Abruzzo, slightly above the national average.

Total employment had been growing at an average annual rate of 2% in Abruzzo in the 2004-08 period, to be compared to a national average of 1.1%. However, the impact of the global crisis was particularly severe in Abruzzo, with an employment loss of more than 24 000 jobs in two years. Notwithstanding a sharp rebound in 2011 (2.6%), total employment still remains more than two percentage points below its 2008 level. In relative terms, the highest employment losses emerge in services (particularly trade, hotels and restaurants) and agriculture.

A more detailed analysis of the region's economic structure may be done only for the private sector up to 2009 (Figure 1.6).<sup>1</sup> The value of the “specialisation index” – the relative employment shares by sector in Abruzzo compared to the other Italian regions in 2009 – is particularly high in the motor vehicle industry. Other manufacturing sectors where the region enjoys a comparative advantage are mining, the electronic industry, non-metallic mineral products and the traditional “Made in Italy” sectors (textiles,

clothing and footwear, and the food industry). The region's specialisation in the tertiary sector is weaker, particularly in information and communications, and real estate services. Overall, Figure 1.6 shows that the region's specialisation pattern is very differentiated but tends to reinforce its main features, with comparative advantages and disadvantages becoming more intense over time. However, in the period 2005-2009 the sector including textiles, clothing, leather and footwear recorded a decrease in specialisation (Figure 1.6).

Figure 1.6. Sectoral specialisations in the Abruzzo region



1 Mining	11 Electric and electronic equipment	21 Information services
2 Food industries	12 Electric machines	22 Finance
3 Textiles, clothing, leather-footwear	13 Motor vehicles	23 Real estate
4 Wood and paper	14 Other manufactures	24 Professional activities
5 Coke and petroleum products	15 Electricity and gas	25 Education
6 Chemical products	16 Water and waste	26 Healthcare
7 Rubber and plastics	17 Construction	27 Leisure services
8 Non-metallic minerals	18 Commerce	28 Other services
9 Metallurgy	19 Hotels and restaurants	
10 Machinery and equipment	20 Transport and telecommunication	

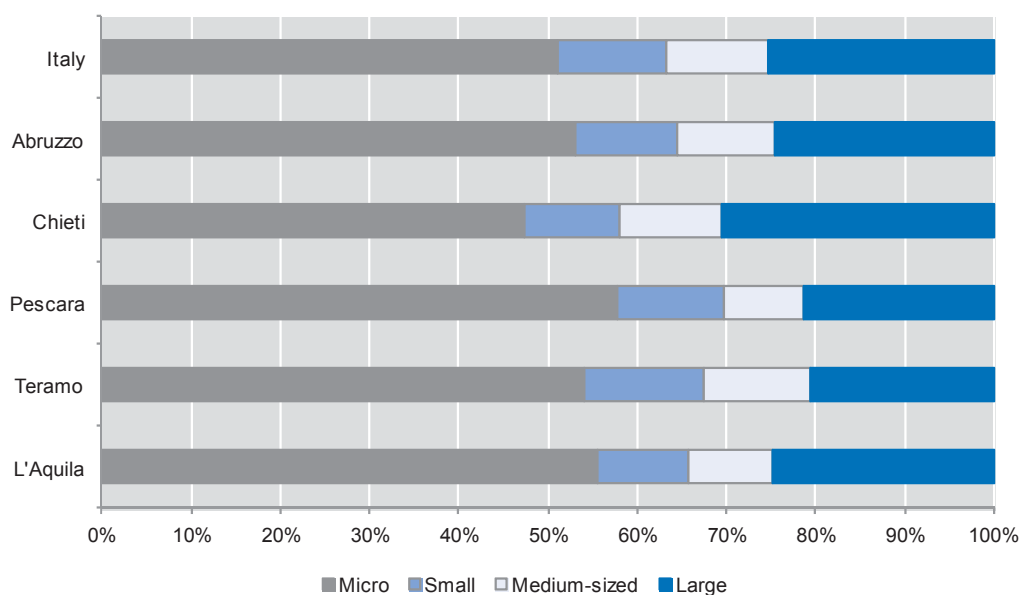
Notes:

1. Specialisation is measured as  $(L_{ijt} - L_{i-jt}) / (L_{ijt} + L_{i-jt})$  where  $L_{ijt}$  is employment share in the  $i$ -th industry,  $j$ -the region (Abruzzo) at time  $t$  and  $L_{i-jt}$  is the corresponding share in the rest of Italy. Thus, specialisation is the outcome of measuring employment shares in one industry in the Abruzzo region compared to the average industrial shares of the other Italian regions.
2. Changes in specialisation index refer to the difference in the value of specialisation in 2009 compared to that in 2005.
3. Bubble size denotes sector size in terms of employment in 2009.
4. The bubble for number 12 (electric machines) is not visible because the value of change in specialisation is particularly low.

Source: OECD, based on data from ISTAT, *Asia database* (2005-2009).

The industrial base of the region is characterised by a large number of micro firms (less than 10 employees) which absorbs more than half of total employment of the region (Figure 1.7). Around 20% of the regional employment is accounted for by large firms, in line with the Italian industrial structure. Within the Abruzzo region, the share of employment in large firms is higher in the province of Chieti, where several multi-national enterprises are located in the automotive pole. The two provinces of Pescara and Teramo, instead, display the highest shares of employment in SMEs with a strong presence of the traditional sectors of the “Made in Italy” brand in Teramo. Considering only the manufacturing sector, the share of employees in large firms is 48% in Abruzzo against the Italian average of 42%. Conversely, the share of employees in each of the other three size classes (micro, small and medium) are slightly lower in Abruzzo compared to the Italian average.

Figure 1.7. Share of employment by size of firm in Italy, Abruzzo and its provinces, 2009



Source: OECD, based on ISTAT data.

Innovation is a crucial factor driving growth at the regional level. According to the OECD categorisation of regions on innovation-related variables, Abruzzo is identified, among other regions in the *Mezzogiorno* of Italy, as a de-industrialising region with structural inertia. Such a categorisation takes into account a mix of twelve indicators related to innovation capacity and performance available for the majority of OECD regions, varying from the educational attainment of the labour force, to R&D expenditure or number of patent applications.<sup>2</sup>

***The supply of tertiary-educated graduates is higher than the national average, but below the OECD standards***

The innovation-related variables highlight the potential and challenges for a regional innovation strategy in Abruzzo. Even though the share of the labour force with tertiary educational attainments in Abruzzo is among the highest among Italian regions, the value is still remarkably lower than the OECD average, with a gap of 6 percentage points (18.6% in Abruzzo *versus* 24.2% in the OECD). Public and business expenditure in research and development (R&D) represents around 1% of Abruzzo's GDP, below the 2.5% value of the OECD average. At the same time, the share of R&D expenditure carried out by higher education institutions in Abruzzo is high compared to national and OECD averages (Table 1.1).

Table 1.1. Values of innovation-related variables in Abruzzo, Italy and the OECD average, latest available years

	OECD average	Italy	Abruzzo
Number of patents per million of inhabitants (2009)	107.8	50.5	31.0
R&D expenditure as a percentage of GDP (2009)	2.52	1.26	0.95
% of labour force with tertiary attainment (2010)	24.2	17.0	18.6
Share of R&D by higher education/total R&D expenditure (2007)	17.7	30.1	41.3

*Note:* The OECD average for patents excludes data from Chile; the OECD average for R&D expenditure excludes Australia, Chile, Greece, Iceland, Mexico and Switzerland.

*Source:* OECD Regional Database.

Among southern regions, Abruzzo has a remarkable advantage in the production of human capital. Abruzzo hosts three universities, in Pescara-Chieti, L'Aquila and Teramo. All together, they enrolled more than 60 000 students in the academic year 2011/2012 (see Table 4.5). In the case of L'Aquila, the university is particularly important to the local economy, hosting around almost 24 000 students over a total population of 72 000 inhabitants. In the context of southern Italy, Abruzzo is one of the regions with the highest potential in terms of human capital production and this constitutes an advantage for the region as far as the export education services are concerned. However, as it will be discussed in Chapter 4, Abruzzo should improve the match between the supply and the demand of a highly skilled workforce in order to ensure that there are jobs that make use of high skills and avoid outward migration.

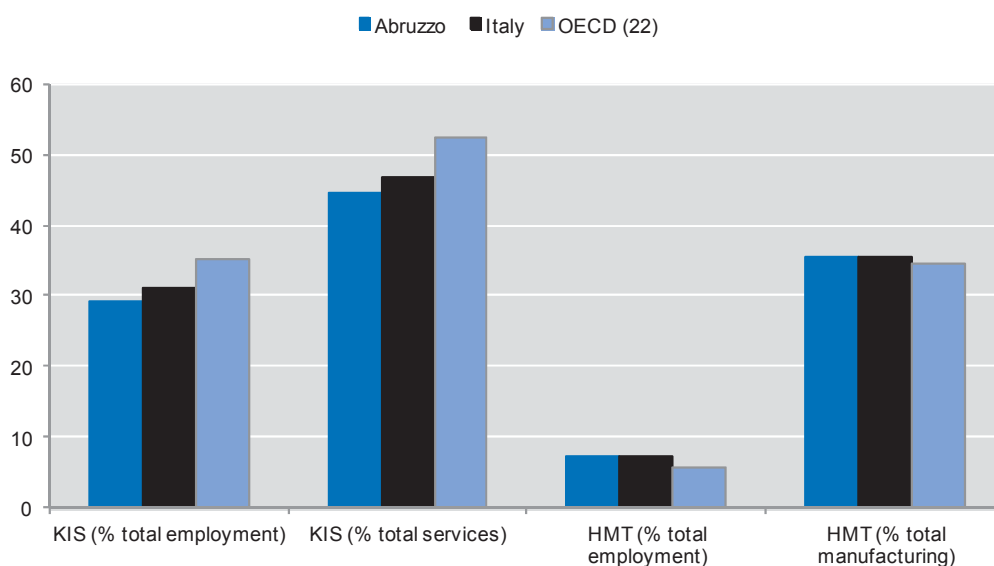
***While manufacturing is diversified and endowed with high-technology resources, knowledge-intensive services are below the national and OECD averages***

The share of employment in high and medium-high technology manufacturing (HMT) in Abruzzo is in line with the Italian average and is even above the average of 22 OECD countries (7.2% of total employment in HMT against 5.8% in the OECD in 2008).<sup>3</sup> This is strongly related to the set of incentives which the Abruzzo region enjoyed in the past decades through the *Cassa per il Mezzogiorno* scheme and to the consequent localisation of large manufacturing firms in the region. Instead, a stronger effort to increase employment in knowledge-

intensive services (KIS) is needed, as the value for Abruzzo stands below both the Italian and the OECD averages (Figure 1.8). The upgrading of the manufacturing base and its diversification is the crucial element for a regional innovation strategy in Abruzzo, as will be discussed in Chapter 4.

Figure 1.8. **Employment in knowledge-oriented services, 2008**

Knowledge-intensive services and High-tech manufacturing



Source: OECD Regional Database.

### ***Linkages with the outside world are driven by the presence of multi-national firms***

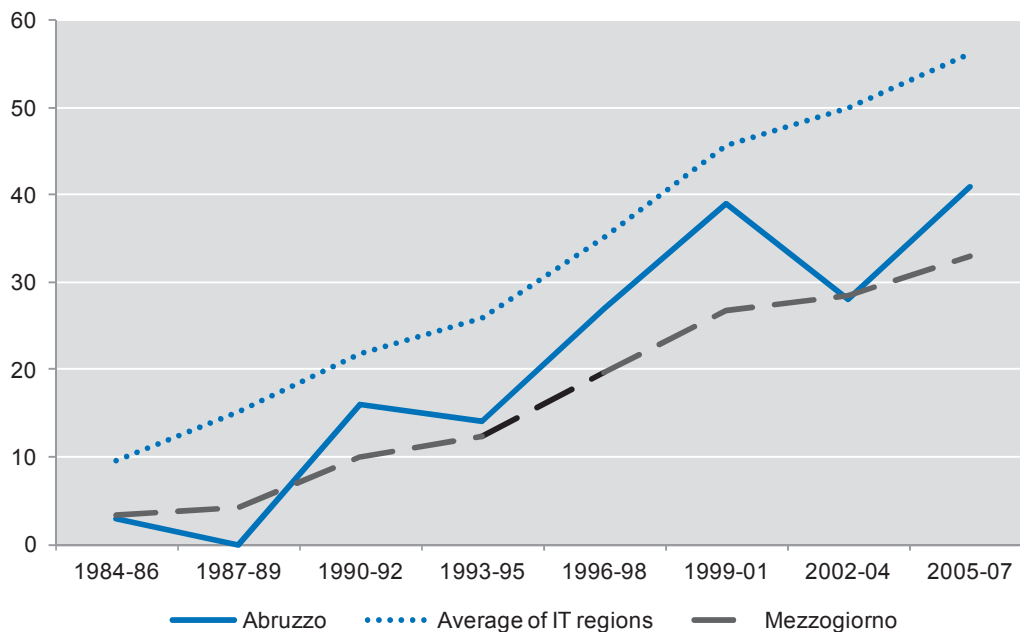
The linkages between Abruzzo and the world economy reflect the role that the region plays in the international division of labour, mainly through international trade. The extent to which Abruzzo is connected to the outside world is crucial for the transfer of knowledge and productive factors that keep the region competitive. Economic development and international openness tend to reinforce each other, both at national and local levels. More open economies normally show higher growth rates than those characterised by protectionist policies (Baldwin, 2004). In turn, economic development tends to translate into higher degrees of international economic integration. More productive firms, selected by exposure to international competition, drive innovation and growth at the local level and show stronger competitiveness on the foreign market.

A first measure of connectivity of the Abruzzo region with the rest of the world is the number of co-patent applications with inventors located in the region and elsewhere around the world. More specifically, these inter-regional innovation linkages are measured through the number of regions with which Abruzzo is linked by means of the co-patent activity of the inventors. The connectivity through

co-patenting has been on rise in Abruzzo and Italy since 1984 (Figure 1.9). The region was connected to only three Italian regions in the mid-1980s (Lombardy, Piedmont and Emilia-Romagna). Between 1996 and 1998, co-patenting collaboration with inventors in other regions had increased and mostly involved Italian and European<sup>4</sup> inventors (respectively 44% and 45% of co-patent applications with an inventor in another region), followed by inventors in North America (11.6% in Canada or the United States). By the second half of the 2000s (between 2005 and 2007), the relative weight of extra-regional collaboration within Italy had increased (64% of the total), whereas the one with EU and North America decreased (27.3% for the EU and 7.5% for North America). Since the second half of the 1990s, the non-Italian regions with the most linkages with Abruzzo have been Hessen, (Germany, where Frankfurt is located) and Ohio (United States).

Notwithstanding the small population of Abruzzo, the quantity and the geographic distribution of co-patenting activities show that the region is more connected with the rest of the world in terms of inter-regional innovation linkages than the average of the *Mezzogiorno* (Figure 1.9). The potential innovation capacity in Abruzzo, in terms of high-technology manufacturing, presence of universities and other nationally and internationally relevant research institutes, could be better exploited in the coming years and the number of linkages might become higher.

Figure 1.9. Geographical connectivity through co-patenting among inventors



Source: Based on OECD Regional Database.

The correlation between sluggish growth and limited integration into the world economy is particularly evident in the *Mezzogiorno* area (southern regions), where it is an important factor underlying its persistent divergence from other European regions. The case of Abruzzo reveals, however, some specific features



(Iapadre, 2009). The region's persistent gap with respect to the national average is highlighted by the fact that its contribution to the gross domestic product (GDP) of Italy is still lower than its employment and population shares. This gap helps to understand why the region fails to attract a number of immigrants proportional to its population share. The import propensity appears also much lower than the national average.<sup>5</sup> On the other hand, when measuring the degree of openness of the regional economy by the ratio between merchandise exports and GDP, Abruzzo performs slightly better than Italy. This result owes much to the local affiliates of multi-national enterprises (MNEs), whose employment share with respect to the national manufacturing total is much higher than the region's economic weight. This is indirectly confirmed by the fact that Abruzzo's share of the number of Italian exporters (1.5%) is lower than its contribution to the value of exports (1.9%), pointing to the relatively higher average firm size of Abruzzo's exporters, typical of MNEs affiliates.

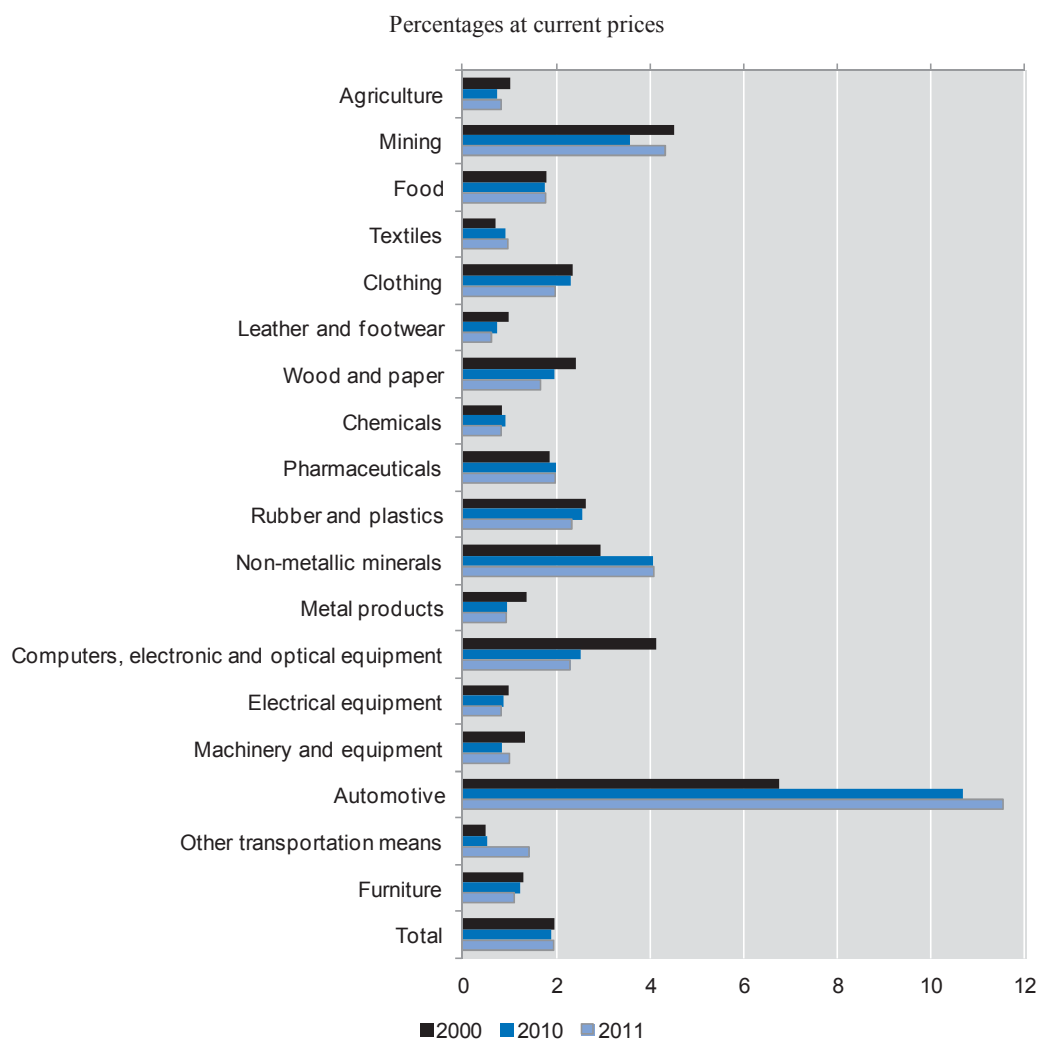
Other forms of international integration are much less developed than they could be, given Abruzzo's economic potential. The share of national service exports<sup>6</sup> is very low (0.6% *versus* 1.8% in the case of GDP) and this could be partly due to the fact that local tourism opportunities are not fully exploited. Active participation of local firms in international production networks is also modest, in terms of both foreign direct investment (FDI), employment and outward processing trade.

The pattern of export specialisation of Abruzzo has not changed significantly in the past decade (Figure 1.10). However, its concentration in the automotive industry has strongly increased, while there has been a reduction of comparative advantages in the wood and paper industry as well as in computers, electronic and optical equipment. Other specialisation sectors in which the role of large external firms is important include non-metallic minerals, rubber and plastics, and pharmaceuticals. Clothing is the only traditional industry in which the region revealed a moderate comparative advantage in the last decade – however, during the crisis it has been eroded by the competitive pressure from emerging economies.

In conclusion, the Abruzzo region's international economic linkages rely mainly on a relatively large presence of multi-national firms, including also some firms based in other Italian regions that generate a large proportion of its exports. In some areas of Abruzzo, such as the automotive pole in the province of Chieti, a system of local producers has successfully developed connections with externally controlled firms. Elsewhere, e.g. in the province of L'Aquila, integration between multi-nationals and the local economy has remained very weak, exposing the region to the risk of change in the location strategies of external firms.

The central role performed by large multi-nationals in Abruzzo's exports is confirmed by the geographic distribution of these firms. Leaving aside the unsurprising proportion of Abruzzo's exports to the European Union, which absorbs 72% of its total exports (equal to 2.3% of Italian exports towards the EU), the constraints imposed by distance seem less important for Abruzzo than for other Italian regions. In particular, Abruzzo's exports appear relatively less oriented towards closer markets, such as Eastern Europe, North Africa and the Middle East, than towards distant areas, such as North America. Indeed, North America is an important destination for some of the multi-nationals operating in the region.

Figure 1.10. Abruzzo's share of Italian exports by sector



Source: OECD, based on ISTAT data.

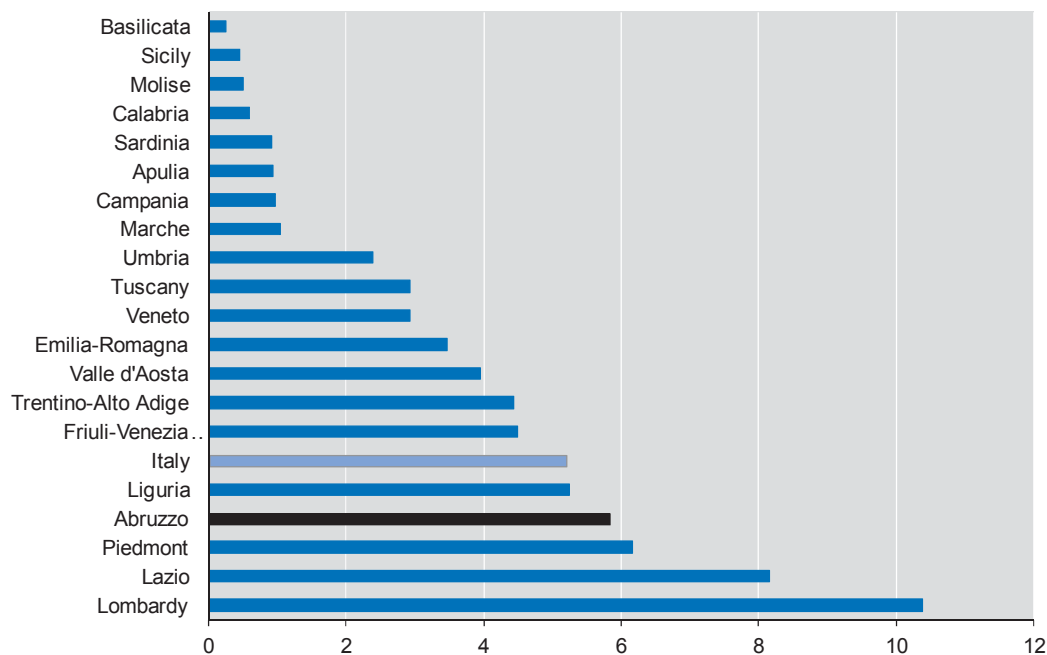
An additional aspect to consider is the increase in the concentration of Abruzzo's exports by province of origin over the past few years. The province of Chieti, where the automotive cluster and other large exporting firms are located, now accounts for two-thirds of the region's exports, increasing its share from 53% to 66% in the period 2002-2010. This result has been obtained mostly at the expense of the provinces of L'Aquila – whose share fell from 21% to 11% – affected by the crisis of its electronic pole, and that of Teramo – whose share decreased from 19% to 16%, where its small firms operating in the traditional sectors have been weakened by international competition.

The Abruzzo region's comparative advantages strongly depend on the presence of foreign-controlled firms. The importance of inward FDI for Abruzzo's economy can be seen in Figure 1.11. The employment share of foreign MNEs is also one of the highest in Italy, ranking only below the regions of Lombardy, Piedmont and Lazio, where values may appear greater than is actually the case. In fact, MNE employs workers in firms

whose Italian headquarters are located in the above mentioned regions, even if their plants are located elsewhere.

Figure 1.11. **Rate of FDI openness by region, 2010**

Percentage ratio between employment in affiliates of foreign MNEs and total employment



Source: OECD, based on ICE-reprint and ISTAT data.

A recent study conducted by Unicredit Retail Division with the contribution of experts from the Bank of Italy examined the economic relations in place among Italian regions (De Bonis et al., 2010).<sup>7</sup> The study looked at the balance of trade of outbound transactions in order to evaluate the likelihood of a direct relationship between the balance of trade – both international and domestic – and the rate of current development. It showed that, between 1995 and 2005, inter-regional trade in southern regions experienced a deficit (measured in GDP percentage) relatively higher than in central and northern regions. This, in turn, reveals that each domestic source of revenue or transfer of revenue from outside is only partially converted into internal demand, thus reducing the potential for self-driven growth. To quote De Bonis et al. (2010), the whole *Mezzogiorno* of Italy is allegedly suffering from a situation referred to as “compensation stress”.

Abruzzo shows fluctuating levels in the two trade balances (the Italian regions most similar to Abruzzo are Umbria, Marche and Emilia Romagna, although the last two differ due to a more positive balance of trade generated by exports). During the 10-year period since 1995, Abruzzo recorded an overall negative balance of trade which amounts to -5.5% of GDP. This is the result of an increase in foreign accounts by 5% and a decrease in accounts with the other Italian regions by -10.5% (Table 1.2). This means that, despite a significant export capacity, the number of commodities and services Abruzzo purchases

from other regions exceeds by far the number of commodities and services sold to other regions.

Table 1.2. **Trade balances in goods and services as a % of GDP (average 1995-2005)**

	Abroad			Inter-regional			External		
	Export	Import	Balance	Export	Import	Balance	Export	Import	Balance
Abruzzo	21.2	16.2	5.0	40.0	50.6	-10.5	61.3	66.8	-5.5
Umbria	14.1	11.0	3.0	45.9	54.0	-8.0	60.0	65.0	-5.0
Lombardy	34.0	40.9	-6.9	43.7	30.7	23.1	87.7	71.6	16.1

Source: De Bonis, R., Z. Rotondi and P. Savona (2010), *Sviluppo, rischio e conti con l'esterno delle regioni italiane: lo schema di analisi della "pentola bucata"*, Laterza, Rome.

### ***Population is ageing rapidly with consequent challenges in terms of labour market and public service provision***

All advanced economies are becoming older and societal ageing is due primarily to two major drivers, namely ageing which is related to health-care improvements, and also ageing which is related to the slowdown in the subsequent fertility replacement ratios. In Italy, the societal challenges associated with ageing are particularly acute, and this is a combination of people living longer and lower fertility rates over four decades. Among these societal challenges are differences in the provision of services, as well as income inequalities. The falling replacement ratios are likely to exacerbate these differences and a time range between 20 and 30 years will be necessary before the dependency ratio begins to fall (Barbieri and Scherer, 2011).

Abruzzo has a share of elderly population (more than 65 years and over) which is 6 percentage points higher than the OECD average and around 1 percentage point higher than the Italian value. The presence of rural and mountainous areas, as well as relatively small urban agglomerations in Abruzzo is also at the origin of outmigration of young people.

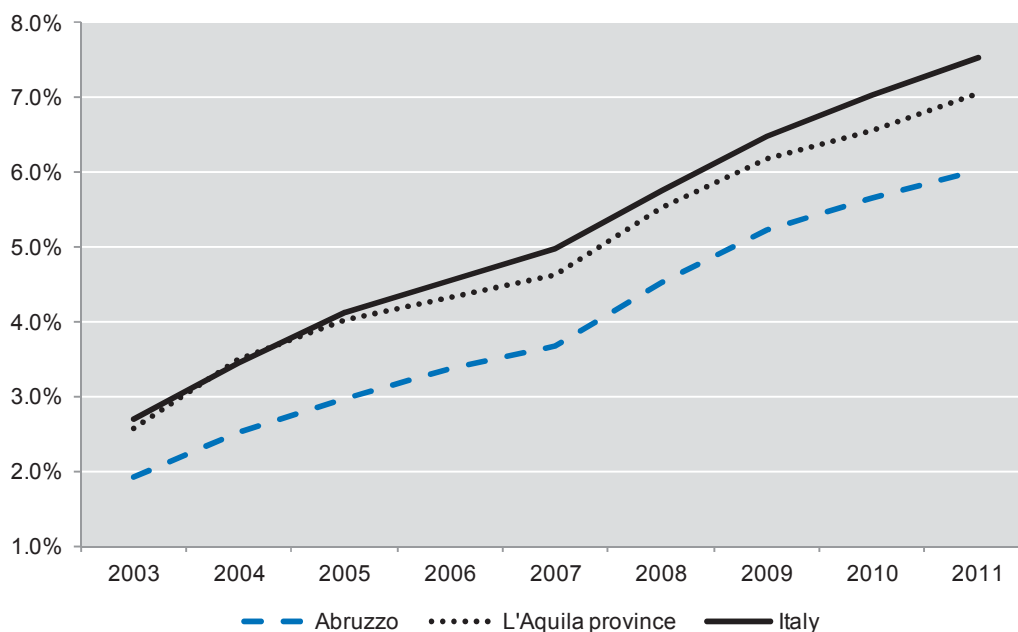
Societal ageing should be looked at in conjunction with migration flows. Compared with other OECD countries, Italy has relatively low levels of inter-regional mobility and international migration. Moreover, among the most geographically mobile groups of migrants there are the young and highly educated workers (Faggian and McCann, 2009). The increasing migration of young highly skilled workers, and particularly university graduates, combined with the changing demographic structure of the overall population, and two decades of increasing inter-regional divergence, mean that the relationship between economic strength of a region and its ability to provide the long-term local healthcare, education and other public services becomes ever more complex.

At either a local or a regional level, the effects of these ongoing changes mean that older areas (defined in terms of population) which are also declining in term of their economic potential, are also generally areas which demand greater health and social care services while being increasingly unable to fund these services. These

localities will therefore become increasingly dependent on fiscal transfers from richer neighbourhoods or regions. However, with more widespread fiscal cutbacks faced by most countries and regions over the coming years, the scale of these fiscal transfer possibilities are likely to be reduced, and this implies that other more local solutions will need to be sought to respond to these societal and social inclusion challenges. In terms of local public service provision, there are likely to be more profound community provision and engagement challenges among territories and institutions in the coming decades.

Regarding the foreign component of the resident population, Abruzzo's share of foreigners is slightly lower than Italy's share – a situation that has not significantly changed with respect to the past decade. Also the province of L'Aquila does not seem to have undergone any major change in the social composition of its population after the 2009 earthquake, contrary to the expectations of an increase of immigrants for the reconstruction process (Figure. 1.12).

Figure 1.12. Share of foreigners in total resident population, 2003-2011



Source: OECD, based on ISTAT data.

## The territorial organisation in the Abruzzo region

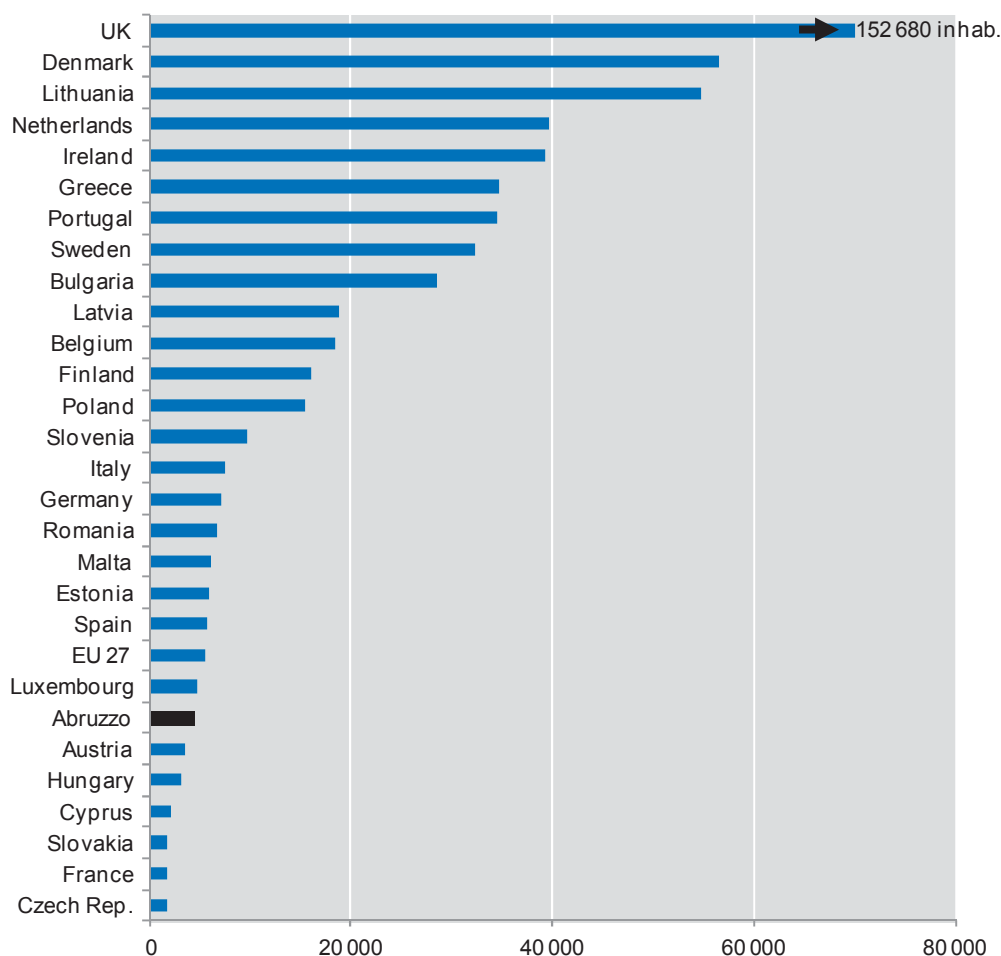
### *Administrative fragmentation characterises Abruzzo as in other Italian regions*

Municipalities are the basic components of the territorial organisation in Italy, enjoying significant political power, in particular with regard to spatial development.<sup>8</sup> The municipality of L'Aquila has the administrative status of a regional capital, even if some of the regional offices as well as functions associated

with this status are shared with Pescara, the largest municipality in terms of population.

The territory of the Abruzzo region is currently administered by 305 municipalities, which differ significantly in terms of population and land. One aspect to stress is the low number of municipalities with a significant demographic size. In fact, only 5 out of 305 municipalities have more than 50 000 inhabitants (Pescara, L’Aquila, Teramo, Chieti and Montesilvano) – and only Pescara has more than 100 000 inhabitants – whereas 22 municipalities have a population between 10 000 and 40 000 inhabitants. Comparing the size of municipalities of Abruzzo with that of the other European countries, it emerges that on average Abruzzo has smaller municipalities than the EU-27 and also of the average size of Italian municipalities (Figure 1.13).

Figure 1.13. Average number of inhabitants in municipalities

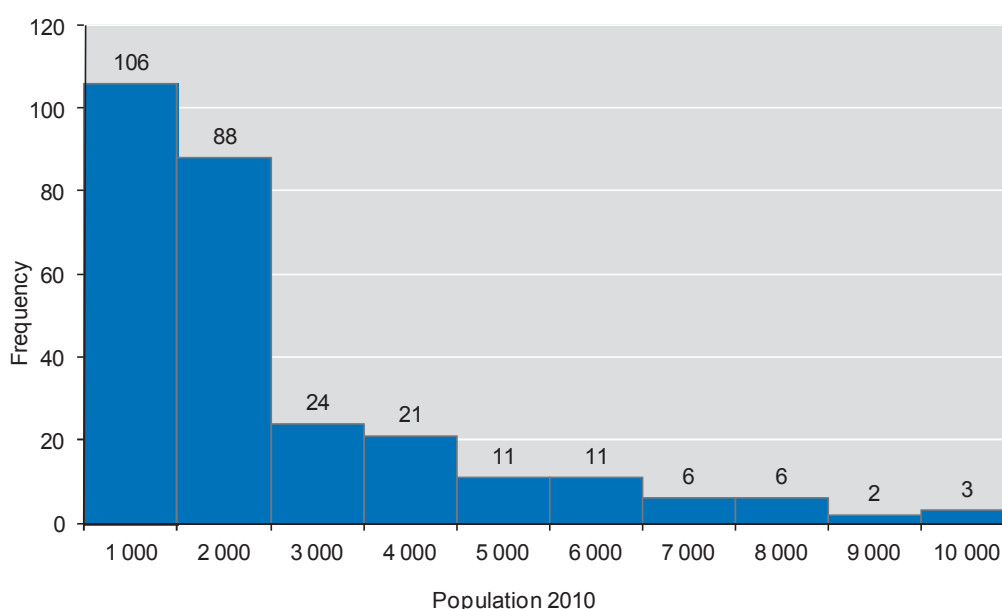


Source: ISTAT, <https://demo.istat.it/> and Dexia/CEMR (2012), “Subnational Public Finance in the European Union”, [www.dexia-creditlocal.fr](http://www.dexia-creditlocal.fr).

Most of the remaining 278 municipalities of the Abruzzo region are very small in terms of population (Figure 1.14): 106 units (34.7% of the total municipalities) have less

than 1 000 inhabitants; the number is 194 units (63.6% of the total number of municipalities) when municipalities with less than 2 000 inhabitants are considered.

Figure 1.14. **Size distribution of municipalities with less than 10 000 inhabitants**



Source: ISTAT, <https://demo.istat.it/>.

In this respect it is important to highlight that Abruzzo is a mountainous region: 65.1% of the regional surface is recorded as “mountain territory”. Moreover, this region hosts the highest peaks (Gran Sasso and Majella) of the Apennines, the mountain chain running through Italy from Liguria to Calabria. Under the relative prices regime that was consolidated in the 1950s, the mountain agriculture displayed very low productivity and was not competitive on the national market. This was the driving factor for the large-scale emigration experienced by the mountain areas, where the collapse of the agricultural sector was not counterbalanced by expansion of other economic sectors. In turn, emigration caused a dramatic reduction in population in a large number of mountain municipalities and, consequently, led to the current spectacular territorial polarisation of the region.

Table 1.3 gives an interesting piece of information on the relationship between the altitude of the municipalities and their long-term demographic performances. Of the municipalities whose altitudes range between 1 000 and 1 500 metres, only 7 out of 30 experienced a positive population growth rate; among the municipalities with an altitude in the range of 500-1 000, only 15 out of 124 (12.1%) experienced a positive population growth rate, while among the municipalities with an altitude in the range of 0-500, 31 out of 151 (20.6%) experienced a positive growth rate.

Table 1.3. Number of municipalities of Abruzzo by classes of altitude and of population growth rates, 1951-2010

Altitude: classes (metres)	Population growth rates: classes							Total
	-0.5	0	1	2	3	4	6	
500	57	63	22	6	1	1	1	151
1 000	53	56	12	1	2	0	0	124
1 500	13	10	7	0	0	0	0	30
Total	123	129	41	7	3	1	1	305

Source: OECD, based on ISTAT data.

### *The territory has been functionally organising around several clusters of municipalities*

By analysing the pattern of territorial development displayed by the Abruzzo region since 1950 one may detect that territorial polarisation was accompanied by territorial integration, that is by the formation of inter-municipal functional areas. In the growing areas – and in some cases booming ones, such as ‘Pescara’ – territorial integration was primarily the outcome of the formation of inter-municipal conurbations and of the intensification of social and economic relationships both in the form of travel-to-work flows and in the spatiality of the exchange and socialisation patterns. In the mountain areas, instead, most of which experienced a sharp population decline as previously outlined, territorial integration was driven by the spatial polarisation in the provision of basic public services (health care, education) and the private commercial activities. Since population reduction made untenable the supply of these services at municipal level when population had dropped below a certain threshold, these services tended to concentrate in the pivot municipalities of the corresponding areas, however small they were in absolute terms.

In Italy the phenomenon of territorial integration has been measured by the Italian National Institute of Statistics (ISTAT) which in 1987 compiled the first map of the territorial organisation in terms of local labour systems (LLS). LLSs can be defined as highly integrated clusters of contiguous municipalities and their boundaries are usually identified according to the self containment of commuting flows. According to the more recent map compiled by ISTAT in 2006, the territory of Abruzzo can be described in terms of the 19 LLSs depicted in Figure 1.15. The number of municipalities making up the identified local labour systems ranges from a minimum of 3 (‘Pineto’) to a maximum of 49 (‘Atessa’) (Figure 1.15). Eleven local systems comprise more than 10 municipalities and 7 local systems more than 20 municipalities.



Figure 1.15. The local labour systems (LLSs) of Abruzzo



Source: ISTAT.

Interpreting the territory of the Abruzzo region in terms of local systems as defined by ISTAT allows us to highlight the urban dimension of the region, a feature which goes unnoticed under the standard conceptualisation of the regional territory based on the administrative borders of municipalities. Indeed, by looking more deeply into the social and economic structure of the Abruzzo region's local systems allows one to reach the conclusion that some of them have a clear urban nature, and are medium-sized functional urban areas (FUAs).

Out of 19 LLSs, 5 have an urban nature given their overall size (>100 000 inhabitants) and the size of their core municipality (>40 000 inhabitants). Because of that, these LLSs – namely Pescara, Avezzano, L'Aquila, Vasto and Teramo – are hereafter referred to as FUAs. The FUA of 'Pescara' hosts 363 000 inhabitants – whilst three LLSs have a population within 50 000-100 000 inhabitants (Table 1.4). Taking a dynamic perspective and looking at the region's evolutionary potential, these FUAs emerge in their fundamental role for the region, where the concentration of the economic processes of the region is expected to continue. Taken together, these five FUAs represent more than 60% of the total regional added value (OECD, based on ISTAT data, 2005).

Table 1.4. Local labour systems of Abruzzo: Basic socio-economic statistics

LLS	Municipalities	Population 2010	Activity rate (%), 2010	Unemployment rate (%), 2010	Manufacturing share (%), 2009
Pescara	26	363 364	47.3	8.9	16.1
Atessa	49	121 901	44.5	10.4	43.4
Giulianova	12	110 030	48.4	10.5	31.7
Avezzano	29	105 678	46.7	9.3	26.8
L'Aquila	29	102 230	49.7	5.1	19.6
Vasto	26	95 561	44.4	10.1	35.7
Teramo	8	83 189	48.0	6.8	26.2
Sulmona	24	53 090	42.8	6.8	21.5
Ortona	10	42 429	44.1	11.8	30.9
Pineto	3	41 569	46.8	8.6	25.5
Popoli	28	39 934	45.2	12.2	36.6
Penne	8	33 257	45.1	9.4	36.2
Castel di Sangro	18	20 914	43.5	7.7	9.2
Guardiagrele	9	20 429	41.6	9.6	31.8
Pescina	8	16 111	44.7	7.2	19.1
Celano	4	15 630	47.0	8.2	25.4
Basciano	7	15 067	45.9	9.3	43.1
Montorio al Vomano	5	11 871	43.5	7.3	24.4
Castilenti	6	9 700	44.8	9.2	46.7

Source: ISTAT.

One aspect to stress is the geography of the major local systems: those with more than 50 000 inhabitants, although limited in number, are nevertheless numerous if compared with the regional scale and, moreover, are rather evenly distributed across the regional space. This leads one to draw the conclusion that the Abruzzo region's spatial development has maintained a polycentric territorial organisation notwithstanding the spatial concentration that has taken place.

Comparative analysis among LLSs in terms of some structural economic, social and spatial variables would be of some interest. Table 1.4 shows that the LLSs under scrutiny differ significantly in terms of the variable examined, and this should be carefully taken into consideration when assessing the impact of external shocks on the Abruzzo region and also when designing local development policies.

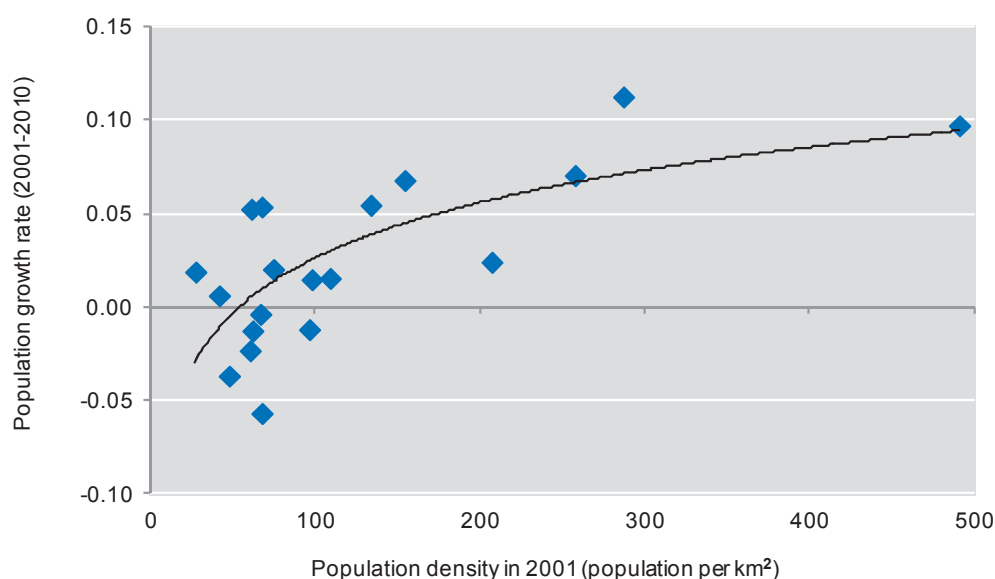
The LLS of Pescara is definitely the most important in the Abruzzo region, more than three times larger in terms of population and total employment than the LLSs of 'Atessa', 'Giulianova', 'Avezzano', 'L'Aquila' and 'Vasto' – which are the five largest in the region (after that of 'Pescara'). Of note is the territorial contiguity between four of the six major LLSs (close to or more than 100 000 inhabitants): between the LLSs of 'Giulianova' and that of 'Teramo' and between the LLS of 'Atessa' and that of 'Vasto' (see Figure 1.16). Also to be noted is that the LLS of 'Pescara' is located between these two units of neighbouring LLSs, along the Adriatic coast.

This finding yields a more accurate description of the nature of the territorial polarisation this region displays after five decades of economic growth. With the sole exception of 'L'Aquila' and 'Teramo', all the major LLSs are located along the Adriatic coast ('Teramo', is also very close to the coast).

As previously stated, territorial polarisation in the Abruzzo region – brought about by the industrialisation process and the ensuing urban growth – started in the 1950s and led to the integration of contiguous municipalities, which are connected in terms of labour market, education, recreation and other kinds of linkages. A further aspect to stress is that

territorial polarisation is still an on-going process. Indeed, besides the formation of integrated territorial units one may observe that a minor polarisation is occurring among the Abruzzo region's LLSs. Some of them are attracting population whereas others are losing population. In particular, larger and more populated LLSs, especially those located along the Adriatic coast, are attracting more population than others. This finding can be seen in Figure 1.16, which shows that LLSs with higher population densities in 2001 enjoyed higher population growth rates in the following decade. This leads one to presume that agglomeration economies – the benefits associated with proximity among economic agents – are certainly playing a role in shaping the new pattern of territorial organisation of the Abruzzo region.

Figure 1.16. Population density and population growth rates (2001-2010) in Abruzzo's local labour systems

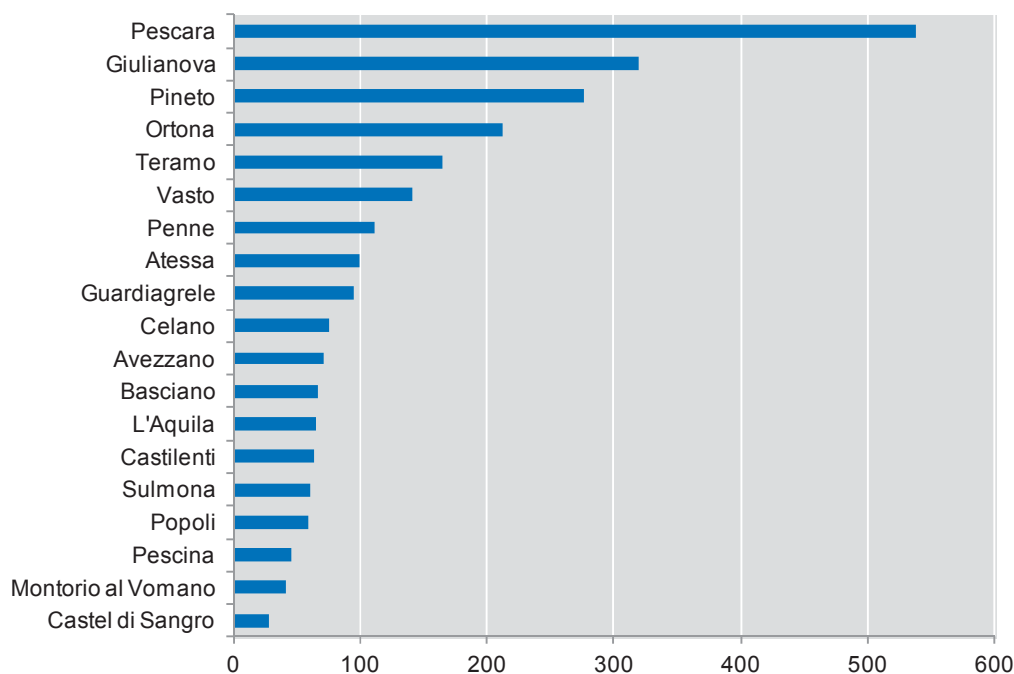


Source: OECD, based on ISTAT data (2001-2010).

### ***Local labour systems of Abruzzo are very heterogeneous in terms of economic structure and performance***

A preliminary description of the heterogeneity of the structure of LLSs in the Abruzzo region can be made by analysing population density. Being an indicator of agglomeration, it furnishes a first description of the extent to which population is spatially concentrated or dispersed throughout the territory. In this respect, it may be useful to recall that high dispersion can be associated with negative environmental externalities – by way of example, due to an increased use of cars – as well as with more expensive provision of public services, in particular in the very sparsely populated areas. As evidenced by Figure 1.17, the Abruzzo's LLSs display highly differentiated values of population density: from a minimum of 28 inhabitants per km<sup>2</sup> – in the case of 'Castel di Sangro', the less industrialised system – to a maximum of 491 inhabitants per km<sup>2</sup> – in the case of 'Pescara', the largest and the second most performing system in terms of population growth between 2001 and 2010.

Figure 1.17. Population densities in Abruzzo's local labour systems, 2010



Source: OECD, based on ISTAT data.

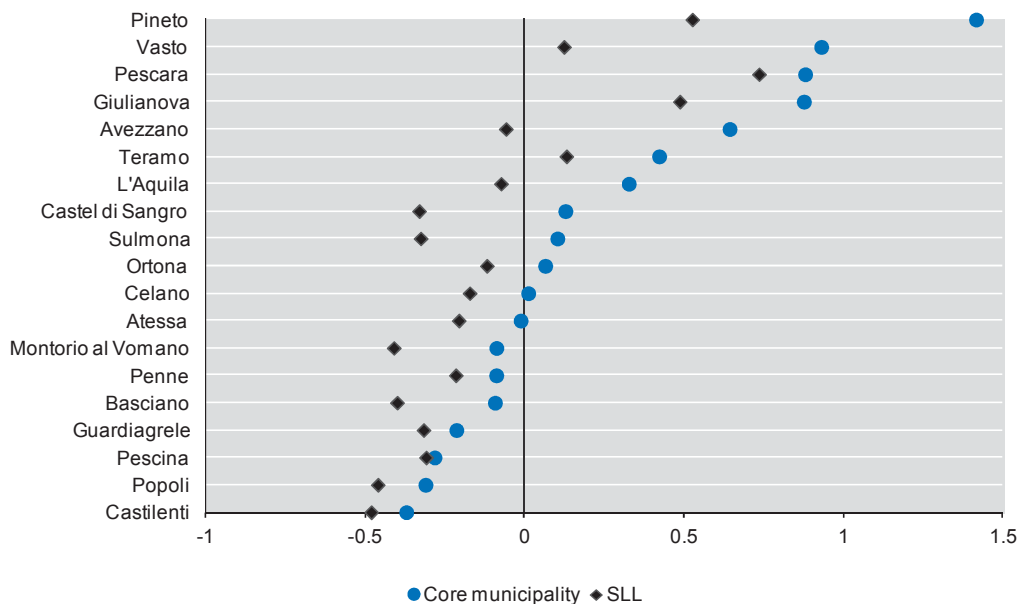
LLSs of Abruzzo are very heterogeneous in terms of their productive structure. Assuming the ISTAT's classification of economic activities (ISTAT, 2001), 6 out of 19 LLSs have a share of employment in the manufacturing sector higher than 35% (see column 6 in Table 1.4). Most of these "industrial" LLSs are localised in the northern part of the region. In 2009 the share of employment in manufacturing activities in the various LLSs ranged from 9.2% (the LLS of 'Castel di Sangro') to 46.7% (the LLS of 'Castilenti').

On examining the LLSs' growth trajectories in the period 1951-2010 one also notes marked differences. Comparing values of the population growth rates in the LLSs and in the corresponding larger municipalities yields two important facts (Figure 1.18):

- Population has grown in a very limited number of LLSs: only 5 out of 19 LLSs have increased in population over the period considered, and 3 of them very significantly ('Pescara', 'Pineto' and 'Giulianova').
- Population has grown in some municipalities but has decreased in the corresponding LLSs: six LLSs have experienced this phenomenon, especially those of 'Avezzano', 'L'Aquila', 'Sulmona' and 'Castel di Sangro'.

Behind the latter point is the weak development trajectory of these LLSs. In fact, in growing LLSs the population and employment in the centre usually spreads outside the centre itself towards the surrounding territory. Many LLSs in Abruzzo are still in a phase where the central municipality is increasing population with concurrent decreasing of activities in the surrounding municipalities.

Figure 1.18. Population growth rate (1951-2010): Local labour systems and their core municipalities



Source: OECD, based on ISTAT data.

### *Major local systems are inter-related in a polycentric structure and Rome is a fundamental external pole*

The polycentric spatial organisation of Abruzzo is characterised by the presence of two main LLSs, those of ‘Pescara’ and ‘L’Aquila’. The LLSs of ‘Avezzano’, ‘Teramo’ and ‘Vasto’ are also relevant urban centres in the context of the regional economy, but none of them seems to exert a clear leadership in terms of size and functions. However, as the region does not have any large metropolitan areas – and, consequently, the related high-level infrastructures and services – no clear hierarchy among Abruzzo’s cities can be detected in functional terms. As a matter of fact, L’Aquila and Pescara share high-ranking administrative functions that in other Italian regions are concentrated in the capital city.

This peculiar “administrative” polycentricity may have both positive and negative consequences. On the one hand, when higher functions are supplied in different urban centres of the region, these functions can be on average more accessible to residents and, to a certain extent, this contributes to meeting the need for a higher level of social cohesion in territorial terms. On the other hand, the polycentric administrative structure of the region might be associated to a potential lack of agglomeration externalities (Veneri and Buralassi, 2012). More generally, small scale systems – like those in the Abruzzo region – often lack high-ranking infrastructures and advanced public and private services. Indeed, in absence of a large metropolitan area and when activities are distributed in a number of small and medium sized centres, a region can benefit less, in terms of average productivity, from agglomeration externalities.

To gain better understanding of the polycentric structure of Abruzzo one must take in account the interactions among its major urban centres and the features of these urban centres, trying to understand potential complementarities to exploit through increased interaction. Each functional area of Abruzzo has different characteristics in terms of urban/rural characteristics, density of activities, economic structure, etc. However, these areas should not be seen as separate, since they are located in the same region and, more importantly, within a close physical (and functional) distance from one another. This means that at this spatial level what happens in a given area affects the other ones, at least in terms of economic development and well-being. In this respect, economic theory helps to understand the nature of linkages between territories and their role for economic development. The spread-backwash effects literature (Myrdal, 1957; Hirschman, 1958), originally used to discuss trade linkages among territories, is useful for this purpose and can be applied to a much broader set of interactions. According to this conceptual framework, the performance of a given place is affected by the performance of other places located in close proximity. When the effect is positive or virtuous, then “spread” effects come into being, and when the effect is negative it gives rise to “backwash” effects. In the real world, both effects occur, and literature found that the net result rests on the nature of the linkages among the various territories and on the distinctive features of the regions (Partridge et al., 2007; Feser and Isserman, 2006).

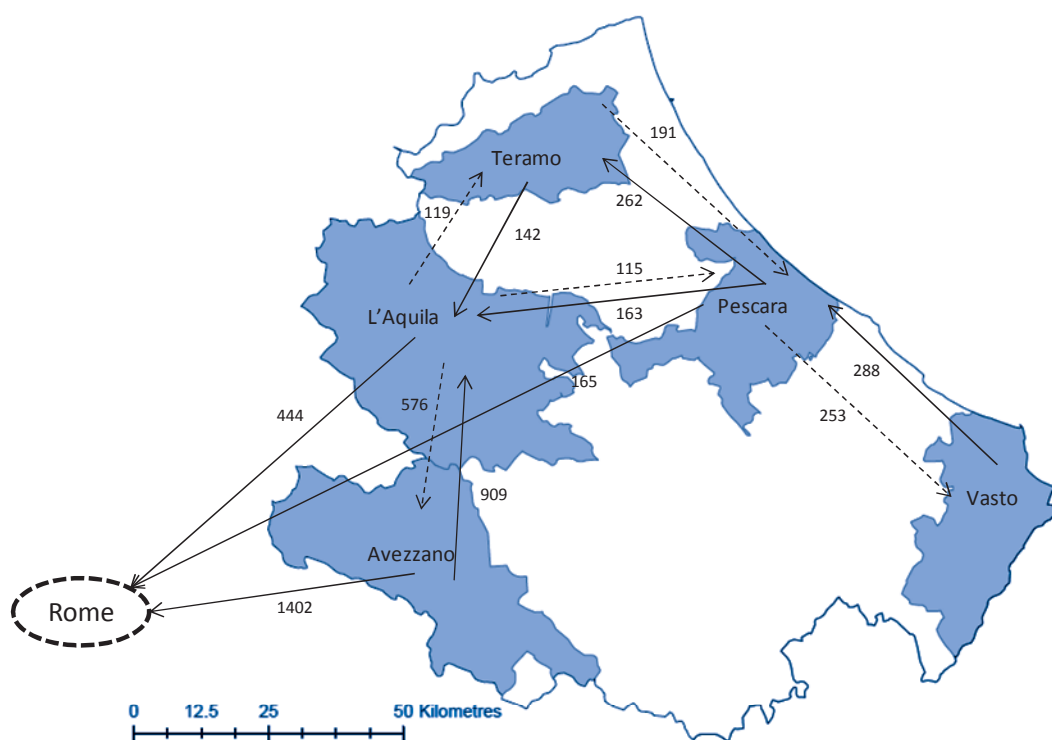
Spread and backwash effects are particularly relevant among areas that are located in close proximity. In this case, we should bear in mind that linkages operate also among areas which have different socio-economic structures and, therefore, also between urban and rural areas. In this respect, one may observe that the growth of an urban area – for example, driven by agglomeration economies – can be a source of spread effects for rural areas. However, there is some evidence that also growth in the peripheral areas positively affects urban areas’ performances (Hughes and Holland, 1994). Given these interconnections among different but close territories, one might want to understand the conditions under which spread effects dominate over backwash effects, improving the competitiveness and the performance of the whole region. Empirical evidence shows that distance plays a central role and that the closer two areas are located, the more likely they are to be connected through spread-type relationships. A further important factor is to be found in the features of the areas under analysis and of the linkages among them (Partridge et al., 2007).

Two further questions should be addressed when analysing the territorial organisation of the Abruzzo region: the relationships among the 19 LLSs and the relationships among Abruzzo’s main cities (and LLSs) and the contiguous Italian regions. Figure 1.19 shows how the major LLSs in Abruzzo are linked in terms of home-to-work commuting flows. As already indicated, here functional areas are approximated with the local systems as identified by ISTAT. Every arrow in the figure represents a commuting flow which comprises at least 100 workers, while the exact number appears close to each arrow. When two local labour systems have linkages in both directions, the dashed arrow represents the lower interaction.

As evidenced by the home-to-work commuting flows depicted in Figure 1.19, the connection between Abruzzo’s main LLSs and Rome is very strong. Indeed, the LLSs of ‘L’Aquila’ and ‘Avezzano’ are more connected to Rome than to the various LLSs in Abruzzo, although distances between them and the other LLSs of the region

are much lower. Even the LLS of ‘Pescara’, notwithstanding its location along the eastern coast, reveals a significant connection to Rome – with as many commuters to Rome as to the LLS of ‘L’Aquila’.

Figure 1.19. **Commuting interactions among the major local systems in the Abruzzo region**



Source: OECD, based on ISTAT data on commuting (2001).

The importance of Rome is also perceived by the local population, as indicated by the responses to the OECD–University of Groningen Community Survey.<sup>9</sup> The majority of respondents indicated Rome as the most important place with which to intensify and improve the linkages for the future development of both the region and the area hit by the earthquake. On the whole, Rome represents a relevant pole of attraction for the Abruzzo region and a place with which to find more complementarities to be exploited.

The western side of the region – taking the Apennines as the watershed– is obviously very much oriented towards Rome. However, the road network built in the recent decades makes Rome a gravitational pole also for the eastern part of the Abruzzo region. It takes about two hours to reach Rome from Pescara and from Giulianova. Naples, one of largest Italian cities and metropolitan areas, can be

reached by car in less than three hours from L’Aquila and in about three hours from Pescara.

Southward, the largest FUA is the city and metropolitan area of ‘Bari’, a distance of 400 km from L’Aquila; northwards, the largest city (and metropolitan area) is that of ‘Bologna’. There is a fairly good train connection between Pescara and these two urban systems and also a fairly good motorway. In the northern part of the Abruzzo region it is important to highlight a strong relational and spatial integration between the territorial system of ‘Teramo-Giulianova’ and the contiguous local systems of ‘Ascoli Piceno’ and ‘San Benedetto del Tronto’ in the neighbouring Marche Region (also with similarities in the economic morphology).

## The region and the natural disaster

### ***The earthquake of 2009 hit L’Aquila and a wide surrounding territory (cratere) characterised by very small municipalities and consequent administrative fragmentation***

Natural events like floods or earthquakes have “spatial boundaries” by definition, as they manifest within a given space. Yet to identify the boundaries of natural disasters is not always an easy task. In so far as natural disasters generate social costs – in the form of human lives, capital destruction or temporary or permanent disruption of the economic process – to define the territorial boundaries is indeed a complex issue. To solve this issue, it requires a collective decision, usually based on the assessment of the relevance of the social and economic costs that the natural disaster has caused.

The territorial boundary of the 2009 earthquake in the Abruzzo region, the area named *cratere*, was identified by the national government in accordance with the Abruzzo region (see Figure 1.20). It comprises 57 municipalities, for a total population of 144 752 inhabitants (2010) and a total land mass of 2 387 km<sup>2</sup>. The largest municipality is L’Aquila, which accounts for around 50% of the total population of the concerned area.<sup>10</sup> This area displays social and economic features that have to be highlighted in order to address key questions concerning the economic and physical reconstruction – and to assess its capacity to recover from the shock.

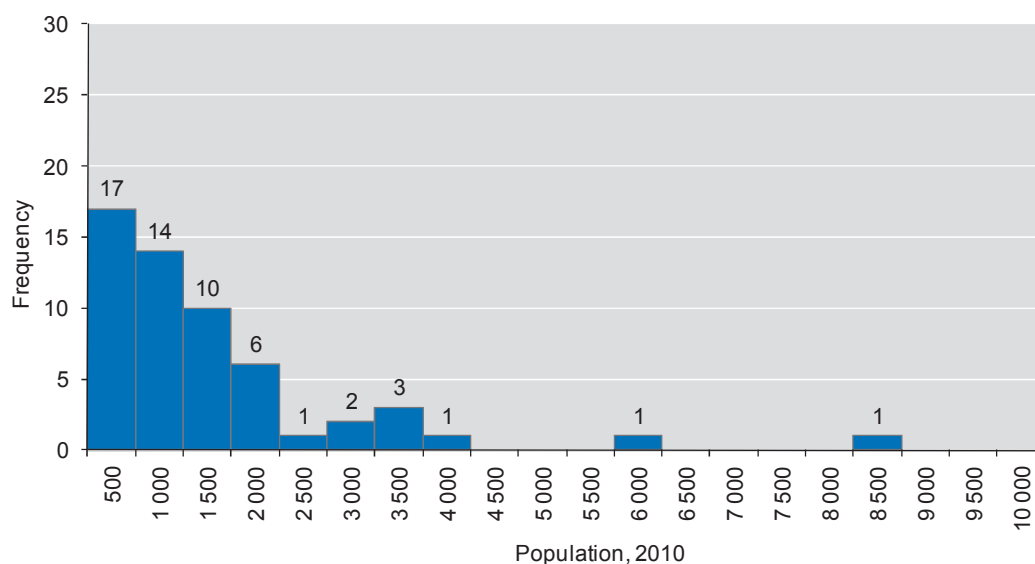
The extraordinary political-administrative fragmentation of the *cratere* is depicted in the Figure 1.21. The second largest commune of the *cratere*, Montorio al Vomano, has only 8 283 inhabitants. Forty-seven communes out of 57 have a population of less than 2 000 units, and 31 less than 1 000 units. To understand the territorial organisation of the area one should also stress that besides the main centres many other smaller settlements are scattered across their territories. The total number of these small settlements, as defined by ISTAT, amounts to 362.



Figure 1.20. Municipalities of the *cratere*, by local system

Source: OECD, based on ISTAT

This political-administrative fragmentation reflects the geography and the history of the area. As already pointed out, it is a mountain area whose economic base was made up of the typical agro-pastoral activities of the Italian Apennines. The municipality of L'Aquila has grown in population by 32% over the period considered. The whole FUA of L'Aquila is comprised of 29 municipalities, all but one are part of the *cratere*. On the whole, the FUA of L'Aquila concentrates more than 70% of the total population and 77% of total employment of the *cratere*. It follows that the future development trajectory of L'Aquila constitutes a key issue for the economic recovery of the whole area and should be a fundamental target of regional and national policies.

Figure 1.21. **Municipalities of the *cratere*, not including L’Aquila**

Source: OECD, based on ISTAT data.

### ***L’Aquila should focus on its economic base to recover from stagnation and the effects of the earthquake***

L’Aquila displays an economic base that is typical of an “administrative city”. Historically it has played the role of the administrative, cultural, economic and political centre of a large territory, roughly corresponding to the functional area (local labour system) as identified by ISTAT (see below). In the early 1970s the introduction in Italy of the regions as political-administrative units marked a watershed in the economic history of the city. In 1971 L’Aquila became the capital city of the Abruzzo region, and in the subsequent years the employment in the public sector increased, consolidating its feature as administrative city. Analysis of the economic base of L’Aquila shows that the public sector is by far the most important source of employment for the city (see Minister for Territorial Cohesion, 2012).

The foundation in 1961 of the University of L’Aquila marked a further key moment in the economic history of the city. The number of students soared steadily over the years to a total of about 24 000. Although not more than 8 000-10 000 students were residents, the University of L’Aquila established a fundamental pillar of the economy of the city. Out of a population of about 70 000-80 000 inhabitants, L’Aquila clearly qualifies as a university city.

In the 1960s and in the 1970s the manufacturing sector also experienced significant expansion. The quality of life the city could offer to residents and visitors, its proximity to Rome, the human capital and the presence of technical facilities increased the incentives for investing in an economically lagging area, which led to the formation of a technologically advanced manufacturing sector. The

manufacturing sector has played an important role in the diversification of the economic base and the social morphology of the city, its importance has never been comparable to that of the public sector in generating employment and income in L'Aquila.

The fourth pillar of the economic base of L'Aquila is the retired population that can be estimated in a range of 21 000-23 000 people in the FUA of L'Aquila. In terms of income “generated” (used) the retired population stands second in importance only to the public sector. Noteworthy to observe is that this is not an economic peculiarity of L'Aquila: the retired population plays the same economic role in most Italian and European cities.

In regards to the city's resilience, the features of the economic base of L'Aquila have to be taken carefully into consideration. First of all, the earthquake did not amount to a dramatic disruption in terms of income generation. Some sectors – public sector and “pension sector” – were not affected at all; the manufacturing sector recovered in most cases rapidly from the earthquake while there was a sharp reduction in the number of students resident in the city – the current estimated number is above 3 500 units.

From an economic perspective the 2009 earthquake had a dramatic impact on the physical capital (buildings and infrastructure) and, consequently, imposed transaction costs and rationing of private and public services and social relationships. The estimated damage of the earthquake on the physical capital amounts to about EUR 8 billion, with 37 000 buildings severely damaged – most of them located in the FUA of L'Aquila (data provided by the Department for Planning and Coordination of Economic Policy, DIPE).

The accurate description of the economic base of L'Aquila is relevant in order to explore the city's economic prospects. Neither the pension sector nor the public sector can be expected to increase the level of household income over the next decade and beyond. On the contrary, it is more likely that incomes generated by these two sectors will stagnate or decline moderately. Against this background, consolidation of the manufacturing sector through its technological up-grading and increases in its competitiveness are key issues. A further key issue is the recovery and up-grading of the University of L'Aquila. Turning it into a full residential university and an economic driver of the recovery may strongly support the development trajectory of the city in the next decades. This perspective will be presented in Chapter 6.

## Abruzzo towards 2030: Challenges

### *The economic context of Abruzzo has changed in the last few years*

Since the mid-1990s Abruzzo's economy has been affected by a sequence of “shocks”, generated by institutional and economic changes at national, European and global level. Four main changes in the Abruzzo region's economic context can be identified: *i*) a progressive reduction of external aid; *ii*) a sharp reduction in the growth rate of the Italian economy; *iii*) a substantial reduction in public spending; *iv*) internationalisation of the European and Italian markets. A further shock has to be taken into account for its significant impact on the future development

trajectories of the Abruzzo region: the 2009 earthquake with its epicentre in the regional capital, the city of L’Aquila.

Having lost the status of “backward region” in the late 1990s,<sup>11</sup> the Abruzzo region was no longer entitled to be the recipient of the substantial aid that had shaped actors’ strategic behaviour and, consequently, its economy and society in the previous four decades. This institutional change has radically modified the location advantages that had fostered exogenous and endogenous economic growth in the previous decades, and has marked the beginning of a new phase in the economic history of this region.

The past decade was a period of stagnation for the Italian economy, and this adversely influenced the performance of the Abruzzo region. Stagnation reduced the effective demand coming from other Italian regions and significantly affected Abruzzo, one of smallest Italian regions. There is no expectation of a sharp increase in the growth rate of the Italian economy in the next years. Therefore, the Abruzzo region has to thrive with these economic constraints.

The effects of the financial crisis that started in 2008 have had deeply worrying consequences for Italy. In essence, it brought about the latent fiscal crisis of the Italian state, turning the funding of its substantial public debt into a very difficult – and particularly costly – enterprise. The stabilisation policy pointed to a sharp reduction in public budget with the expected impact on the level of activity in the short and medium term. The constraints on the public spending have also taken the form of a re-allocation of the budget, with differentiated effects at local level.

The increased internationalisation of the European and Italian markets has put further pressure on the whole of Abruzzo’s economy – and particularly on the manufacturing sector – by changing its competitive base. This is a question of great relevance for a region that, as a result of the incentives provided in the past by the *Cassa per il Mezzogiorno* scheme, hosts a number of multi-national manufacturing enterprises, by definition oriented to evaluate the location advantages on a global scale.

Finally, the devastating earthquake that hit the region in 2009 must be considered. It affected 22.2% of the regional territory and 10.8% of the regional population – 309 people lost their lives. L’Aquila, the capital city of the region, was severely hit, and almost its entire historical centre – one of the most renowned in Italy for its architectural heritage – and most of the minor settlements making up this peculiarly dispersed city – all of historical value – suffered extensive damage.

The institutional, economic, and natural shocks briefly described above amount to a severe threat for the long-term development trajectory of the Abruzzo region. The development trajectories followed by the region in the past decades have yielded an economic, social and territorial structure which displays the distinctive features summarised in the previous chapters. This structure is to be taken as the starting point for a proper understanding of the threats that the region will have to confront.

This report identifies four main threats to the region. They are structural in nature, to the extent that they are rooted in deeply embedded features of the Abruzzo region’s economy and in its long-term economic trends.

### ***A shrinking manufacturing sector is a threat for the Abruzzo economy***

Globalisation and increasing international competition – in conjunction with reduced external aid – are putting pressure on the manufacturing base of the Abruzzo economy, both in terms of total employment and productivity. The process of European integration and the increasing internationalisation of the European economy will likely continue in the next decade and more. In this respect, the current performance of the manufacturing sector will not be easily maintained or improved, given the current configuration of relative prices, technologies and agglomeration economies that determines the productivity of the manufacturing firms operating in the Abruzzo region.

The economic consequences of a stagnating or declining manufacturing sector should not be undervalued. Its decline will not be counterbalanced by the dynamism of the public sector, which cannot be expected to increase its employment (and productivity) in the next two decades in Italy. Moreover, it will not be easily compensated for by the expansion of tradable services, given the absence of large cities that might otherwise play a role in this market at national or international level. Moreover, although tourism has a potential so far only partially exploited, it will not be able to play the role that the manufacturing sector has previously performed in generating employment and income. A shrinking manufacturing base is a real threat to Abruzzo's economy.

### ***Territorial polarisation may further increase***

A further increase in territorial polarisation expressed in terms of municipalities and local systems also represents a threat. The polarisation process may take two forms. The shrinking provision of public goods – and locally embedded demographic trends – may speed up territorial polarisation – which, as previously stressed, has been extremely strong in the Abruzzo region in the past decades – between winning and losing systems. A large number of the local systems that according to their past performances may be classified as “losing systems” may continue to decline. Not being sustained by viable economies, they will decline for economic and also demographic reasons. Yet, a process of polarisation may also take place among the local systems that may be classified as “winning systems” due to their past performances. In fact, differences in the industrial organisation and sectoral specialisation of the main local systems – and also differences in their ability to devise adequate strategic responses – may lead to strongly differentiated dynamic performances, generating a further spatial concentration of the manufacturing sector and population.

Polarisation may also take place within each local system in the form of a relative increase of population in the pivot municipalities. This a phenomenon already observed in previous decades in the Abruzzo region and particularly in some of its local systems.

The most important negative economic outcome of territorial polarisation, as it is manifesting in a mountain region like Abruzzo, is the amount of unused – and, consequently, decaying – physical, cultural, ecological (landscape), human and relational capital (that for brevity can be termed “territorial capital”). By disrupting or leaving unused important elements of the local capital, territorial polarisation substantially reduces the potential contribution of agriculture and tourism to

Abruzzo's economic welfare. A second negative outcome of territorial polarisation is the concentration of population and social/economic processes in a few poles, with the consequence of reducing the degree of polycentricity of the region, a feature which is highly valued in the regional, national and European social preference functions. Indeed, a region such as Abruzzo with a territorial organisation characterised by small cities (and urban systems), while cannot gain much from spatial concentration (in terms of the returns to scale associated to the sheer dimension of the territorial units), may lose much in terms of territorial cohesion as a consequence of spatial concentration.

***Quality of life in Abruzzo's urban areas may not be sufficiently high to maintain their attractiveness for people and investments.***

The third threat is apparently more elusive, but indeed very concrete: the risk for Abruzzo to be stuck in a situation in which urban areas display low levels of energy efficiency, environmental sustainability and quality of life. And these are spheres in which European cities are currently strongly engaged in order to compete in the international arena. Neglecting the relevance of improving urban communities can make cities lagging behind in terms of development or even push them into decline. Indeed, demand for vital, safe and attractive communities increasingly plays a crucial role in shaping the strategies of territorialisation of households and firms. Not to be able to keep up with the expectation of the population in terms of urban quality will reduce the attractiveness of cities and reduce investments and innovation.

***The difficult economic recovery for L'Aquila would strongly reduce the economic potential of the entire Abruzzo region.***

A further fundamental threat for the Abruzzo economy and society lies in the consequences of the earthquake that hit L'Aquila in 2009. The devastating effects of the earthquake on the social and also physical fabric of the city have given rise to a very complex policy issue. Due to the features of the settlements – the historical importance of the buildings and the constrained sequence in the reconstruction intervention – reconstruction will be slow, and it is expected to be completed in ten years. Besides, given the peculiarity of its economic base, L'Aquila may experience an economic decline in the form of reduction in employment and income in some of its base sectors. A more worrying threat to the economic future of the city refers to a “simplification” of its economic structure that will turn L'Aquila into a purely administrative city. Such an evolution would strongly reduce the economic potential of the Abruzzo region. Indeed, for its geographic position and territorial capital endowment, L'Aquila could instead build a strong export services sector over the next two decades.

The threats outlined above should be turned into challenges, pointing to the policies that ought to be designed to meet them. Indeed, these threats are not out of the reach of public policies, even though to be addressed a profound change in the policy paradigm is required.

Table 1.5. **Threats, implications and challenges in Abruzzo**

Threats	Main implications	Emerging challenges
Globalisation and increasing international competition	Declining manufacturing base	Upgrading the manufacturing base: Towards a Regional Innovation Strategy
Excessive territorial polarisation	Negative effects on the existing stock of territorial capital and its degree of activation	Boosting tourism and the use of territorial capital
No or slow economic recovery of L'Aquila after the earthquake	Potential scenario of decline for L'Aquila, one of the strategic urban areas of the Abruzzo region, with huge losses of territorial capital and consequences for the economy of the whole region	Strengthening the economic role of L'Aquila: higher education and research
Lagging behind in terms of energy efficiency, environmental sustainability, quality of life, sustainable urban mobility, etc.	Negative effects on the territorial competitiveness of the main cities. In fact, other cities in Europe are improving these aspects as crucial factors for attracting people and activities.	Making the most from the opportunity of the reconstruction of L'Aquila by creating a "laboratory" to improve the "smartness" of the whole Region.

### ***Upgrading the manufacturing base: Towards a regional innovation strategy***

The formation of a manufacturing base has been central to the Abruzzo region's strong performances in the past decades and of its current level of employment and *per capita* income. Under the pressure of international competition and the long-term effects of a decrease in support from the central state, the manufacturing sector has entered a phase of uncertainty as far as its future performances are concerned. The challenge is to maintain – and possibly increase – the current level of employment and productivity. This objective may be attained only through an upgrading of the production technologies, affecting both products and processes, and also of the marketing strategies.

Given the industrial organisation of the manufacturing sector of this region, the role of clusters and networks is crucial to foster technological and organisational innovation. To improve the vertical relationships between the main manufacturing firms and their suppliers and also the horizontal relationships among clusters of small firms will prove a key factor to meet this challenge. With regard to this issue the three universities of the Abruzzo region may play an important role in shaping and fostering innovation, both directly providing services to firms but also acting as incubators of new firms (spin-offs).

Another key element is the spatial dimension of the manufacturing sector. All industrial poles are small or very small in relative terms, even by Italian standards. After all, Abruzzo is one of the smallest Italian regions and the urban system of 'Pescara' is the only one that has a scale that warrants strategic autonomy. However, all industrial poles are spatially quite close to each other. In some cases they are practically contiguous. This feature opens up the possibility of the formation of innovation networks stretching over more than one urban system and industrial pole.

### ***Improve the use of territorial capital: Natural environment and cultural heritage***

Although in recent decades tourism has significantly increased in the Abruzzo region, there is still untapped potential. With most of its territory classified as mountain area and a fascinating historical heritage – celebrated in literature and photography – the Abruzzo region has an extraordinary amount of cultural and ecological capital for the tourism industry. Its natural assets have long been appreciated. A large part of the land of the region – 36% – is “under protection”: Abruzzo hosts three national parks, one regional park and 15 natural reserves.

What has hampered the full exploitation of this potential is the difficulty of organising the availability of tourism services in a territory with features as distinctive as those of the Italian Apennines. Given the territorial capital of these mountain areas – made up of extremely complex settlement patterns, endowed with very rich bio-diversity and characterised by geographic and cultural fragmentation – what this territory can offer is a highly structured travel experience, a kind of “service” which needs to be provided by highly skilled and locally embedded organisations. In this respect, the Abruzzo region can boast many instances of appropriate use and management of its territorial capital. Notably, the Abruzzo, Lazio and Molise National Park – which is characterised by many human settlements within its boundary, as are all natural parks located in the Apennines – has developed innovative tourism services based on the sustainable use of the local capital. This park, the first to be established in Italy (1921), is recognised as an example of good practices developed over many years. The other two national parks of the Abruzzo region – Gran Sasso-Monti della Laga National Park (1991) and Majella National Park (1991) – are also steadily improving the sustainable management of their natural and cultural capital. Instances of good tourism practices can also be seen outside the protected areas. However, a very large number of areas have not reached their full potential as tourism destinations.

### ***Higher education and research: The economic role of L’Aquila***

The Abruzzo region hosts three universities (Teramo, Pescara-Chieti and L’Aquila) which in the past decades have attracted students mostly from the region or from other regions of southern Italy. The largest university, and also the one with the most potential to increase its national and international role, is that of L’Aquila. However, a stronger relationship with the local manufacturing and services firms is required. The presence of the Gran Sasso National Laboratory, one of the most renowned in the world for its experimental facilities for particle physics and nuclear astrophysics, and the recently launched Gran Sasso Science Institute – which is expected to have about 120 doctoral students – help L’Aquila to qualify as a city of higher education and research.

The Abruzzo region would greatly benefit from an increase in L’Aquila’s capacity to exploit its potential and expand its higher education and research sector so that it becomes a pillar of the local and regional economy. To play this role the University of L’Aquila will have to significantly increase the number of students and researchers coming from other Italian regions and also from abroad. Expanding the higher education and research sector will also greatly benefit the relatively small but innovative manufacturing poles of the city, with the chance to establish a strong relationship between research and social, organisational and technological innovation.



The 2009 earthquake has put at risk the future of L'Aquila as a higher education and research centre, destroying most of the university buildings and facilities and disrupting the university life, which was highly concentrated in the historical centre. To help the University of L'Aquila recover and further develop must be a key focus for both regional and local policy makers.

### ***Energy efficiency and sustainable development***

Dramatically increasing the energy efficiency of the economic process and making production and consumption processes more environmentally sustainable are rules by which regions and cities are expected to abide within the institutional framework of the European Union. These are objectives that are to be pursued with determination at regional and local levels in the next two decades. The notion of smart cities may be taken as the paradigm of the social and technological changes required to increase energy efficiency and environmental sustainability.

L'Aquila may play a fundamental role in paving the way towards the implementation of the concept of smart cities in the Abruzzo region. The fact that a large part of the city has to be re-constructed provides an opportunity to use the most up-to-date environmentally friendly technologies and also to test the most effective incentive schemes to modify agents' choices in the desired direction. In the next decade – the period in which most of the physical reconstruction will take place – L'Aquila may be turned into a laboratory with regard to the implementation of the paradigm of smart cities, establishing a benchmark for all other urban systems in the region and also providing a policy model.

## Notes

1. Taken from ISTAT (2009), *Asia database*, [www.istat.it/it/archivio/29456](http://www.istat.it/it/archivio/29456), which refers only to private businesses in industrial and service activities (agriculture and the public administration are excluded).
2. See OECD (2011) for details on the way the index is constructed.
3. Due to lack of data, the following countries were not included in computing the average OECD value: Australia, Canada, Chile, Estonia, Israel, Japan, Korea, Mexico, New Zealand, Poland, Slovenia and Sweden.
4. Not including inventors located in Italian regions.
5. The indicator on import should be interpreted with caution, due to the relatively large uncertainty concerning the territorial allocation of import data.
6. National service exports include all the services including tourism and excluding transport.
7. These data do not come from official sources. They are estimates provided by De Bonis et al. (2010).
8. Recent legislative changes (Law 135/2012) in the territorial governments will partially modify the current situations. See Chapter 2 for details.
9. See Annex 3A.1 for details on the survey.
10. The FUA of L'Aquila (89 189 inhabitants) accounts for 62% of the total population hit by the 2009 earthquake.
11. It moved out of the Objective 1 European regions which receive the largest share of EU Structural Funds.

## Bibliography

- Baldwin, R.E. (2004), “Openness and Growth: What’s the Empirical Relationship?”, *Challenges to Globalization: Analyzing the Economics*, National Bureau of Economic Research, Inc.
- Barbieri, P. and S. Scherer (2011), “Retirement in Italy: Rising Social Inequalities across Generations”, in H.P. Blossfeld, S. Buchholz and K. Kurz (eds.), *Ageing Populations, Globalization and the Labor Market: Comparing Late Working Life and Retirement in Modern Societies*, Edward Elgar, Cheltenham.
- De Bonis, R., Z. Rotondi and P. Savona (2010), *Sviluppo, rischio e conti con l'esterno delle regioni italiane: lo schema di analisi della “pentola bucata”*, Laterza, Rome.
- Dexia/CEMR (2012), “Subnational Public Finance in the European Union”, [www.dexia-creditlocal.fr](http://www.dexia-creditlocal.fr).
- Faggian, A. and P. McCann (2009), “Human Capital, Graduate Migration and Innovation in British Regions”, *Cambridge Journal of Economics*, Vol. 33, No. 2.
- Feser, E. and A.M. Isserman (2006), *Harnessing Growth Spillover for Rural Development: The Effects of Regional Spatial Structure*, University of Illinois.
- Hirschman, A.O. (1958), *The Strategy of Economic Development*, Yale University Press, New Haven.
- Hughes, D.W. and D.W. Holland (1994), “Core-Periphery Economic Linkages: A Measure of Spread and Possible Spread Effects for the Washington Economy”, *Land Economics*, Vol. 70, No. 3.
- Iapadre, L. (ed.) (2009), *Integrazione internazionale, sistema finanziario e sviluppo dell'economia abruzzese*, Il Mulino, Bologna.
- ISTAT (2001), *8° Censimento Generale dell'Industria e dei Servizi. Distretti industriali e sistemi locali del lavoro*, ISTAT, Rome.
- ISTAT (n.d.), Labour Force Survey, accessed 10 January 2013, [www.istat.it/en/labour](http://www.istat.it/en/labour).
- ISTAT (2009), *Asia database*, [www.istat.it/it/archivio/29456](http://www.istat.it/it/archivio/29456).
- Ministry for Territorial Cohesion (2012), “L’Aquila 2030: Una strategia di sviluppo economico”, report commissioned by the Minister for Territorial Cohesion, Rome.
- Myrdal, G. (1957), *Economic Theory and Underdeveloped Regions*, University Paperbacks, Methuen, London.
- OECD (2011), *Regions and Innovation Policy*, OECD Reviews of Regional Innovation, OECD Publishing, doi: 10.1787/9789264097803-en.

- OECD and University of Groningen (2012), *Building Resilient Regions after a Natural Disaster: Abruzzo towards 2030: On the wings of L'Aquila*, issues paper presented at the OECD Forum, L'Aquila, 17 March 2012.
- Partridge, M., R.D. Bollman, M.R. Olfert and A. Alasia (2007), "Riding the Wave of Urban Growth in the Countryside: Spread, Backwash, or Stagnation?" *Land Economics*, Vol. 83, No. 2.
- Veneri, P. and D. Burgalassi (2012), "Questioning Polycentric Development and its Effects: Issues of Definition and Measurement for the Italian NUTS-2 Regions", *European Planning Studies*, Vol. 20, No. 6.



## *Chapter 2*

### **A renewed governance system to improve regional policy in Abruzzo**

*In order for Abruzzo to implement an integrated regional development strategy, stakeholders will have to establish a common strategic vision. They will need to share objectives and information; agree on funding allocation and priorities; develop their own capacities; and be engaged in transparent decision making and evaluation. This chapter describes the governance challenges Abruzzo faces. It suggests three broad priorities for improving and supporting an integrated development strategy for the region. Abruzzo should reshape its territorial governance in order to reduce administrative fragmentation and strengthen the largest functional urban areas. It must provide local administrations with instruments to improve their organisational and planning capacity. And it must improve the transparency and accountability of policy making, including the dialogue between public and private stakeholders and the quality and use of public information.*

## **Introduction: An integrated regional development strategy for Abruzzo**

The redevelopment strategy for Abruzzo and L'Aquila requires a vision and rethinking of the potential of the region. The need for such a rethinking is crucial in light of the long and slow downward trend experienced by the region's economy in recent decades and the devastating impact of the 2009 earthquake.

Like most natural disasters, the earthquake of L'Aquila has a specific regional dimension. This is not only because the earthquake damaged part of the region's physical capital and disrupted the social and economic processes, but also because the amount of financial and organisational resources that the regional government has had to put in place to support the recovery is substantial, affecting the entire economy of the region. This report proposes a set of regional policies aimed at increasing the resilience of the whole regional system.

### ***Abruzzo has the opportunity to reform regional policy to increase its resilience***

Abruzzo now has the opportunity to reform its regional policy to foster a new development vision, overcome its fragmentation, move forward as a community and to connect the region with the global economy. Such a strategy is ambitious, and is aimed at helping Abruzzo to achieve its objectives in terms of the well-being of its communities. Along with many OECD regions, the redefining of a regional development trajectory requires a reconsideration of the region's assets, strengths, weaknesses, threats and opportunities, and a re-examination and restructuring of the region's institutional and governance arrangements, in ways which are most appropriate for strengthening its resilience and supporting long-term development.

This report suggests that Abruzzo implement an integrated development strategy based on four main pillars: improve the regional governance system, build a regional innovation strategy, make better use of the natural environment and cultural heritage, and follow a smart cities agenda. These pillars, which will be presented in this and the following chapters, are expected to have an impact on different local systems of the region. At the same time, an integrated regional strategy should be designed on the basis of interaction with and input from local actors with local priorities and differing development strategies. Chapter 6 explores the development strategy for L'Aquila, which was dramatically affected by the 2009 earthquake and is most in need of a long-term development strategy. This report suggests that L'Aquila build its development strategy with the objective of becoming more knowledge-driven, creative, smart and open.

Because Abruzzo is in the process of a recovery which will take time, considerations were made also regarding the speed of impact on the economy and society of the different policies in the long-term strategy. The regional innovation strategy, based on diversification and upgrade of the available capabilities and competences can rapidly support economic growth. Similarly, the agenda to develop L'Aquila can, during the recovery and reconstruction period, transform the city and increase its attractiveness and generate positive spill-overs through commercially viable applications. An integrated strategy for tourism based on the natural environment and cultural heritage will, instead, have an economic impact later in time, though it has to be put in place urgently to better exploit the extraordinary cultural heritage and natural environment of the region.

An integrated approach for implementing the redevelopment strategy would be more beneficial than a sectoral one, as synergies among the different pillars will reinforce the outcomes: transparent and inclusive decision making, for example, can strengthen networks between economic actors and help innovation transmission; the natural, cultural and heritage resources of the region are major assets for producing innovative services; a major benefit of the smart city agenda is to foster governance innovation, combining technology-led innovation with institutional innovation across the private, public and civil society sectors and so on.

### ***Changes in the governance system are required to support the long-term development strategy***

For Abruzzo to implement an integrated regional strategy, relevant stakeholders will have to converge towards a common strategic vision, share objectives and information, agree on funding allocations and priorities, develop their capacities and be engaged in transparent mechanisms of decision making and evaluation of public action (OECD, forthcoming).

In Italy, administrative regions, which have gained a growing economic role since the early 1970s, today enjoy substantial strategic autonomy and have the political power to play an important role in the economy by shaping local institutions and allocating the financial resources they command directly and indirectly. The Abruzzo regional government will therefore continue to play a key role in the development policies of the region over the coming years. However, new multi-level governance arrangements are required to cope effectively with the threats imposed by the region's current economic difficulties and to prepare for possible future shocks. In addition, the region must introduce instruments to improve the capacity of public and private actors operating in the regional system, and to facilitate communication and networking across institutions.

The 2009 earthquake has brought to centre stage the difficulty of co-ordination across different institutions and levels of government. The difficulty in the multi-level governance of the region arises primarily from, poor accountability of policies and fragmentation of decision making across various levels, linked to a dialogue with stakeholders which is not systematic, poor information sharing and low engagement of citizens. A lack of tools for capacity building intensifies these structural weaknesses. More accountable and participatory governance would not only allow decision makers to rely on a richer spectrum of evidence and input before making their decisions, but it would also force them to confront potentially diverging ideas, argue their case more robustly and improve the quality of decision processes.

Strategy building in post-disaster regions requires swift consensus building and decision making. Using the terminology coined by Putnam (1995), this implies a decisive effort both at bonding (that is the creation of channels of communication networks within homogenous groups and organisations) and at bridging (the creation of channels of communication and networks across groups and organisations). In the case of Abruzzo in particular, both bonding and bridging have been limited, leading to a situation in which decision making has become extremely atomised. Public institutions can strongly contribute, through their own renewal and improved interaction, to recreate trust and shared ownership as well as to allow for the implementation of integrated approaches. The experience of the 2011 Great East Japan Earthquake provides precious insights into the potential benefits of integrating the governance of post-disaster reconstruction, involving all relevant levels of government (Box 2.1).



Given the governance challenges Abruzzo faces, this report suggests three main priorities for improving the governance system to support the integrated regional development strategy. These are:

1. Reshape the territorial governance of the region to overcome administrative fragmentation and strengthen the largest functional urban areas (FUAs) of Pescara and L’Aquila.
2. Engage in systematic capacity development for multi-sectoral planning; improve the transparency and accountability of policy making, the dialogue with public and private stakeholders and the quality and use of information.
3. Improve the quality of decision-making processes by engaging community deliberation in the definition of regional development strategies.

Multiple instruments can be used by Abruzzo to address the governance challenges identified. Some of them will be outlined in the following paragraphs and in the thematic chapters related to the main components of the regional strategy (innovation, territorial capital and an agenda for L’Aquila). Given the specific relevance of community engagement in post-disaster regions, this aspect is addressed in a separate chapter with reference to the 2009 earthquake in L’Aquila (Chapter 3).

## Reshaping territorial relationships

### *The high administrative fragmentation in Abruzzo is a challenge for investment and service delivery*

The first step toward a more effective governance framework is to overcome administrative fragmentation and to narrow administrative gaps, i.e. to reduce the mismatch between administrative boundaries and functional economic areas, which present a challenge for service delivery, public investment and economic development.

The legislation concerning the Italian system of local government and governance has been constantly in flux in Italy in the past 20 years, since the Law 142/1990 marked a sharp change in the recent history of the Italian political administrative system. The last change in the local government and governance legislative framework was made very recently, in July 2012 (Law 95/2012, see Box 2.2). The aim to reconcile the discrepancy between the administrative (municipal) and the functional partition of the territory is at the origin of the changes in legislation. On the basis of the legislation in place since 1990, the inter-municipal clusters could have developed various forms of integration. Yet, notwithstanding its indisputable advantages, institutional integration has not been prioritised in Italy or Abruzzo to the extent necessary to keep up with the strong territorial integration which emerged from the spatial and economic development. There are two main reasons for the lack of institutional integration:

- Continuous changes in the legislation have resulted in only marginal changes in the system of local government and governance.
- The political climate in the past two decades, which favoured a “local”, i.e., municipal, vision of the policy-making process *vis-à-vis* a regional scale.

### Box 2.1. Integrating post-disaster reconstruction governance: The 2011 Great East Japan earthquake

The scale of disaster following the Great East Japan Earthquake, which hit Tohoku Region in March 2011, was unprecedented. The National Police Agency reports that the earthquake resulted in more than 18 000 dead/missing and about 130 000 fully devastated housings, as of 10 October 2012. Japan followed an integrated recovery approach with all stakeholders, since respective local authorities were not in condition to programme and manage reconstruction process by themselves. This required the involvement not only of national and local governments but also private sector and civil organisations as well as academia.

The integrated approach relies on the following pillars:

1. Strengthening regional mitigation co-operation, notably in the promotion of mutual aid partnership in preparation for disaster. These partnerships have included dispatching officials, delivering emergency supplies and accepting evacuees and they usually stretch beyond geographic proximity to avoid the simultaneous damage in neighbouring zones. The national government has supported these initiatives via the amendment of Disaster Countermeasures Basic Act and Basic Disaster Management Plan.
2. Vertical co-operation: as in the case of L’Aquila, the Great East Japan Earthquake damaged the very government function at local level. Particularly reduced was the local capacity for specialised urban development projects management. Accordingly, the national government arranged to second experienced officials from local governments all over Japan to the affected area. It also developed a database of urban development advisors, facilitating the most appropriate allocation of expertise and know-how.
3. Horizontal co-operation at the national level: Acknowledging that the reconstruction process is potentially very complex and should involve all ministries, Japan established the Reconstruction Agency in February 2012. The Agency, headed by the prime minister, co-ordinates the reconstruction activities of sectoral ministries. It relies also on local offices to directly respond to local needs. The related Special Reconstruction Area Act implements the principle of “no one-size-fits-all solutions”, taking account of the size of the hit zone and the different needs of each local government. Co-operation of sectoral ministries is also in progress outside the agency’s remit. For example, the Ministry of Education and the Ministry of Infrastructure agreed to align public school reconstruction and surrounding urban development in the affected area.
4. Public-private partnerships (PPP): In times of severe fiscal constraints, recourse to PPPs is essential. The Ministry of Infrastructure has thus conducted PPP feasibility studies in the affected areas, covering urban development, public housing and support for long-term evacuees. Based on a study, the town of Yamada in the Iwate prefecture has planned its urban re-organisation on the basis that the public sector provides infrastructure development while local business organisations manage the temporary shopping malls and diverse events. PPP fora were at work also in the capital region of Tokyo, where about 5.15 million people had difficulty in coming home due to the transportation bottlenecks. The government had subsidised the private sector to secure shelters, store necessary supplies and implement emergency drills to cope with emergencies.

*Source:* Ishigaki, K. (2012), Presentation at the OECD-University of Groningen Forum on Abruzzo, 17 March 2012, and [www.reconstruction.go.jp/english/](http://www.reconstruction.go.jp/english/).

### Box 2.2. Territorial reorganisation in Italy (Decreto Legge 95/2012)

According to Law 95/2012, the number of Italian provinces should be reduced from the current 86 to 51 through the merging of small contiguous provinces within the same region. The new provinces will be expected to have a population at least 350 000 and an area of at least 2 500 km<sup>2</sup>. The four provinces in Abruzzo will become two: L'Aquila-Teramo, and Pescara-Chieti. The provinces will maintain responsibility for territorial planning, transport and schools. The political governments will be abolished and substituted by the appointment of three councillors.

Ten of the fifty-one provinces will have a special institutional organisation as metropolitan areas: Rome, Torino, Milan, Venice, Genoa, Bologna, Florence, Bari, Naples and Reggio Calabria.

The new system should take place from January 2014. However, the implementation of the reform is, at the moment of publishing this report, uncertain.

*Source:* Parlamento Italiano, Camera dei Deputati, [www.camera.it](http://www.camera.it).

There is a general trend in the European Union towards forms of institutional co-operation among municipalities that are territorially integrated. This integration forms the basis of forward-looking strategies for the largest clusters, namely those having a straightforward urban or metropolitan nature. But it is equally important to ensure effective and efficient policy in small, marginal areas (and often mountain areas). In fact, there are two important downsides to administrative fragmentation: *i*) a lack of efficient scale for public service delivery and economic development; and *ii*) weaknesses in municipal capacity (strategic and technical knowledge, financial, organisational, etc.).

Different approaches have been developed in OECD countries to provide incentives to local systems to adapt their institutional structures (Blöchliger and Vammalle, 2012). These include financial incentives, compensatory measures and optimal size targets (Figure 2.1). The extant Italian legislation concerning local governance offers an array of instruments to establish effective forms of governance. The pressure to follow in this direction exerted by the central government has recently increased. Consequently, facilitating the establishment of an appropriate governance system should be considered a key policy issue by the regional government in Abruzzo.

Table 2.1. **Typology of national municipal merger policies**

Merger policy	Optimal size	
	None	Target size
Voluntary (disincentives)	Austria France	
Voluntary (no policy)	Australia Norway (current) Spain Switzerland United Kingdom United States	Turkey
Voluntary (incentives)	Finland Japan (Heisei)	Japan (Showa)
Mandatory		Denmark*

*Note:* \* Denmark has been placed in this category with respect to the obligation to merge. While recent mergers were based on voluntary decisions by municipal councils, they occurred under threat of parliamentary intervention. However, local authorities decided with whom to merge.

*Source:* OECD (2006), “Workshop Proceedings: The Efficiency of Sub-Central Spending”, OECD Network on Fiscal Relations across Levels of Government, [www.oecd.org/ctp/fiscalfederalismnetwork/38270199.pdf](http://www.oecd.org/ctp/fiscalfederalismnetwork/38270199.pdf).

### ***Different forms of inter-municipal co-operation should be encouraged***

The analysis of Abruzzo’s local labour systems conducted in Chapter 1 reveals profound differences among these territorial units in terms of scale, territorial organisation and economic base. This suggests different governance models. While the largest functional urban areas of Pescara and L’Aquila could be regulated as single units, different models of co-operation could be designed for small municipalities. As the experience of other European countries shows, effective strategic co-operation frameworks can be achieved following diverse paths and through formal and informal institutions. For example, in France the inter-municipal structure differs according to the territorial specificities, whether metropolitan areas, cities or rural areas (OECD 2006a).

Co-operative behaviour among municipalities in the region will greatly enhance the effectiveness of policy intervention, particularly in the current period of fiscal constraints. Co-operative behaviour will favour both the small local mountain systems, which command a limited amount of resources devoted to essentially tourism and rural policies, and the larger functional urban areas, which are practically contiguous in Abruzzo. Competition among local systems concerning the provision of public goods and services will prove disruptive and may hinder the realisation of economies of scale for a more efficient production and service delivery.

A further question to address in building an effective governance system is the relationship between regional and local policies. It is to be stressed that in recent years small and medium-sized cities have also gained a strong political autonomy and, consequently, their economic strategies may exert a great influence at regional – and national – levels. Obviously, this is of particular relevance as far as the major cities are concerned, but it is reasonable to affirm that how cities will react to the current challenges will affect regional development profoundly.

Given the limited number of large functional urban areas in the Abruzzo region – those having a straightforward urban nature – and given their dominant position in its economy, the strategic responses of ‘Pescara’, ‘Atessa’, ‘Giulianova’, ‘Avezzano’ and ‘L’Aquila’ are very significant. This means that the regional government’s development strategy may be put in jeopardy by counteracting strategic responses devised by these major cities. Therefore, the Abruzzo region should exploit the opportunity to redesign, against the background of the current legislation, the horizontal structure of its governance system. Such a renewed governance system will also help in improving vertical relationships, between the local systems and the region and between the region and the central level of government.

***Strengthening the functional urban areas of Pescara and L’Aquila would increase policy effectiveness***

In Abruzzo, discussions about delimitating as a unique area the city of Pescara with the surrounding economically integrated areas date back to the 1970s but nothing relevant has happened. Experiences related to the provision of basic administrative services and public goods on an inter-municipal basis have been made, but they are limited in scope. On the whole, stable and effective instances of inter-municipal co-operation or innovative governance have not yet emerged, and the main actors in the policy-making process remain the municipalities and the regional government. Although not as strong as that of the booming area of Pescara, a process of inter-municipal integration has also taken place in the territory of L’Aquila, with the consequence that it would be appropriate to take the FUA of L’Aquila as a unit of analysis and policy design.

To identify the boundaries of these areas can be difficult for geographical, historical and economic reasons. In the case of Pescara the local labour system encompasses 26 municipalities according to the definition given by the Italian Statistical Office, while that of L’Aquila includes 29 municipalities. According to a recent investigation, instead, the FUA of L’Aquila encompasses only 10 contiguous municipalities, excluding those mountainous areas that are more distant and less connected in terms of commuting flows (Minister for Territorial Cohesion, 2012a).

Against the background of the current legislation, Abruzzo could promote the regulation of the functional urban areas of Pescara and L’Aquila as single units with regard to future spatial, economic and social interventions.

***Inter-municipal co-operation in the mountain areas should be fostered to increase the economic return of natural and cultural resources***

Beyond the largest functional urban areas in Abruzzo, the importance of the small mountain systems for maintaining and using the extraordinary territorial capital of the region should not be underestimated (see Chapter 5).

Here it is useful to stress that in many cases territorial integration in the rural and mountain areas in Abruzzo has given rise to local systems made up of clusters of small municipalities which assume the nature of networks of towns/villages. These units are still rather small in terms of population – and even more so in terms of the numbers of employed – with the consequence that they might not be self-sufficient

and will depend for the provision of private and public services on nearby urban systems (see the example of the strategy currently developed in Galicia, Spain, to address this type of issue, Box 2.3). Moreover, one has to take into account that, given the geographic complexity of the mountain territory, to assign a commune to a given territorial network may be uncertain or that some communes can be described as isolated in relational terms – that is, they do not belong to any inter-municipal local system. In these cases too, devising an economic development strategy aimed at building or enhancing territorial integration among communes should be a central issue.

### Box 2.3. Inter-municipal co-operation in Galicia (Spain)

In the past municipal co-operation in Galicia was possible only through the creation of an inter-municipal body, which implied a long bureaucratic procedure and the imposition of the financial risk to just one municipality. As a result, co-operation at the local level was not frequent. More recently, the regional government has been promoting “soft” agreements (i.e. voluntary) among small municipalities using financial incentives for projects involving several municipalities. Although it is too early to assess the impact of this initiative on regional investment, it has at least increased the number of inter-municipal investment projects overcoming the previous large fragmentation in sectors such as water or transport.

For the water sector, two pilot projects were introduced for evaluating economies of scale reached by managing the integrated water cycle (water provision, sanitation, treatment of collective waste, etc.) at inter-municipal level. The Consorcio del Louro regroups four municipalities around the Louro river, while the Consorcio de Aguas de Valdeorras regroups nine municipalities in a very rural area, sparsely populated.

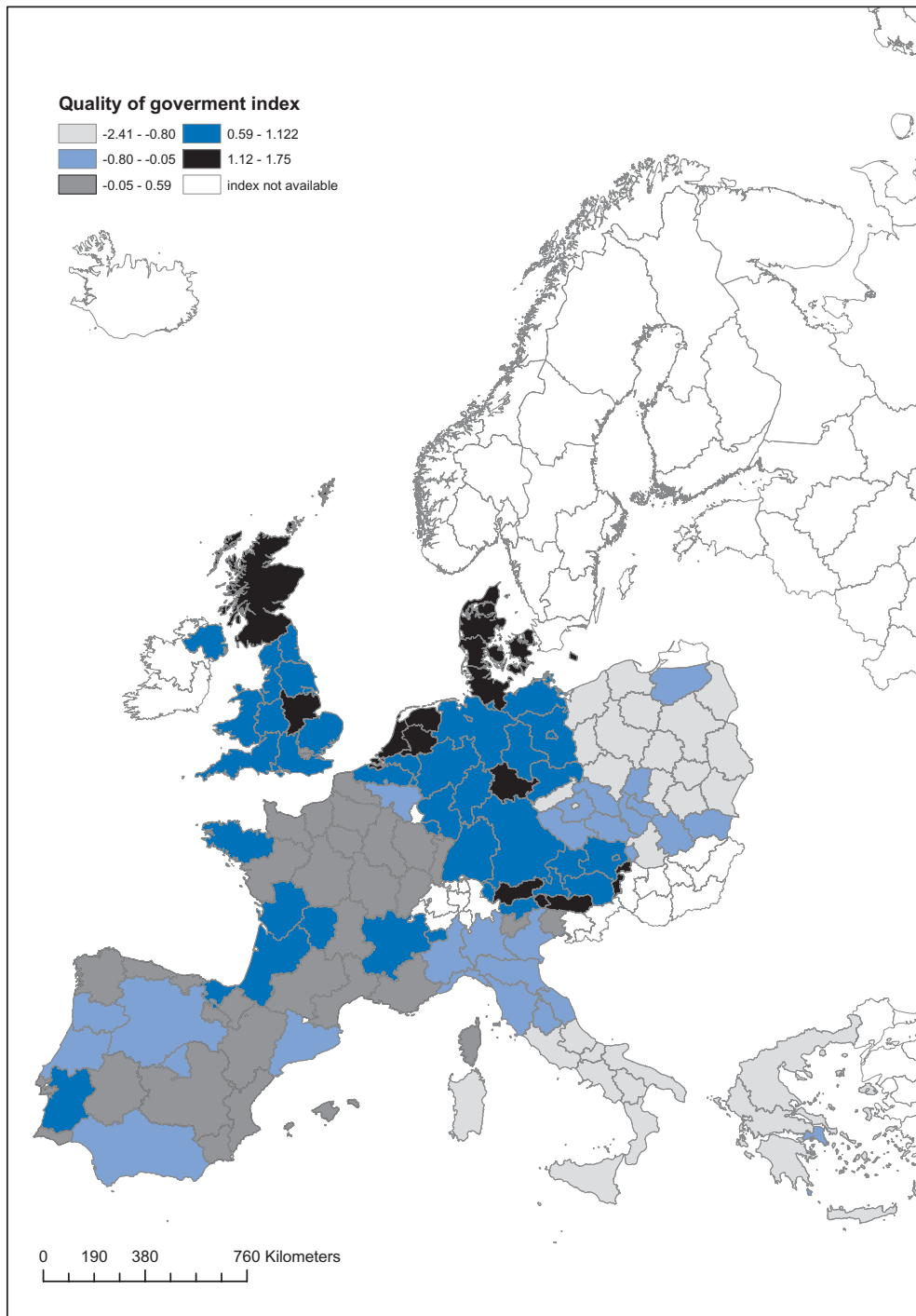
The Regional Government also instituted the Metropolitan Area of Vigo, merging 14 municipalities in one urban zone. The merging recognises the urban area *de facto*, as these municipalities were already co-operating in different sectors.

*Source:* OECD (forthcoming), *Investing Together: Meeting the Co-ordination and Capacity Challenges across Levels of Government*, OECD Publishing, Paris.

## Regional and local capacity for strategic planning

The issue of the capacity of governments is not new, and reflected also in the public opinion (Figure 2.1). When decentralisation increases the role of local institutions not only in providing public goods, but also in shaping the local economy, the issue of capacity of local administrators and social capital comes into importance, as some analysis shows for the southern regions in Italy (Mauro and Pigliaru, 2012).

Figure 2.1. EU Quality of Government Index: Perception of citizens



*Note:* The index is built according to a survey on a sample of European citizens (sample size per country around 34 000 people). Higher values of the index (in black in the figure) correspond to a better appraisal of the quality of local government.

*Source:* Adapted from Charron, N., V. Lapuente and B. Rothstein (2010), *Measuring the Quality of Government and Subnational Variation*, report for European Commission, Directorate-General for Regional Policy, [http://ec.europa.eu/regional\\_policy/information/studies/index\\_en.cfm#2](http://ec.europa.eu/regional_policy/information/studies/index_en.cfm#2).

***Poor investment in human resources and mismatch between competences and availability of resources seem to be the major obstacles to improving the capacity of local administrations***

The recent trend in the Italian local government legislation towards increasing regional autonomy seems now to be “counter-balanced” by defining *ex ante* conditions and more *ex post* controls on performance. Indeed, the Italian government passed a law aimed at exercising stronger control over the “institutional quality” of regional and local authorities, both for reinforcing accountability mechanisms (through transparency and financial control on regional presidents and councillors), for improving the effectiveness in public spending and for warranting the implementation of fiscal consolidation rules across levels of government.

This new approach mirrors the need perceived in many OECD national governments to make the most of regionalised approaches in the context of the crisis. One key lever for possible improvement lies in sub-national capacity building. While regional governments can be targets for such capacity-building policies, they are also themselves concerned by the capacities of local/municipal governments in their regional area. Regional authorities are often involved in the support of public policies at a municipal level. They must also be able to provide a clear assessment of the needs and assets of their region. The OECD has recently developed an assessment tool for sub-national capacity assessment (See Annex 2.A1) that can be considered as a useful “checklist” when engaging and implementing a regional strategy based on public investment (hard and soft). This perspective is in line with EU regional policy intentions for the next programming period 2014-20 to promote the good governance of projects, including by considering institutional capacity building and efficient public administrations as a legitimate area to receive European funds. This approach is motivated by the European willingness to enhance the outcomes of regional policy co-funded by the EC and address the low quality of sub-national institutions as one important possible bottleneck in that perspective.

Findings from the OECD public governance questionnaire in Abruzzo reveal some issues related to the capacity of local administrations which are partially shared with other regions in Italy and OECD countries (see Annex 2.A2 for details on the content of the survey). However, the impact of the earthquake on the amount and number of functions to be accomplished by local and regional administration in Abruzzo reinforces the urgency of finding viable solutions (Box 2.4). The concerns expressed are related to:

- Fragmentation in the organisation and limited political autonomy. The region’s bureaucratic machinery appears still to be suffering from fragmentation and de-coupled functions. The number of directorates is disproportionate and insufficient co-ordination arrangements are at work for ensuring smooth planning and effective, integrated implementation. In addition, many interlocutors have expressed concerns regarding the diminished autonomy of the region’s administration from the regional political government which hampers capacity building, institutional learning and memory.
- Poor investment in human resources. The region’s public administration is characterised by an inverse pyramid as far as the top managers are concerned. The number of executives and directors (*dirigenti*) over desk-office administrators is



comparatively very high. Among the latter, moreover, there is a high proportion of temporary employed staff (also after several years of service), and a high turnover among younger personnel. As a result, there is also little exchange and diversification of know-how both horizontally and vertically.

- Lack of specific expertise. Most interlocutors indicated as a major concern the lack of qualified staff, in particular for specific technical competences, and/or sufficient time to perform a given function. This issue has become urgent after the earthquake, since the local administrations' tasks have increased in complexity. To address this issue, the Italian government has recently hired 300 workers with specific expertise to strengthen the offices in the municipality of L'Aquila and the other affected municipalities which are in charge of the procedures related to the reconstruction after the earthquake (Minister for Territorial Cohesion, 2012c). While it is too early to evaluate the impact of this new governance, it rightly responded to the need to improve capacity and to act fast.
- Mismatch between the allocation of competences and the availability of resources. This is perceived in both directions, for example the one-stop-shop Sprint Abruzzo, a service established in 2006 by the region's government to assist SMEs in internationalising their businesses; currently employs only two staff members.
- Little or no follow up on complaints from local citizens and firms and an absence of credible accountability mechanisms based on transparency and validated capacities. This problem is also related to the difficulty of introducing performance evaluation. Attempts to introduce systems for the evaluation of the performance of public administration personnel have reportedly met with significant resistance in the region as well as in municipalities, and they received weak political support (Arista, 2010).
- Monitoring, evaluation and adjustment. Many responses point out the difficulty of designing, monitoring and evaluating policy plans and of using evaluation results to make mid-course adjustments to ensure attainment of policy goals.

***The proliferation of administrative structures and functions both at central and local levels make co-ordination of policies across governments quite challenging***

The fragmentation in the organisation of the regional administration is often linked to the possible fragmentation and overlapping of functions with the central government administrations. Regions in Italy have the legislative responsibility over 24 policy fields (ranging from health to higher education, from economic development to energy, to transport networks), however the distribution of responsibilities with the central government (whether shared, exclusive or residual) is not equally clear among the different policy fields, often generating uncertainty and inefficiency, and increasing costs and time.

#### Box 2.4. The post-disaster experience of Umbria after the 1997-98 earthquakes

Good governance has contributed to the overall success of the recovery process in Umbria, following the 1997-98 earthquakes. From the beginning there was close co-operation between the national government, the two regional governments involved (Umbria and Marche), the provinces and the municipalities. Civil society was closely involved from the beginning, playing a special role in the technical and scientific committee, which included experts from the university and the media. There was also a consultant body set up including the employers' confederation, the trade unions and professional associations. Periodic meetings were set up. There were weekly meetings with municipalities and a monthly meeting involving the two regions affected. Frequent interaction led to the establishment of very clear roles, clear rules of engagement and an atmosphere of trust from early on.

The Italian central government played an essential role (through Protezione Civile and the government commissioner). The money released by Rome was essential in allowing the planning process to go ahead, was spent according to clear and concise rules, and to date no instances of corruption have been unveiled. Most of the funds were transferred to an account at the Bank of Italy and the regional commissioner made the final decisions regarding expenditure. In addition, an accounting system called DURC (*Documento Unico di Regolarità Contributiva*) was put in place. This was a simple, transparent and decentralised accounting system whose main aim was to minimise corruption and prevent firms participating in the recovery effort from becoming involved in the underground economy. This was extremely successful and led to its adoption elsewhere in Italy.

The municipalities and local governments collaborated actively and made final decisions at the local level. Given the number of municipalities involved, it was inevitable that implementation of plans and recovery would be uneven and while there are many virtuous examples, there are also a few problematic cases. The region participated to a large extent in setting up the governing rules of the recovery effort, in overseeing the process in close co-operation with municipalities and in establishing clear and transparent rules for releasing the money to municipalities and private actors.

One hundred and eighty integrated recovery plans for villages were set up quickly, with the involvement of the private sector, which had the final say on decisions regarding reconstruction. The private sector has also played a prominent role in the funding of the reconstruction processes. Civil society has played a key role, not only in the decision-making processes, but also through pressure to follow through on agreed courses of action.

Overall, the recovery process was facilitated by its decentralisation, with an approach based on trust and constant interaction between the different actors involved.

*Source:* OECD, based on interviews with key officials in Abruzzo and Umbria.

The proliferation of regional laws and regulations could be a sign of the aforementioned lack of clarity over roles and responsibilities and a signal of co-ordination problems both among levels of government and among sectoral approaches (OECD forthcoming). In this context, interviews have shown that the amount of legislation, rather than contributing to solve the problem, represents a problem in itself. Too many laws and regulations make all interactions more complex. There is a clear need for simplification and the case of Abruzzo appears to be one of the most difficult among Italian regions (Table 2.2).

Table 2.2. Number of regional laws and regulations in force (as of 31 December 2008)

Region	Laws	Regulations
<b>Abruzzo</b>	<b>2 373</b>	<b>160</b>
Basilicata	640	92
Calabria	761	46
Campania	1 212	N/A
Emilia-Romagna	929	41
Friuli-Venezia-Giulia	1 043	N/A
Lazio	2 170*	156
Liguria	815	61
Lombardy	632	102
Marche	799	52
Molise	995	54
Piedmont	942	154
Apulia	886	186
Sardegna	2 104*	N/A
Sicily	2 935*	N/A
Tuscany	968	134
Umbria	992	105
Valle d'Aosta	927	66
Veneto	782	38
Province of . Bolzano	1 320*	N/A
Province of Trento	701	367

Note: \* The figure refers to the adopted acts (not those implemented).

Source: Clarich, M. and B. G. Mattarella (2010), “Leggi più amichevoli: sei proposte per rilanciare la crescita”, *Scenari Economici n.8*, Centro Studi Confindustria, based on data from the Chamber of Deputies.

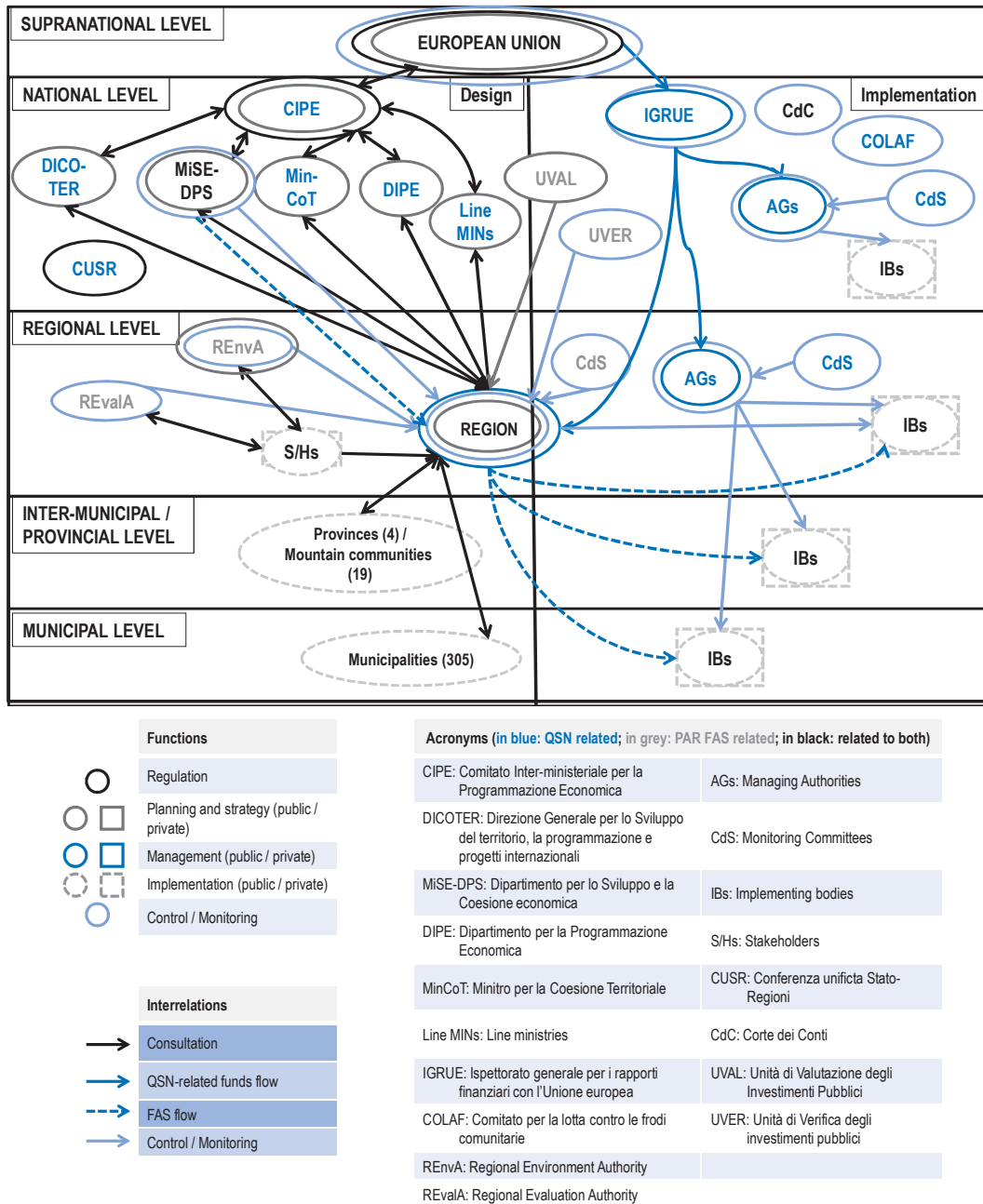
While it is very complicated to visualise in an integrated way the allocation of roles for all policy fields at the regional level, an institutional mapping of the regional development policy in Abruzzo can offer insights into the interplay of various actors at different levels of government and looking at various sectoral dimensions, using the principle of unitary programming (*Programmazione Unitaria*) (Figure 2.2).

The Inter-ministerial Committee for Economic Programming (*Comitato Interministeriale per la Programmazione Economica*, CIPE) – a collegial body chaired by the prime minister and with the participation of the ministers with economic portfolios – co-ordinates the economic policy at national and international (including EU) level, sets priorities and allocates resources for investments accordingly. Among its responsibilities are also the implementation of the QSN 2007-2013 (the main national planning document for EU Structural Funds) and the allocation of the National Fund for Underutilised Areas (*Fondo Aree Sottoutilizzate*, FAS). Once the different preliminary strategic documents (national and regional ones) are finalised, state and regional administrations consult each other on the development of the draft QSN. To that end, eight thematic roundtables/seminars were organised in 2005-2006. The regions were involved mainly through their respective services responsible for regional planning and programming. Also representatives of the economic and social partners (Stakeholders, S/Hs) were invited to those roundtables. The overall process was agreed upon at the Unified State-Region Conference (*Conferenza Unificata Stato-Regioni*, CUSR), which also approved the final version of the QSN document in December 2006.

Such an organisation is mirrored by one with the same degree of complexity at regional level. While the complexity itself is not necessarily a bad thing, the fact that many actors contribute to the processes of elaboration, implementation and evaluation may raise an issue of accountability in decision making. In fact, concerns regarding a lack of clarity in the different responsibilities, a fragmentation of action and a difficulty to generate integrated and coherent strategies, as well the evaluation of their impact were expressed by many of the institutional stakeholders who responded to the governance questionnaire prepared for this study.<sup>1</sup>

The institutional mapping exercise and the interviews carried out for this report suggest that there is difficulty in Abruzzo in putting in place a “system” to pool resources, develop visions and implement policy solutions strategically and coherently at the relevant scale. Similarly, the dispersion in the allocation of resources has been considered a cause of reduced effectiveness of policy interventions, not only in Abruzzo but in most of southern Italian regions (SVIMEZ, 2010). The limited ability of interaction among public authorities (and with the civil society as underlined in Chapter 3) is also due to the poor systematic flow of data among institutions regarding funding allocation choices, monitoring and the evaluation of results.

Figure 2.2. Institutional mapping (QSN, 2007-13; Abruzzo’s PAR FAS, 2007-13)



Source: OECD, based on institutional websites.

## Addressing the governance challenges

Abruzzo's multi-level governance challenges can be tackled in different ways. Table 2.3 shows the three main priorities for strengthening the governance system together with possible instruments that remain only marginally used in Abruzzo.

Table 2.3. **Key priorities and governance arrangements to overcome challenges**

Main priorities for Abruzzo's multi-level governance	Instruments to use
Reshape the territorial governance of the region to overcome administrative fragmentation and strengthen the largest functional urban areas	<ul style="list-style-type: none"> <li>• Enhanced inter-municipal co-ordination</li> <li>• Regulate main functional urban areas as single units</li> <li>• Incentives to inter-municipal co-operation in service delivery and multi-sector planning for small municipalities</li> </ul>
Engage in systematic capacity development to multi-sectoral planning; improve the transparency and accountability of policy making, the dialogue with public and private stakeholders and the quality and use of information.	<ul style="list-style-type: none"> <li>• Integrated information on expenditures, projects and planning</li> <li>• Repository of good practices and competences to be used by different administrations</li> <li>• Invest in capacity building to produce and disseminate assessment on key outcomes of regional development policy</li> <li>• Monitor and share experiences</li> <li>• "Co-operation pact" with private and public stakeholders for multi-sectoral and multi-level planning</li> <li>• Systematic use of policy evaluations and their results for adjustment in course of actions</li> </ul>
Improve the quality of decision processes by engaging community deliberation in the definition of regional development strategies (see Chapter 3).	<ul style="list-style-type: none"> <li>• Identify virtual and physical places for community engagement and deliberations</li> <li>• Ensure institutions meet to discuss community inputs</li> <li>• Monitor progress towards policy objectives measured by indicators chosen by the community (well-being index)</li> </ul>

## Conclusions and main recommendations

The changes that have taken place in recent years in Abruzzo's institutional and economic context, together with the consequences of the 2009 earthquake, require that main public and private actors converge towards an integrated strategic response to build the region's resilience to future shocks. Such a strategic response will also require profound changes in the governance system.

Abruzzo should develop an integrated approach to redevelopment after a natural disaster, by building on a strategic vision for the region, strengthening the dialogue to raise the profile of needed reforms, and clarifying responsibilities. The process of decision making should be accompanied by the identification of the conditions for the implementation of the strategy and the actors involved. Bearing the social cost of a natural disaster is a burden that largely goes beyond the financial and organisational capacity of the affected region – co-operation among public-private actors and different levels of government is needed to boost the community.

Abruzzo should reform its governance system in order to better support the implementation of a regional development strategy. The reforms should address horizontal territorial governance and increase the capacity of administrations to improve the quality of decision-making processes.

Abruzzo region should redesign the horizontal structure of its governance system, by designing flexible integration schemes for small municipalities and by strengthening the main functional urban areas of Pescara and L’Aquila with regard to spatial, economic and social interaction. This new structure would improve the delivery of services to small municipalities, increase the efficiency of the entire region with regards to the innovation strategy and improve the co-ordination with other levels of government (regional and central).

Abruzzo should restore trust, increase accountability of policy making and improve capacity of administrations. As a start the regions should focus on improving the accessibility, quality and disclosure of information on reconstruction expenditures, criteria and timelines. Then resources – skills and funds – should be invested to provide information systems for gathering and sharing key outcomes of the regional development strategy. Targets of accountability, transparency and enforced dialogue with profit and non-profit private stakeholders as well as multi-sectoral planning cannot be achieved without a “co-operation pact” in the region. Policy evaluation has a decisive role in offering insights on conditions, causalities and bottlenecks for the implementation of policies and in suggesting ideas for how to revise objectives, re-allocate resources and identify the tools to deliver results. The new programming period of European and National Regional Development Policy could be considered as an opportunity to introduce incentives to make reform happen.

## Note

1. See Annex 2.A2 for details on the OECD Survey on Public Governance.

## *Bibliography*

- Allain-Dupré, D. and L. Mizell (forthcoming), “Creating Conditions for Effective Public Investment and Regional Economic Growth: Sub-national Governance Capacities in a Decentralised Context”, *OECD Regional Development Working Paper*, OECD Publishing, Paris.
- Arista, T. (2010), “La programmazione in Abruzzo”, *Abruzzo 2010 – Analisi della crisi abruzzese: Risorse, proposte, progetti per un nuovo sviluppo*, Edizioni Noubs.
- Associazione per lo sviluppo dell'industria nel Mezzogiorno (SVIMEZ) (2010), Rapporto SVIMEZ 2010 sull'economia del Mezzogiorno: Introduzione e sintesi, Rome, [www.astrid-online.it/Mezzogiorno/Documenti/Svimez-Rapporto-2010\\_linee\\_rapporto.pdf](http://www.astrid-online.it/Mezzogiorno/Documenti/Svimez-Rapporto-2010_linee_rapporto.pdf).
- Blöchliger, H. and C. Vammalle (2012), *Reforming Fiscal Federalism and Local Government: Beyond the Zero-Sum Game*, OECD Fiscal Federalism Studies, OECD Publishing, doi: 10.1787/9789264119970-en.
- Charron, N., V. Lapuente and B. Rothstein (2010), *Measuring the Quality of Government and Subnational Variation*, report for European Commission, Directorate-General for Regional Policy, [http://ec.europa.eu/regional\\_policy/information/studies/index\\_en.cfm#2](http://ec.europa.eu/regional_policy/information/studies/index_en.cfm#2).
- Clarich, M. and B. G. Mattarella (2010), “Leggi più amichevoli: sei proposte per rilanciare la crescita”, *Scenari Economici n.8*, Centro Studi Confindustria.
- Dabla-Norris, E., J. Brumby, A. Kyobe, Z. Mills, and C. Papageorgiou (2011), “Investing in Public Investment: An Index of Public Investment Efficiency”, *IMF Working Paper 11/37*.
- Ishigaki, K. (2012), Presentation at the OECD-University of Groningen Forum on Abruzzo, 17 March 2012.
- Mauro, L., and F. Pigliaru (2012), “How Binding is Low Social Capital for Economic Growth?” *Social Science Research Network*.
- Milio, S. (2007), “Can Administrative Capacity Explain Differences in Implantation Performances?” *Regional Studies*, Vol. 41, No. 4.
- Minister for Territorial Cohesion (Ministro per la Coesione Territoriale) (2012a), “L’Aquila 2030: una strategia di sviluppo economico”, [www.coesioneterritoriale.gov.it/wp-content/uploads/2012/09/calafati-settembre-2012.pdf](http://www.coesioneterritoriale.gov.it/wp-content/uploads/2012/09/calafati-settembre-2012.pdf).
- Minister for Territorial Cohesion (2012b), “Selezione del personale agli uffici speciali per la ricostruzione dell’Aquila e dei comuni del Cratere”, [www.coesioneterritoriale.gov.it/progetti/ricostruzionelaquila/](http://www.coesioneterritoriale.gov.it/progetti/ricostruzionelaquila/).

- Minister for Territorial Cohesion (2012c), “Selezione del personale a tempo determinato in dotazione agli Uffici Speciali per la ricostruzione della città di L’Aquila e dei Comuni del Cratere”, 5 November, [www.coesioneterritoriale.gov.it/5-novembre-selezione-personale-uffici-speciali-ricostruzione/](http://www.coesioneterritoriale.gov.it/5-novembre-selezione-personale-uffici-speciali-ricostruzione/).
- OECD (2006a), *OECD Territorial Reviews: France 2006*, OECD Publishing, Paris, doi: 10.1787/9789264022669-en.
- OECD (2006b), “Workshop Proceedings: The Efficiency of Sub-Central Spending”, OECD Network on Fiscal Relations across Levels of Government, [www.oecd.org/ctp/fiscalfederalismnetwork/38270199.pdf](http://www.oecd.org/ctp/fiscalfederalismnetwork/38270199.pdf).
- OECD (forthcoming), *Investing Together: Meeting the Co-ordination and Capacity Challenges across Levels of Government*, OECD Publishing, Paris.
- OECD and University of Groningen (2012), *Building Resilient Regions after a Natural Disaster: Abruzzo towards 2030: On the Wings of L’Aquila*, issues paper presented at the OECD Forum, L’Aquila, 17 March 2012.
- Putnam, R.D. (1995), “Bowling Alone: America's Declining Social Capital”, *Journal of Democracy*, Vol. 6, No. 1.
- Rajaram, A., T.M. Le, J.A. Brumby and N. Biletska (2010), “Framework for Reviewing Public Investment Efficiency”, *World Bank Policy Working Paper*, No. 5397 (August), Washington, DC.
- SVIMEZ (2010) *Rapporto sull’economia del Mezzogiorno*, Ed. Il Mulino.



## Annex 2.A1

### Sub-national capacities for public investment: Assessment questions

Capacity	(Self) assessment questions for sub-national governments
To engage in strategic planning for regional development that is tailored, results-oriented, realistic, forward-looking and coherent with national objectives	<ul style="list-style-type: none"> <li>• Do mechanisms or procedures exist to ensure that sub-national investment plans reflect national and sub-national development goals?</li> <li>• How is the correspondence between territorial assessment, needs, and planned projects assessed?</li> <li>• Is there a clear and authoritative statement of public investment priorities at national level? At regional level?</li> <li>• What consideration has been given to complementarities between investments in both hard and soft infrastructure?</li> <li>• How do the authorities assess the potential contribution of investments both to current competitiveness and to sustained growth in the global economy?</li> <li>• Are data available and used to support the territorial assessment and planning process?</li> </ul>
To co-ordinate across sectors to achieve an integrated place-based approach	<ul style="list-style-type: none"> <li>• Has attention been given to potential complementarities and conflicts among sectoral investments?</li> <li>• Do formal or informal mechanisms exist to co-ordinate across sectors (and relevant departments/agencies) at the sub-national level?</li> </ul>
To co-ordinate with other jurisdictions to promote and capitalise on complementarities and to achieve economies of scale across boundaries	<ul style="list-style-type: none"> <li>• Have cross-jurisdictional partnerships involving investment been implemented previously? On specific sectors only or all sectors? Have they been successful?</li> <li>• Does a higher level of government require, support, or provide incentives for cross-jurisdictional co-ordination?</li> </ul>
To involve stakeholders in planning to enhance the quality and support for investment choices – while preventing risks of capture by specific interests	<ul style="list-style-type: none"> <li>• Do mechanisms exist to identify and involve stakeholders throughout the investment cycle? How successful are they? Which categories of stakeholders are most/least engaged?</li> <li>• Are stakeholders regularly consulted to see if they are satisfied with the opportunities to engage and the quality of engagement?</li> <li>• Do citizens have access to timely information throughout the investment cycle?</li> <li>• Is stakeholder feedback incorporated into decision making? How?</li> </ul>
To conduct rigorous <i>ex ante</i> appraisal	<ul style="list-style-type: none"> <li>• What percent of investment is subject to <i>ex ante</i> assessment (by sector)? What is not covered?</li> <li>• Does the SNG have access to and use published guidance that details appraisal methods and standards?</li> <li>• Is there an independent review of appraisals to ensure their objectivity and quality?</li> <li>• Is the government able to tap appropriate expertise, either in-house or elsewhere, to ensure proper technical appraisal of complex/sophisticated investments?</li> <li>• Are the results of <i>ex ante</i> appraisals used to prioritise investments?</li> <li>• Are the costs of operation and maintenance assessed on a long-term basis?</li> <li>• What percent of staff in government has project evaluation skills? What percent of these staff are in positions that make use of their skills?</li> </ul>
To link strategic plans to multi-annual budgets	<ul style="list-style-type: none"> <li>• Are investments funded with a multi-year budget envelope?</li> <li>• Is there a medium-term planning and budgeting framework? Is this framework integrated with the annual budget? (IMF)</li> <li>• Are multi-year forecasts for public investment reviewed and updated regularly?</li> </ul>
To tap traditional financing and innovative financing mechanisms for public investment	<ul style="list-style-type: none"> <li>• What is the fiscal situation of SNGs? What are the main fiscal capacity challenges of SNGs?</li> <li>• How are public investment projects financed? Which innovative mechanisms for PI are used? To what extent have they been successful?</li> <li>• Do SNGs have access to information concerning (supra) national funds for investment?</li> </ul>
To mobilise private sector financing	<ul style="list-style-type: none"> <li>• Has the government engaged in PPPs recently? In which sectors? Have problems been encountered?</li> <li>• Does a dedicated PPP unit exist that can assist sub-national governments?</li> <li>• Where does the government fall on the DTT “maturity curve” for PPPs?</li> </ul>

Capacity	(Self) assessment questions for sub-national governments
To engage in transparent, competitive, procurement processes with corresponding internal control systems	<ul style="list-style-type: none"> <li>• What percentage of total annual tender procedures is competitive?</li> <li>• What percentage of total annual contracts awarded go to SMEs?</li> <li>• What percentage of the total number of tender procedures was the subject of complaint?</li> <li>• What percentage of the total number of tenders was conducted online (e-procurement)?</li> <li>• What percentage of staff involved in procurement activities has had related training?</li> <li>• Is formal guidance regarding procurement procedures provided to staff involved in procurement activities?</li> <li>• Is there a procurement unit that can assist SNGs?</li> </ul>
To possess a well-designed indicator system with realistic, performance promoting targets	<ul style="list-style-type: none"> <li>• Does a system of performance indicators exist?</li> <li>• Do indicators allow for monitoring both project implementation and performance?</li> <li>• What percent of indicators are associated with targets?</li> <li>• Do monitoring systems collect sufficient data to monitor implementation progress, include total project cost?</li> </ul>
To conduct and use regular <i>ex post</i> evaluation	<ul style="list-style-type: none"> <li>• Is <i>ex post</i> evaluation of investment projects required?</li> <li>• What share of public investment spending is subject to <i>ex post</i> evaluation (by sector)?</li> <li>• Do clear guidance documents exist that detail <i>ex post</i> evaluation standards?</li> </ul>
To use monitoring and evaluation information to enhance decision making	<ul style="list-style-type: none"> <li>• Does a dissemination strategy for monitoring and evaluation information exist – both for public reporting as well as internal use?</li> <li>• Is there alignment of the timing of budget preparation and the availability of monitoring and evaluation data?</li> <li>• Do policy makers incorporate performance information from previous periods into current decisions? How?</li> <li>• Are actors sanctioned or rewarded based on the achievement of targets?</li> <li>• Are data made available in a timely way and in a useable format for decision makers?</li> </ul>
To monitor and manage risks to integrity and accountability throughout the investment cycle	<ul style="list-style-type: none"> <li>• Are processes in place to identify, assess, and respond to risks throughout investment cycle (e.g. captured in a risk register)?</li> <li>• Are measures in place to address potential conflict of interest?</li> <li>• Are whistleblower protections available?</li> <li>• Does risk assessment have a bearing on project selection or management arrangements?</li> </ul>
To engage in “better regulation”, characterised by high-quality regulation, administrative simplification, and coherence across levels of government	<ul style="list-style-type: none"> <li>• Does the sub-national government have access to and participate in mechanisms for co-ordinating regulatory coherence across levels of government?</li> <li>• Is regulatory impact analysis used?</li> <li>• Are public consultations in connection with the preparation of new regulations of sufficient duration, accessible, and appropriately targeted?</li> <li>• Is there consistent consideration of alternatives to regulation?</li> <li>• Have there been efforts to reduce the stock of regulation or simplify administrative procedures in the past few years?</li> <li>• Are e-government tools used to simplify administrative procedures for public investment projects (e.g. for land-use, public procurement)?</li> </ul>
To ensure the quality and availability of technical and managerial expertise necessary for planning and executing public investment	<ul style="list-style-type: none"> <li>• What percent of employees work on public investment tasks (% FTE)? What percent of these have had formal training in a related area, such as <i>ex ante</i> appraisal?</li> <li>• Does a formal process for training staff in technical skills for public investment exist? What are training utilisation rates?</li> <li>• Are professionals/new hires available from university programmes that provide training related to public investment (e.g. urban planning, regional policy, public policy, economics, etc.)?</li> <li>• Is the performance of agencies/departments/units dealing with sectoral and regional public investment regularly monitored and assessed? Are there specific rewards and sections?</li> <li>• Is the performance of public employees dealing with public investment projects regularly assessed?</li> <li>• Is external technical assistance (e.g. for planning, <i>ex ante</i> assessment, <i>ex post</i> evaluation) readily available – such as through regional development organisations, universities, think tanks, or independent consultants?</li> </ul>

Source: Allain-Dupré, D. and L. Mizell (forthcoming), “Creating Conditions for Effective Public Investment: Sub-national Capacities in a Multilevel Governance Context”, *Regional Development Working Papers*, OECD Publishing, Paris.

## *Annex 2.A2*

### **OECD Survey on Public Governance for Abruzzo**

The OECD carried out a Survey on Public Governance throughout the first half of 2012 to gather information for this study. The survey methodology draws from recent OECD work on policy coherence and multi-level governance. It was aimed at identifying good governance practices at the national, regional and sub-regional levels for managing inter-dependencies between the different actors and bodies. In particular, the primary objectives of the survey were:

- to understand the system of governance and mechanisms geared to improving policy making in relation to the strategic development of a region hit by a sudden natural shock; and
- to identify key co-ordination challenges for the governance of such policies, and governance mechanisms developed by public administrations to tackle them.

To that end, the questionnaire covered various roles and tasks, including:

- the responsibility for strategy and priority setting and planning: this referred to the periodic assembling of lists and descriptions of proposals for forthcoming policy programmes, laws and sub-ordinate regulations;
- financial responsibility: this related to the function of budgetary allocation as well as monitoring and control over the effective and efficient utilisation of public funds;
- the responsibility for co-ordination (due to the cross-cutting character and mutual dependence on many public policies): this covered the creation and management of clusters of actors that interact *i*) across different levels of government (so-called “vertical co-ordination”, for instance such as co-ordination between state and regional administrations); *ii*) among relevant actors at the same level (so-called “horizontal” co-ordination” among different central administrations or different sub-national administrations); and *iii*) in a networked manner;
- implementation and enforcement responsibilities: this referred to the oversight of the enactment and application of policies and regulations;
- the responsibility for monitoring and evaluation, covering *ex ante*, interim and *ex post* assessments of the way spending occurred and decisions were performed; and
- the responsibility for stakeholders consultation and for communication: this pertained to those practices by public administrations seeking input from (private and public) stakeholders to provide timely, correct and full information on the public policies, decisions and outputs.

The questionnaire investigated the existence and type of organisational and procedural arrangements in place that are meant to allow institutional actors to fulfil those responsibilities. It included also open questions seeking both a self-evaluation of the

challenges faced by the various administrations in performing any given task as well as a description of positive examples from which to draw possible lessons for better governance.

The questionnaire was addressed to public institutions playing a relevant role in those policy areas that the OECD considered as bearing significant potential for the local and regional development of Abruzzo. Those policies were:

- Research excellence: this policy should enhance the potential of Abruzzo’s academic institutions and universities hosting centres of research excellence, with a view to confirming their performance at the highest international standards.
- University spin-offs: partly linked with the previous one (but not necessarily dependent on it), this policy should stimulate the interface between academia and business (notably small and medium-sized enterprises) in producing, applying and marketing knowledge and innovation.
- Industry poles: this policy considers the development of localised hubs for specialised industrial activities so as to maximise economies of scale.
- Cultural heritage: this policy is aimed at reconstructing, valorising and preserving the cultural assets of significant areas, including the city of L’Aquila – being them natural, artistic or historic sites.
- Mountain tourism: this policy refers to the development of the tourism industry in the mountain area and parks, building on the existing national and regional natural parks and promoting sustainable activities.
- Green economy: this policy should seek to bridge the post-disaster recovery strategy with wider policies aimed at making the production, distribution and consumption of energy more effective and sustainable on a systemic basis. The policy should aim at improving the quality of environmental services (energy, water, waste) taking into account diseconomies of scale.
- Post-disaster reconstruction/reconstruction of L’Aquila: this strand of policies should foster innovative visions for areas hit by system disruptive events (in the specific: L’Aquila) to become a sustainable provider of services and infrastructure. Those policies should also address the social effects of the earthquake (such as mobility within the city, demand of school and health services, etc.), taking account of legal, engineering and archaeological regulations.

The questionnaires were sent to 13 departments in the Italian presidency of the council and the ministries of economic development; education, university and research; cultural heritage; and environment. At the sub-national level, the survey covered the Region of Abruzzo, the Municipality of L’Aquila, and the extraordinary bodies tasked with post-earthquake reconstructions. Overall, ten responses were returned and processed anonymously. The resulting information contributed to the preparation of this report. It was instrumental in the identification of gaps in the network of stakeholders and in disentangling potential mechanisms to enhance transparency, accountability and effectiveness in the functioning of the network.



## *Chapter 3*

### **Open policy making to build a resilient Abruzzo**

*This chapter considers the role of community engagement in improving decision making in a post-disaster region. It describes the difficulties experienced by L'Aquila after the 2009 earthquake and discusses some of the city's recent initiatives to restore social cohesion and community engagement. The chapter also offers an overview of how L'Aquila's citizens view the city's future, as expressed in different participative events and a community survey undertaken during this study. The chapter concludes with recommendations on how to effectively engage communities in a post-disaster context, drawing not only on L'Aquila's experience but those of other post-disaster regions as well.*

## Introduction

A recovery and development strategy in a post-disaster region has to inspire and incorporate a community's vision. A community will help leaders to understand the problems from a different perspective, find innovative solutions and ensure that the strategy fits the circumstances of the place.

For the strategy to work, as large a number as possible of individuals and institutions, and particularly the private sector and civil society organisations, must become involved in the process in order to complement the work of the existing institutions and leaders. New modes of governance will therefore need to be implemented in order to facilitate this form of community-led local development. Community-led local development is becoming increasingly important in many parts of the world as a way of engaging the community in local economic, social and environmental change.

There is an established trend in the countries of the European Union towards a more accountable policy-making process in cities and increased civic participation. Increased social cohesion is a result of this process. The spreading of ICT technologies has made accountability and political participation easier and less costly, but a trend toward a more open and inclusive city is rooted in the awareness of the complexity of the decision-making processes and on the possible inequalities involved in urban decisions.

Community engagement in post-disaster regions, like in L'Aquila, is a much more complex process for many reasons, including problems associated with the physical reconstruction (for example, difficulty in finding places for community discussions) or because the disaster has affected citizens in unequal ways (for example, an increase of economic inequalities among citizens, resulting in an increase of distrust and fear). However, as international experiences show, the engagement of the community in deliberations after a natural disaster can help decision makers to formulate a strategic vision for development and ensure that the strategy fits the set of circumstances people experience. A strong emphasis on community engagement has characterised this project, and the OECD-Groningen team sought community input throughout this project.

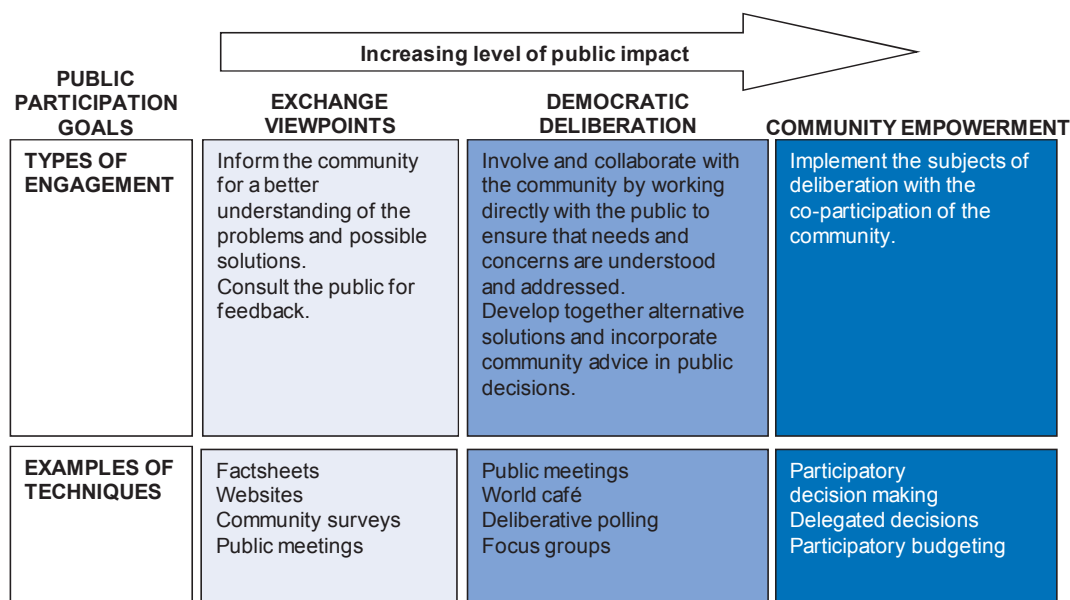
## Community engagement in post-disaster regions

### ***Community engagement can increase public awareness and information sharing and lead to community empowerment***

Community engagement should be based on a range of techniques to encourage participation and enable interested and/or affected people to become involved in decision-making processes to varying degrees depending on the context (Dare et al., 2011). Community engagement can lead to better decisions because local knowledge is accessed; decisions have greater legitimacy because of community involvement and transparency; and decision making is more efficient because more legitimate decisions are less likely to be followed by social unrest (Hartz-Karp and Pope, 2011; Vanclay and Esteves, 2011).

Community engagement goals can be presented according to an increasing amount of public involvement and impact, to which correspond different techniques (website, public meetings, town hall meetings, community surveys, World Café, etc.) (Figure 3.1).

Figure 3.1. Spectrum of public participation



Source: OECD, based on Lenhian, D. (2008), “It’s More Than Talk: Listen, Learn and Act: A New Model for Public Engagement”, the final report of the Public Engagement Initiative, Province of New Brunswick, [www.gnb.ca/0012/PDF/LLA-e.pdf](http://www.gnb.ca/0012/PDF/LLA-e.pdf) and the International Association for Public Participation, [www.iap2.org](http://www.iap2.org).

Three stages can be identified in the spectrum of public participation (Lenhian, 2008). In the first, the goal is to exchange viewpoints by informing and consulting the public. This also responds to the objectives of increasing the transparency of policy making and restoring trust. The second stage aims at community involvement and collaboration in order to achieve a democratic deliberation. In the third stage, community empowerment is sought in order to implement the subjects of deliberation and thus move to action. Public participation should comprise all the stages, although often public involvement is never taken beyond consultation. Deliberation allows citizens to discuss priorities, make compromises and therefore identify the available options for a regional development strategy. The final stage depends on overcoming the traditional view that government planning is the sole responsibility of government officials and moving towards a mutual commitment of multiple stakeholders (government, civil society, business, etc.).

***In post-disaster situations, community engagement can help decision makers to better understand the dimensions of the problem and provide solutions that fit the community’s experience***

Community engagement and the greater involvement of all stakeholders have been shown to improve the quality of decisions made in post-disaster situations. There are four reasons for this:

1. Community engagement can help in governing the conflict between citizens and administrations which is often amplified by the natural disaster. Allowing affected people to have a say in the decisions and exercise choice



are essential, as documented, for example, in the case of New Orleans after hurricane Katrina in 2005 (Wilson, 2009).

2. It can facilitate overcoming the tension between short-term recovery decisions and long-term effects; where there has been inadequate consultation, hurried decisions can have lasting detrimental effects in many aspects of life. Decisions about emergency housing, for example, have many consequences, including transport issues, the ease of provision of and access to social services, people's access to goods and services, and the integrity of their social networks.
3. Community engagement can be a way to identify or strengthen a leadership that can catalyse the development efforts (as it was, for example, in the case of the University of Canterbury after the earthquakes of 2010-2011 in Christchurch, New Zealand).
4. Community engagement is useful in order to gather ideas and to define development priorities, especially when the governance system is complex because of the different institutions and stakeholders involved and because of the complexity of the tasks required to be undertaken by local institutions after a disaster.

This last reason points to the fact that engaging community members can help decision makers better understand the multi-dimensional aspects of the problem, address any potential obstacles and identify solutions for the implementation, and ensure that the strategy fits the set of circumstances that people experience.

### **Community engagement in L'Aquila after the 2009 earthquake**

#### ***After the 2009 earthquake community engagement in L'Aquila has been very weak***

Natural disasters have dramatic re-distribution effects, both in terms of direct effects and also as a consequence of the reconstruction choices; natural disasters and recovery bring about a potentially massive re-allocation of property rights. As a consequence, to manage the "fairness issue" is of overriding importance to avoid or keep under control the social conflict that is inherent in natural disasters. With the objective of learning by monitoring the social and economic dynamics set in motion by a natural disaster, the OECD-University of Groningen research team both promoted, and was also directly involved in, public discussions that supported the process of building a strategic vision and, at the same time, helped to draw some general lessons concerning local social strains and tensions following a natural disaster.

In the case of L'Aquila, to confront the challenges resulting from the earthquake it will be crucial to foster greater societal cohesion and to restore a strong sense of community. The lack of formal channels encouraging civil society to voice their ideas ruled out much of the potentially beneficial dialogue between civil society and public institutions and inhibited much of the mutual institutional learning which might otherwise have taken place. Efforts by local and regional institutional stakeholders and political leaders to encourage the exchange of viewpoints, deliberation and action would help in restoring a sense of community and establish

the base for the necessary consensus for reconstruction and development, as well as for establishing some clarity in the priorities to be followed in the redesign and the development of the city and its region.

## **Towards a new governance of reconstruction**

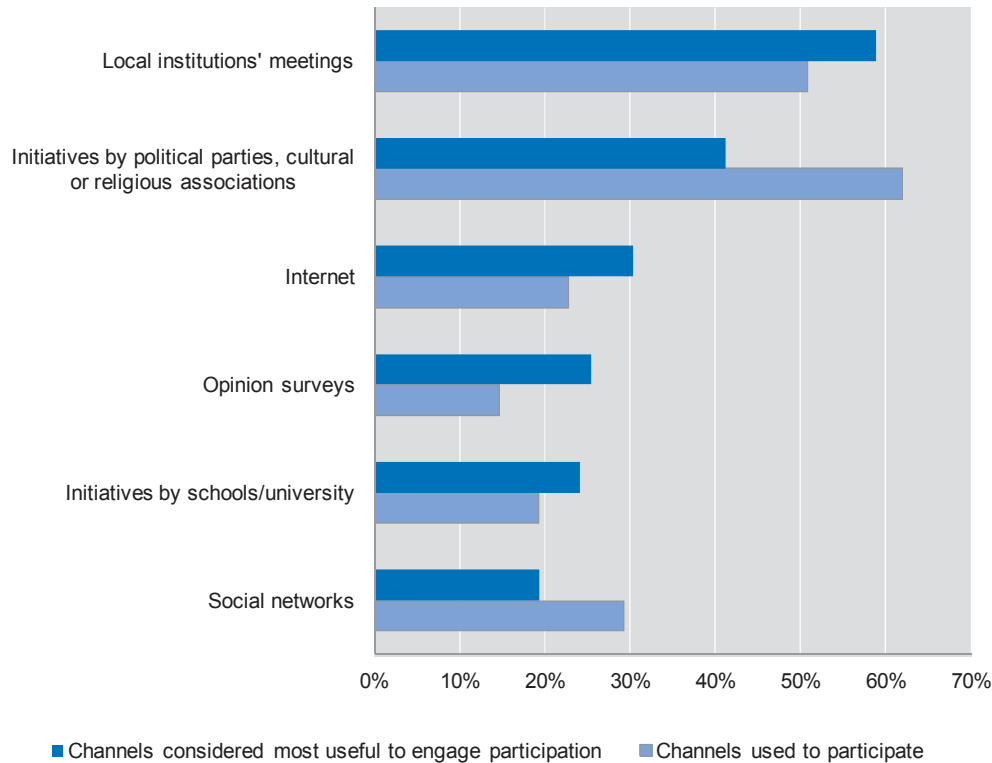
### ***Recent changes brought by the central government regarding the transparency of information on the reconstruction can contribute to restoring trust in institutions and spurring community engagement***

Three years after the earthquake (June 2012), communication regarding the decisions on the reconstruction and redevelopment of L'Aquila was still viewed by the community as being non-satisfactory by almost 40% of those interviewed, and only partially satisfactory for another 50%. Less than 20% of those interviewed said they had taken part in a collective decision-making process about reconstruction choices after the earthquake.<sup>1</sup> Improving the communication channels can be achieved through greater transparency and accountability in the interactions among stakeholders and this requires the creation of transparent and accessible-to-all systems in order to facilitate and have easy access to: *i*) what can be done; *ii*) what are the rules of the game to achieve this; *iii*) what are the funds available; *iv*) how these funds are spent; and *v*) what have been the returns of the different measures adopted and of public expenditure in the reconstruction and development effort. Rebuilding trust by improving transparency is a necessary condition for mobilising citizens around a vision of change and the necessary steps to achieve it.

The new governance set up by the central government has established a clear path of transparency and information regarding the reconstruction that should contribute to restoring civil and social trust and increase the efficiency of public spending (communication by the Minister for Territorial Cohesion, March 2012). Such a path should include the establishment of a centralised website and a one-stop-shop office with information available to all, which may not only improve transparency but also improve the co-ordination of all public and private stakeholders involved. However, while many proposals for a centralised monitoring system have been advanced, including the establishment of a Transparency Observatory, its implementation should be led by the regional institutions, because they operate at the most suitable level for the territorial co-ordination of the information coming from multiple stakeholders and are close enough to understand a community's needs and priorities. Evidence shows that meetings organised by local institutions are considered to be the most useful for citizens to participate in collective decision making, even though the initiatives organised by political parties, cultural or religious associations were more frequent in the aftermath of the earthquake in L'Aquila (Figure 3.2).

Figure 3.2. **Participation in the collective decision-making process**

Which channels would you consider as most useful to citizens' participation in the collective decision-making process regarding the reconstruction (dark blue)?  
And which did you use if you have participated (light blue)?



Note: Multiple answers were allowed in both questions.

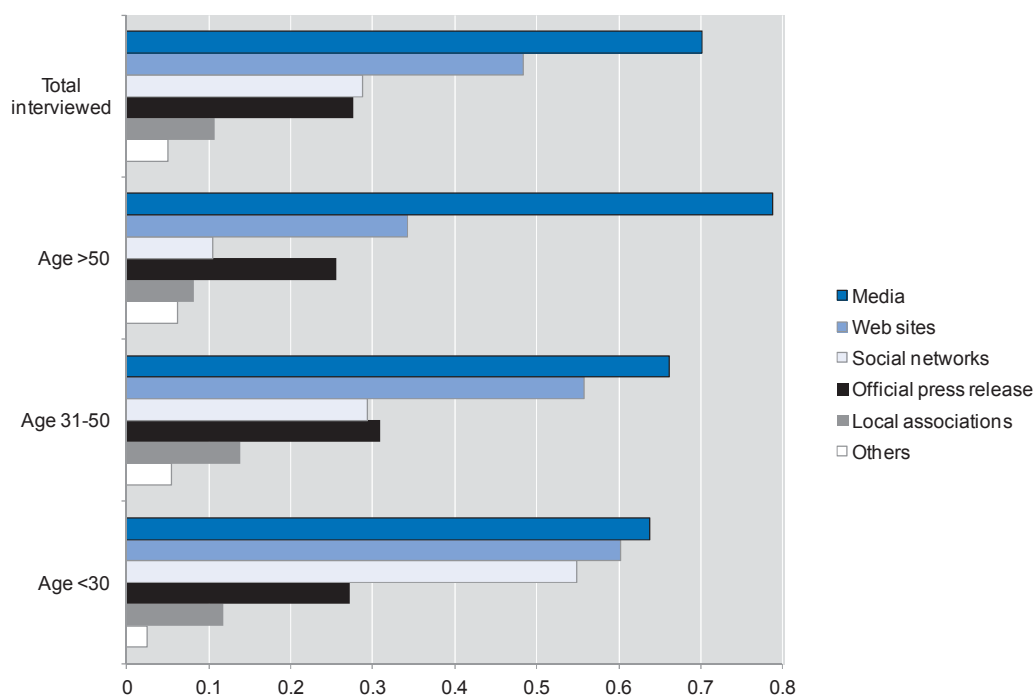
Source: OECD-University of Groningen Community Survey (June 2012). See Annex 3.A1 for details.

In order for the information to respond to the objectives of transparency and to be used by citizens, it has to be relevant, comprehensible and perceived as credible. Therefore, the main recommendations to properly set up an information centre would be:

- Invest in the co-ordination of information flows from multiple sources, through partnerships with relevant stakeholders.
- Rely on different means to disseminate the information. Traditional media are still the most used source of information regarding the reconstruction of L'Aquila; websites and social networks are important sources of information mostly for young people (Figure 3.3).
- Invest in skills and resources to analyse the information and engage with different audiences to present and discuss it. Use a mix of quantitative and qualitative approaches.

Figure 3.3. Information channels on the reconstruction choices

Which communication channels have you used to receive information about the reconstruction?



Note: Multiple answers were allowed.

Source: OECD-University of Groningen Community Survey (June 2012).

## Democratic deliberation for informed decision making

### *The participative meetings held in L'Aquila in 2012 can offer actionable strategies for the local policy makers*

The channels of participation need to be improved by creating simple, accessible, and reactive mechanisms in order to allow and encourage community participation and to discuss and evaluate civil society proposals. Greater participation requires the involvement of a broad range of institutional actors, the private sector (including businesses), and civic groups, leading to the formation of stronger and more enduring partnerships amongst local stakeholders.

Participation also implies a more effective role of political leadership, which is a critical component to improve the quality of the strategic-thinking process, its implementation, and its monitoring. Local decision makers should play a much more prominent role in catalysing the development effort, through leading and participating in workshops and other participative fora, and establishing clear and regular links between political decision making and civil society as a whole. Many initiatives of public participation were organised to address the social fragmentation following the earthquake of 2009 and to discuss proposals for reconstruction and development of the region. However, only on rare occasions did these experiences

have an impact on the decision-making process.<sup>2</sup> What seems to have been largely missing in the experience of L’Aquila after the earthquake is a willingness by the local and regional institutions to engage with the community beyond consultation towards democratic deliberation. This has limited the capacity for the local community to get organised within a framework for action, with clear objectives and tasks.

Deliberation is a multi-dimensional concept that can be defined as dialogue that “induces reflection upon preferences in a non-coercive fashion” (Dryzek, 2000, cited by Wiklund, 2005). Deliberative methods are important because they enable people to think through the issues and thereby to come to a different conclusion than they would have without the deliberation. However, they are useful if participants are provided with the information they need to be involved in a meaningful way and are informed of how their input will affect the decision. The uncertainty regarding how community inputs will be used can instead limit the willingness to participate, and in turn limit the effectiveness and eventually the legitimacy of bottom-up initiatives, as for example became clear at the beginning of the public assembly in L’Aquila in March 2012 (Box 3.1).

Deliberative discussions allow participants to define priorities and identify the options available for a development strategy. For example, the participatory discussion organised with L’Aquila’s citizens in July 2012 (called the World Café) helped to clarify some options already addressed in the public assembly in March and in the Community Survey but it also prompted proposals to improve quality of life in the city and region around the themes of sustainable mobility, integration of transport networks, creation of new spaces of aggregation and cultural activities (Box 3.2). In sum, the World Café discussion helped with gathering input from community participants which served to define the regional strategy presented in this report.

***For public deliberation to be effective, the opinions expressed should have an influence on the decision-making process***

A crucial aspect of public deliberation, underlined also by the participants at the World Café in L’Aquila, is to ensure that the opinions expressed have an effective influence on the decision-making process. For this to happen, it is necessary to allow enough time from democratic deliberation to implementation, which can prove to be difficult in a post-disaster situation.

More importantly, public deliberation should become a regular component of a regional development strategy. This can happen in different ways according to the community preferences. In any case, local institutions should invest – resources and skills – in providing information and spaces for civic participation, both physical and online. The implementation of new information and communication technologies can help generate relevant information and disseminate the results of public deliberation. This in turn will increase policy accountability and innovative solutions for the community. In the case of L’Aquila, there should be public monitoring of societal progress, as a knowledge tool to understand how the public views the course being designed and implemented (see Chapter 6).

**Box 3.1. Community engagement in post-disaster regions:  
Public Assembly at Teatro Ridotto (16 March 2012)**

Community engagement activities and outcomes are affected by the immediate personal and social context of the people involved. While in non-disaster situations, people are meant to participate in a calm and unaffected way, it is unrealistic to expect that people can leave their feelings and emotions “at the door”. The selection of techniques and how they are actually used should be based on a consideration of the emotional burdens of the participants. Where there is conflict (latent or explicit), this will need to be addressed. To have an effective participatory process may mean that the facilitator needs to implement some “process work” first. Participants need to have at least a low level of trust. Sometimes, a good deal of discussion is needed before sufficient trust is developed to allow the real discussion to start.

More than 400 people participated in a three-hour public assembly in L’Aquila following the invitation of the OECD-University of Groningen team on 16 March 2012. The main objective was to discuss the priorities for development identified in the OECD-University of Groningen issues paper by giving a voice to the citizens, who were frustrated by the lack of action to reconstruct the city and provide a long-term vision for development. At the beginning, people were focused mainly on physical reconstruction issues. A hostile tone from the audience highlighted the frustration regarding the perceived lack of transparency and institutional communication on the rules and next steps of the city’s reconstruction. Over the three-hour discussion, more and more strategic issues emerged for a long-term vision; for example, how to use the reconstruction as an opportunity for creating a new city, the need to focus on intangible assets, eco-tourism, renewable energy, social environment, etc. At the end of the meeting, the Minister for Territorial Cohesion, who was present in the room, announced some concrete measures to accelerate the reconstruction process within a broader strategy for the region.

The following day 400 people participated in a public forum held at the Gran Sasso National Laboratory. The public forum provided an opportunity for the community to voice concerns, identify priority areas, and put forward ideas and suggestions for moving forward, on the basis of an issues paper prepared by the OECD-University of Groningen team. The success of this Forum in providing a debate was crucially dependent on the experience of the previous day’s assembly. The final part of the Forum concluded with the arrival of several government ministers and by the prime minister of Italy.

Over the two days of these public forums, there emerged a widespread convergence of the opinions expressed and the preliminary insights put forward by the OECD-Groningen team, made possible only after citizens expressed their concerns regarding the reconstruction choices and fear of local input being excluded from the decision-making process. “How to re-build” is a critical issue both materially but also from a sociological and psychological perspective for any population affected by a shock. After suffering catastrophic shocks, it is a human reaction to revert to secure paradigms (i.e. those known as the *status quo ante*). Such needs must be followed up by public authorities, if a hit region is to recover and be brought back to life again. Beyond the related tragedy, however, natural disasters in OECD regions have constituted an opportunity to challenge and redesign existing local socio-economic paradigms. As was repeated by various commentators, “putting a house back in place” should become a process, not just a product, which is embedded in local social relations. Against that backdrop, for instance, it was also important to ensure that the mainstream construction and economic sector be included in the re-building process and be involved in on-going dialogue with the emergency management services to achieve sustainable development locally. As well as helping to re-energise and catalyse debates, the importance of their participation also lies in the fact that it provided the basis for further citizen engagement activities, including the survey work and the World Café event (Box 3.2).

### Box 3.2. Results from the World Café meeting in L’Aquila

On 6 July 2012, 80 people accepted the invitation of the OECD-University of Groningen research team to take part in a World Café discussion. The objectives of the World Café were to provide an open space for citizens to work together to achieve a vision for the future of L’Aquila, identify existing resources to be leveraged for the development of the area, and outline some priorities for action. In the final phase of the discussions, the participants decided on the actions and stakeholders needed to implement the priorities identified.

The participants in the World Café generated many proposals while discussing strengths and resources for the future of L’Aquila. Through a deliberative dialogue around the choice of the most urgent things to do to improve the quality of life in L’Aquila, many concrete and implementable propositions were identified and then translated into five priorities for lines of action, ordered by the participants at the end of the meeting:

1. Investing for jobs; system of knowledge, education and innovation.
2. Reviving the historical centre: inhabitants, cultural and economic activities. Culture of beauty.
3. Improving mobility; integrated transport networks; containing urban sprawl; polycentric and eco-sustainable city.
4. Achieving transparency of public action; rule of law; improved administrative efficiency; participatory reconstruction.
5. Building a collective identity and strengthening social cohesion; creating spaces of aggregation, quality of public spaces; quality of services to families and the elderly; active participation of young people.

The principle that connects the priorities identified during the World Café is that people must be placed at the centre of redevelopment of the city of L’Aquila and surrounding areas. The crucial role of knowledge and innovation for the development of the region was confirmed in this discussion, as had already emerged in previous consultations with citizens (for example 68% of the respondents to the OECD-University of Groningen Community Survey opted for this slogan to re-launch L’Aquila). However, when citizens were prompted to discuss priorities, actors and tools for change, additional themes emerged, for example the importance of the physical development, the need to contain urban sprawl and to improve sustainable mobility (priority 3). The deliberation not only showed that participants were very aware of the challenges ahead, but it also helped in gathering knowledge and skills on concrete proposals for an integrated transport network, the revitalisation of some areas with eco-sustainable projects, and the reorganisation of public mobility to schools and universities to address these challenges.

Despite the “planning fatigue” and frustration with the lack of transparency of redevelopment choices available up to that point, participants considered that community engagement should become part of the reconstruction process in order to also rebuild a collective identity. Participants indicated the appropriate public and private stakeholders for the implementation of the above five priorities. Besides a call to the University of L’Aquila and local administrations, participants identified institutions that could create networks and facilitate co-ordination among different agencies. Regarding the lines of action for implementation, many suggestions were advanced towards incentives to support engagement, also by providing physical spaces for participation and deliberation. While a clear request of simplification of administrative procedures emerged, there wasn’t a similar request regarding the instruments of regional programming and local planning. A summary of the results from the World Café was sent to the institutional stakeholders that participants had indicated as being crucial for the implementation of the priorities identified.

## Conclusions and main recommendations

From the participative approaches in L’Aquila, as well as the results of deliberative experiences in other OECD post-disaster regions, can be drawn five recommendations:

Foster public deliberation to provide reasoned public input in difficult decision making. For example, the three community congresses organised over a four-month span in 2006 after the destruction of New Orleans by hurricane Katrina in 2005 helped create a public constituency to advocate for the local institutional citywide plan, the Unified New Orleans Plan and at the same time to articulate some of the priorities emerging in the plan (Wilson, 2009; Plyer and Ortiz, 2012).

Ensure that the opinions expressed have an effective influence on the decision process. Public deliberation can foster social trust, unify a community hit by the fragmentation due to the natural disaster. But the objectives and what type of commitment to implementation should be clarified. The public engagement campaign (“Share an Idea”, [www.ccc.govt.nz/index.aspx](http://www.ccc.govt.nz/index.aspx)) launched by Christchurch City Council following the earthquakes of 2011 involved the community sharing its ideas for the redevelopment of the central city to shape the Recovery Plan. More than 100 000 ideas were collected and then synthesised and presented in the Central City Recovery Plan that the City Council submitted to the Minister for Canterbury Earthquake Recovery.

Involve citizens in strategic decisions by presenting reliable and relevant information. Public participation can help orient choices on which public goods and services should be (re)-built, find innovative solutions, support and target investments in neighbourhood-level projects. After the L’Aquila earthquake in 2009, an association, Onlus Tempera, was created with the objective of contributing to the social reconstruction of the village of Tempera (8 km from L’Aquila). The association self-managed and worked on identifying concrete outputs to maintain the identity of the place, fight social disintegration and attract tourism. The first results were the construction of a library and a multi-purpose centre. The association seeks to assist in the renovation of historic public buildings in the town of Tempera and in the creation of a museum.

Allow repeated and different types of community engagement. Public participation is a complex process and difficult to enact in the intensity of a post-disaster situation. However, if communities are allowed and supported to embark on a participatory process, it will facilitate a lasting recovery. Comparing the reconstruction experiences in Los Angeles and Kobe (further to the respective earthquakes of 1994 and 1995), it is noted that even if both countries lacked a comprehensive strategy, local leaders helped to advance recovery by finding a balance between speed and deliberation. To balance these needs most equitably, local governments should have the flexibility to work as quickly as they can and as quickly as the community can tolerate (Olshansky et al., 2006).

Make public deliberation a regular component of the regional development strategy. Invest resources – skills and funds – to provide information systems and communication mechanisms as a start. Identify possible channels for democratic deliberation, clarify where the results of the deliberation will be seen, and create also physical spaces for civic participation. Policy evaluation has a decisive role in offering insights on conditions, causalities and bottlenecks for the implementation of policies and in suggesting ideas on how to revise objectives, resource allocation and tools to deliver. Key outcome indicators on well-being conditions chosen by the community can act as a catalyst for the evaluation of policies.



## Notes

1. Results from the almost 900 responses to the OECD-University of Groningen Community Survey (see Annex 3.A1 for details).
2. Among the experiences of public participation with positive impact, two initiatives should be mentioned: The law on the “Rules of Participation” (*Regolamento sugli istituti di partecipazione*) approved by the Municipal Council of L’Aquila in January 2012 and triggered by the popular initiative *S-OST L’Aquila anno1*. The opening of a recreation centre and a library in the village of Tempera organised by the association *Tempera Onlus* by bridging with other non-profit organisations in neighbouring villages and the universities of L’Aquila and of Camerino.

## *Bibliography*

- Dare, M., J. Schirmer and F. Vanclay (2011), *Handbook for Operational Community Engagement within Australian Plantation Forest Management*, Cooperative Research Centre for Forestry, Hobart, accessed 17 August 2012, [www.crcforestry.com.au/publications/downloads/CRCForestry-CE-FINAL.pdf](http://www.crcforestry.com.au/publications/downloads/CRCForestry-CE-FINAL.pdf).
- Dryzek, J. (2000), *Deliberative Democracy and Beyond*, Oxford University Press, Oxford.
- Hartz-Karp, J. and J. Pope (2011), “Enhancing Effectiveness through Deliberative Democracy”, in F. Vanclay and A.M. Esteves (eds.), *New Directions in Social Impact Assessment: Conceptual and Methodological Advances*, Edward Elgar, Cheltenham.
- Lenhian, D. (2008), “It’s More Than Talk: Listen, Learn and Act: A New Model for Public Engagement”, the final report of the Public Engagement Initiative, Province of New Brunswick, [www.gnb.ca/0012/PDF/LLA-e.pdf](http://www.gnb.ca/0012/PDF/LLA-e.pdf).
- Minister for Territorial Cohesion (Ministro per la Coesione Territoriale) (2012), “La ricostruzione dei Comuni del Territorio Aquilano – Relazione”, 16 March 2012, [www.coesioneterritoriale.gov.it/wp-content/uploads/2012/06/relazione\\_definitiva\\_cratere\\_aquilano.pdf](http://www.coesioneterritoriale.gov.it/wp-content/uploads/2012/06/relazione_definitiva_cratere_aquilano.pdf).
- OECD and University of Groningen (June 2012), community survey, L’Aquila.
- Olshansky, R.B. et al. (2006), “Rebuilding Communities Following Disasters: Lessons from Kobe and Los Angeles”, *Built Environment*, Vol. 32, No. 4.
- Plyer, A. and E. Ortiz (2011), “Building Data Capacity to Foster Resilient Communities”, in A. Liu et al. (eds.), *Resilience and Opportunity: Lessons from the US Gulf Coast after Katrina and Rita*, Brookings Institution, [www.brookings.edu/press/Books/2011/resilienceandopportunity.aspx](http://www.brookings.edu/press/Books/2011/resilienceandopportunity.aspx).
- Vanclay, F. and A.M. Esteves (2011), “Current Issues and Trends in Social Impact Assessment”, in F. Vanclay and A.M. Esteves (eds.), *New Directions in Social Impact Assessment: Conceptual and Methodological Advances*, Edward Elgar, Cheltenham.
- Wiklund, H. (2005), “In Search of Arenas for Democratic Deliberation: A Habermasian Review of Environmental Assessment”, *Impact Assessment and Project Appraisal*, Vol. 23, No. 4.
- Wilson, P. (2009), “Deliberative Planning for Disaster Recovery: Re-membering New Orleans”, *Journal of Public Deliberation*, Vol. 5, No. 1, Article 1.

### *Annex 3.A1*

## **OECD and University of Groningen Community Survey in L'Aquila**

The survey was designed to collect the opinions of the citizens and record the outcomes of other initiatives such as interviews with leading personalities, a public meeting and the World Café. The overall goal was to identify the opinions of the population concerning the current situation and the likely reactions to and attitudes towards prospective policy initiatives.

Given the impossibility of obtaining a representative sampling of the population due to lack of time and of financial resources, the goal was to reach as large a number of citizens as possible by convenience sampling. The responses to the questionnaire were strictly anonymous and respondents were made aware of this at the stage of the data collection.

The questionnaire was comprised of 26 questions (some of which were to further clarify previous responses and were therefore asked only conditional on these) each of which gave access to a predetermined set of answers. In a few cases there was also the possibility for respondents to elaborate.

The questionnaire consisted of four sections:

1. The first aimed at profiling the respondent according to the usual demographic variables: gender, age, educational attainment, income level.
2. The second section investigated the channels used to gain information on the reconstruction process and elicited opinions concerning the relative importance of several possible policy goals.
3. A third section investigated ownership of properties and their destination after restoration from the earthquake damage as well as job market, trying to identify what people consider important in terms of supply of services, housing and job opportunities in order not to move out of the area.
4. The final section of the questionnaire asked opinions on the future of L'Aquila, such as their preferred policy directions, the importance of neighbouring areas, expected role of immigrants, obstacles to growth and to the creation of new businesses, the role of the high education institutions in the process of reconstruction and development, and the role of the cultural and natural assets of L'Aquila.

On average, respondents took 25-30 minutes to complete the questionnaire. The questionnaire was administered following three routes: web-based, face-to-face, and paper-based. The goal was to administer the web-based questionnaire to the largest possible number of citizens with access to the Internet.

The face-to-face interviews were meant to reach people least likely to be contacted via social network and email. They were conducted by trained interviewers on digital tablets between 08:00 and 22:00 in places known to have good public attendance, such as the CASE sites (new temporary houses built after the 2009 earthquake), shopping malls, markets, etc.

After data cleaning the active sample was finally made up of 883 responses, of which 469 were face-to-face interviews and 414 obtained through web access.

## *Chapter 4*

### **Regional innovation strategy**

*This chapter discusses the factors that could help Abruzzo to maximise its long-term economic potential, despite the current global economic pressures. Abruzzo needs to rebuild its regional advantage based on the concept of an integrated regional platform, in order to upgrade technologies and foster a more diverse knowledge base. The chapter analyses regional bottlenecks to implementing an innovation strategy and offers solutions to increase connections between firms and between the universities and the business sector. The chapter also addresses the challenges Abruzzo faces in creating and retaining human capital in the region. Policies to improve the match between local demand for and supply of skills, including the intermediate-type skills widely sought by local SMEs, are suggested.*

## Introduction

Abruzzo faces challenges in transforming the regional economy that predate the earthquake (see Chapter 1). A successful recipe for the restructuring process includes many ingredients. One of these ingredients, and probably the most important one, is the creation and diffusion of knowledge and entrepreneurial opportunities. But knowledge tends to concentrate in large urban areas, while more peripheral regions struggle to generate, absorb and adapt new knowledge as well as attract and retain talent. When a peripheral area is then struck by a natural disaster the situation becomes particularly dangerous because the leakages of physical and human capital, capabilities and resources can further damage the local economy and trigger a downward spiral (OECD-University of Groningen, 2012).

Abruzzo can build upon areas of strength in the existing industry structure, upgrade the available capabilities and competences, and ensure a balance between demand and supply of human resources (Table 4.1). The region has a sound and diversified manufacturing base (e.g. automotive, electronics, rubber and plastic, non-metallic minerals, textiles and clothing, agro-food, pharmaceuticals); abundant natural, cultural and artistic resources, which represent an excellent base for innovative services; human capital availability; high export capacity and MNE presence; and three universities and several scientific centres of excellence.

However, several weaknesses need to be addressed in the context of the regional strategy. The systemic dimension of the regional productive structure and innovation assets is extremely fragile. The lack of internal and external connectivity is a priority to address in regional and local strategies through different brokering and collaboration-promoting instruments and institutions. Furthermore, the firm base of many low-technology small and micro-enterprises, including family-owned firms, results in low levels of innovation capacity due to lack of firm scale and skills gaps. Efforts to stimulate innovation among the region's firms are therefore an imperative. Fragmentation of public and private stakeholders within the region has prevented the identification of a coherent and integrated development strategy and the alignment of objectives and priorities at the various levels of governance.

To seize the opportunities for the region, combat threats to its future development and restore a path of economic growth, Abruzzo should embark on designing and implementing a co-ordinated regional innovation strategy. Such a strategy may consider the following objectives and their associated measures:

- Upgrading and restructuring the regional economy
- Connecting firms
- Skills and employment

Table 4.1. SWOT of the Abruzzo innovation system

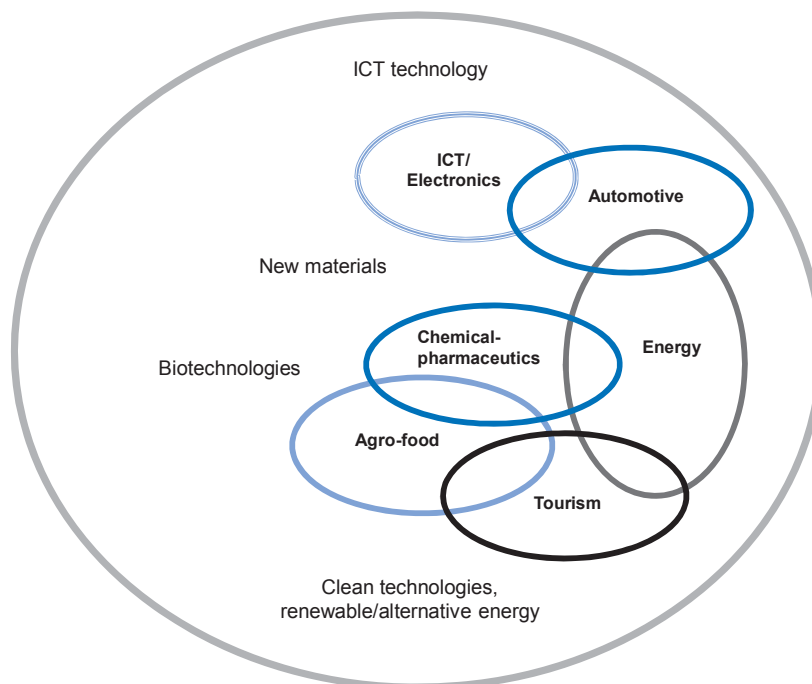
Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Sound and diversified manufacturing base in several industries</li> <li>• Knowledge generation infrastructure (three universities, Gran Sasso National Laboratory)</li> <li>• Natural, cultural and artistic resources</li> <li>• Proximity to Rome and national transit axes</li> <li>• Presence of multi-national enterprises</li> <li>• Regional plan for information society</li> </ul>	<ul style="list-style-type: none"> <li>• Large share of micro and small enterprises in lower technology sectors, often family-owned</li> <li>• Poor connectivity among different firms (large and small), and between firms, universities and public stakeholders</li> <li>• Skills mismatches with respect to the economic structure</li> <li>• Ageing population in low population density areas</li> <li>• Low propensity to innovate, including in the public sector</li> <li>• Transport network (railroads) and network infrastructure (ICT and energy distribution)</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Growth enhancing innovation in services and other traditional low-tech sectors (e.g. tourism)</li> <li>• Strengthening the quality and outreach of the region's higher education institutions</li> <li>• Promotion of smart city concept in the regional strategy</li> <li>• Improving firm and research linkages within and beyond Abruzzo</li> <li>• Additional financial resources for earthquake recovery</li> <li>• Under-utilised potential of skilled graduates</li> </ul>	<ul style="list-style-type: none"> <li>• Long-term effects of earthquake devastation if not addressed now (outflows of skilled workers, young people)</li> <li>• Loss of manufacturing jobs with globalisation pressures</li> <li>• Lack of transformation due to fragmentation of policy efforts</li> </ul>

## Upgrading and restructuring the regional economy

### *The diversification strategy could be based on an integrated policy platform*

Abruzzo should aim at restructuring and upgrading the regional and local economies. Regional diversification that supports economic growth does not only come from transitioning to general purpose or cutting-edge technologies. Regional advantages can therefore be “constructed” based on the unique combinations of skills and assets in the region that contribute to growth through diversification and technological transitions (Figure 4.1).<sup>1</sup> A suitable development strategy for a region like Abruzzo, characterised by a solid, though declining manufacturing sector, can be based on the approach of local and regional “integrated platforms”. The integrated policy platform is based on the concepts of *i*) related variety: knowledge transfers across sectors/activities that have “cognitive” (knowledge base, capabilities and competences) proximity; *ii*) technological change: technological change has a differentiated impact on sectors, leading to different opportunities for structural change in the region; sectors have differentiated impact on the structural change in the region; *iii*) diverse knowledge base: the feasibility of the diversification of a regional economy depends on the current sources of new knowledge production; and *iv*) policy platform: instead of targeting specific sectors, it targets sectoral linkages and flows of knowledge across the entire economy (Box 4.1) (see, among others, Cooke, 2007; Boschma, 2005; Frenken et al., 2007; Pike, Rodríguez-Pose and Tomaney, 2007; Iammarino, 2011; Asheim et al., 2011).

Figure 4.1. Sectoral and technological complementarities



Source: OECD, based on Cooke, P. (2007), “To Construct Regional Advantage from Innovation Systems First Build Policy Platforms”, *European Planning Studies*, Vol. 15, No. 2.

The structure of the Abruzzo economy is indeed quite diversified, which provides opportunities for restructuring through related variety. Furthermore, since Abruzzo Sviluppo has the task to lead the regional co-ordination platform of the innovation poles, it can help facilitate such linkages across technologies (see below). The manufacturing industry is slightly more important than in the rest of Italy, and is based on two main pillars: *i*) large externally controlled firms, including some important MNEs, in medium- and high-tech industries; and *ii*) small and medium-sized enterprises (SMEs), active in traditional sectors, but less organised in local production systems as in other Italian regions (6 out of the 19 local labour systems, can be defined as industrial districts).<sup>2</sup> Increasing international competition and the global crisis have created serious problems for many local producers; therefore restructuring opportunities based on the concept of related variety are in principle wide open in the regional economy.

As already highlighted in several reports, the engine for reconstruction and development of Abruzzo should be based on constructing a new regional advantage by diversifying on the basis of existing specialisations and strengths. This diversification strategy should build both on existing regional advantages in manufacturing as well as traditional handicraft and service activities, possibly spurred by newly formed specific intermediate skills and large scale diffusion of general purpose technologies (ICT).

### Box 4.1. An integrated policy platform to promote diversification through related variety

**Related variety:** Knowledge spills over from one industrial sector or activity to another when these sectors/activities are complementary in terms of knowledge base, competences and capabilities. Effective knowledge transfer requires some, but not too much, cognitive proximity between regional industries, the concept behind related variety. In the long run, related variety is ultimately a major input for regional diversification (regional branching): new industries grow out of technologically related industries, in which new firms recombine and exploit the knowledge and skills taken from local related industries, while other firms not technologically related to others existing in the region exit. The concept of related variety is therefore not strictly defined in terms of economic linkages – i.e. input-output (or backward-forward) linkages – but rather in those of the cognitive dimension (i.e. technological proximity). For the construction of an integrated policy platform, it is important to consider both the economic and the cognitive dimensions of inter-firm linkages. In this respect, the aim is to reconcile and include both vertical business networks and horizontal knowledge networks.

**Technological change:** Certain sectors can have greater impact than others for structural change in the region, contributing to regional diversification. Such key sectors and technologies (for example, micro-electronics, ICT, new materials, biotechnology, clean technologies and renewable energy) are characterised by high pervasiveness, horizontal effects and inter-industry cross-fertilisation among emerging technologies and capabilities. The role of general purpose technologies in such cases is critical in terms of providing platforms for regional technological upgrading and diversification of the original local knowledge base. Diversification within the region through the principle of related variety also requires interactions outside of the region. Such channels include trade linkages, FDI, labour mobility, business and knowledge networks, etc. They enhance diversification into new applications and new sectors while building and extending on the local knowledge base, thus helping produce diversity conducive to growth. The role of general-purpose technologies is also critical in terms of providing platforms for regional technological upgrading and diversification of the original local knowledge base, and to increase inclusion and transmission of information in all realms of the civil society.

**Diverse knowledge base:** There exist different forms of knowledge base according to the origin of the main input for the generation of new ideas (e.g. science-based, engineering-based, design-based and cultural/arts-based). The identification of diversity among the sources of new knowledge production in a local/regional system is particularly relevant when combined with the concepts of complementarities and relatedness mentioned above, in a dynamic perspective. Such an approach helps to determine to what extent and in which direction the diversification of the regional economic structure is actually feasible given its past development trajectory.

**Policy platform:** Innovation is driven by interaction and feedback mechanisms that cross industry boundaries and stems from the recombination of old and new pieces of knowledge in entirely new ways. Instead of targeting specific industrial sectors, the platform policy framework has a horizontal nature inasmuch as it targets linkages and flows across the whole local economy, inserting it in its wider socio-cultural regional context, and taking into account its specific evolutionary trajectory within the general globalisation trend. The concept of a regional innovation system in a dynamic perspective considers the external forces of globalisation of the world economy. Instead of copying or importing models of best practices, this policy strategy aims at building/renewing local assets following mainly (but not exclusively) a bottom-up model of governance and the organisational form of the innovation system. This approach has been recently implemented in highly differentiated regional contexts – some of which are affected by backwardness or industrial decline – (e.g. Lahti region in Finland, Wales in the United Kingdom, Emilia Romagna in Italy) using the potential offered by general-purpose technologies such as ICT.

*Source:* Cooke, P. (2007), “To Construct Regional Advantage from Innovation Systems First Build Policy Platforms”, *European Planning Studies*, Vol. 15, No. 2 and Cooke, P. (2009), “Economic Development Policy as an Evolutionary Envisioning Process”, report to the OECD Centre for Entrepreneurship and LEED, mimeo.

Historical, cultural and artistic heritage and related (primarily service) industries are also assets in the region to develop (see, among others, Bank of Italy, 2012; CRESA, 2012).



Various policy instruments have been identified to promote transition, through related variety, for Abruzzo to consider (see, among others, Boschma and Wenting, 2007; Boschma and Iammarino, 2009; Boschma et al., 2009). Entrepreneurship is a driver for transition, but experienced entrepreneurs matter more since they have a higher survival rate compared with new entrants. Imports and inward FDI can support transition, but trade and foreign investment effects strictly depend on the type of products and functions entering the region, and on their origin. Labour mobility and knowledge networks are further drivers of transition. Spin-offs are yet another mechanism. While most evidence shows this policy is mostly relevant for high-technology sectors, it can still be helpful in other sectors (see Box 4.2).

Abruzzo has taken steps in the direction of designing a regional policy framework for territorial development, including the recently approved Law for Regional Development (Regione Abruzzo, 2012). This law is an ambitious attempt to create the legal basis for an integrated policy platform. It seeks to establish a systemic co-ordination of industrial, innovation and internationalisation policies, under the framework of the European Union's programmes and guidelines. The law envisages the promotion of innovation poles and business networks, but refers also to more traditional industrial policy tools (programme contracts), as well as to policies aimed at supporting enterprise international activities and the regional innovation system.

Although many of the policy tools covered by the new law are already in place, it is unlikely that the region will reach its ambitions without greater attention to complementarities across different policies. More generally, building hard and soft infrastructure, attracting inward FDI, and enhancing human capital and capabilities also bear risks, particularly in peripheral regions (Crescenzi and Rodriguez-Pose, 2011). A region like Abruzzo is more vulnerable with respect to diversification efforts if the regional innovation ecosystem is not sufficiently strong. Abruzzo therefore needs to better identify and manage such risks in the design of regional development policies. For example, ensuring good jobs for skilled human capital is necessary to retain such skilled workers as productive contributors to the regional economy. And multi-national enterprises are more likely to remain in the region if a strong network of relevant research and supply firms are present.

There are several characteristics associated with a relevant regional innovation strategy that Abruzzo may consider. First, such a strategy should take into account the type of region, reflect on the strategic choices made by the region and the tools available to the region. Second, often regional strategies suffer from a number of pitfalls, such as being developed without the right stakeholder input, insufficient prioritisation of action, a high-tech bias, or a disregard for national and global trends (OECD, 2011a). Finally, the European Commission has promoted the concept of smart specialisation as an *ex ante* condition for the 2014-2020 allocation of EU Structural Funds. The smart specialisation agenda also centres on helping regions to diversify on the basis of their existing specialisations and strengths, by focusing on the policy choices and policy processes required to achieve such a diversification. Future innovation strategy development in Abruzzo will need to consider the smart specialisation-type processes as a tool for building an integrated policy platform (Box 4.2).

#### Box 4.2. Smart Specialisation Strategies (RIS3) for regions: An emerging EU concept

National/regional research and innovation strategies for smart specialisation can be defined as integrated, place-based transformation strategies that support transformation, which may include modernisation, transition, diversification or radical foundation. Such strategies focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development. They build on each country's/region's strengths, competitive advantages and potential for excellence and support technological as well as practice-based innovation and aim to stimulate private sector investment. They also get stakeholders fully involved and encourage innovation and experimentation. Finally, such strategies are evidence-based and include sound monitoring and evaluation systems.

This type of strategy has been characterised as having the 4 “C”s. They include: *i*) (tough) Choices and Critical mass (limited number of priorities on the basis of own strengths and international specialisation); *ii*) Competitive advantage (by mobilising talent by matching RTD + I capacities and business needs through an entrepreneurial discovery process); *iii*) Clusters and Connectivity: develop world class clusters and provide arenas for related variety/cross-sectoral links internally in the region and externally, which drive specialised technological diversification – to match what a region has with what is found in the rest of the world; and *iv*) Collaborative leadership: efficient innovation systems as a collective endeavour based on public-private partnership (quadruple helix) – and an experimental platform to give voice to un-usual suspects.

Smart specialisation strategies can be translated into practice by implementing the following steps:

1. Analysis of regional potential for innovation-driven differentiation
2. RIS3 design and governance – ensuring participation and ownership
3. Elaboration of an overall vision for the future of the region
4. Selection of priorities for RIS3 and definition of objectives
5. Definition of coherent policy mix, roadmaps and action plan
6. Integration of monitoring and evaluation mechanisms

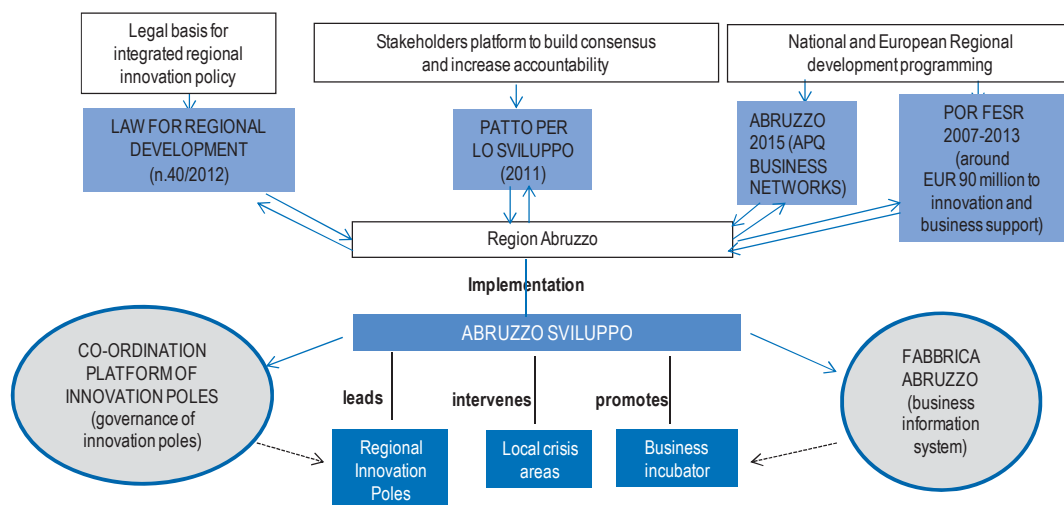
*Source:* Foray, D. et al (2012), “Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3)”; accessed March 2012, <http://s3platform.jrc.ec.europa.eu/s3pguide> and Eurada (2011), “Directory of ‘No-Nonsense’ Activities to Build S3-minded Regions”, scoping document for Agorada 2011, European Commission, [http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/smart\\_specialisation\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf).

#### ***The implementation of the regional innovation strategy needs better governance***

Implementation of the Law for Regional Development is mainly assigned to Abruzzo Sviluppato (Law 40/2012), a region-owned company, established in 1995, which serves as a regional development agency. Its activities include leading the regional co-ordination platform of innovation poles, the promotion of business networks, intervention in local crisis areas, the promotion of business incubators, support to self-employment and micro-credit, and the development of inter-regional and international linkages and co-operation

projects. The agency provides information to local actors about funding and technological opportunities. In addition, Abruzzo Sviluppo has set up a centralised business information system, Fabbrica Abruzzo, in the view to create a detailed map of feasible investment projects (Figure 4.2).

Figure 4.2. **Organisation and main functions of Abruzzo Sviluppo**

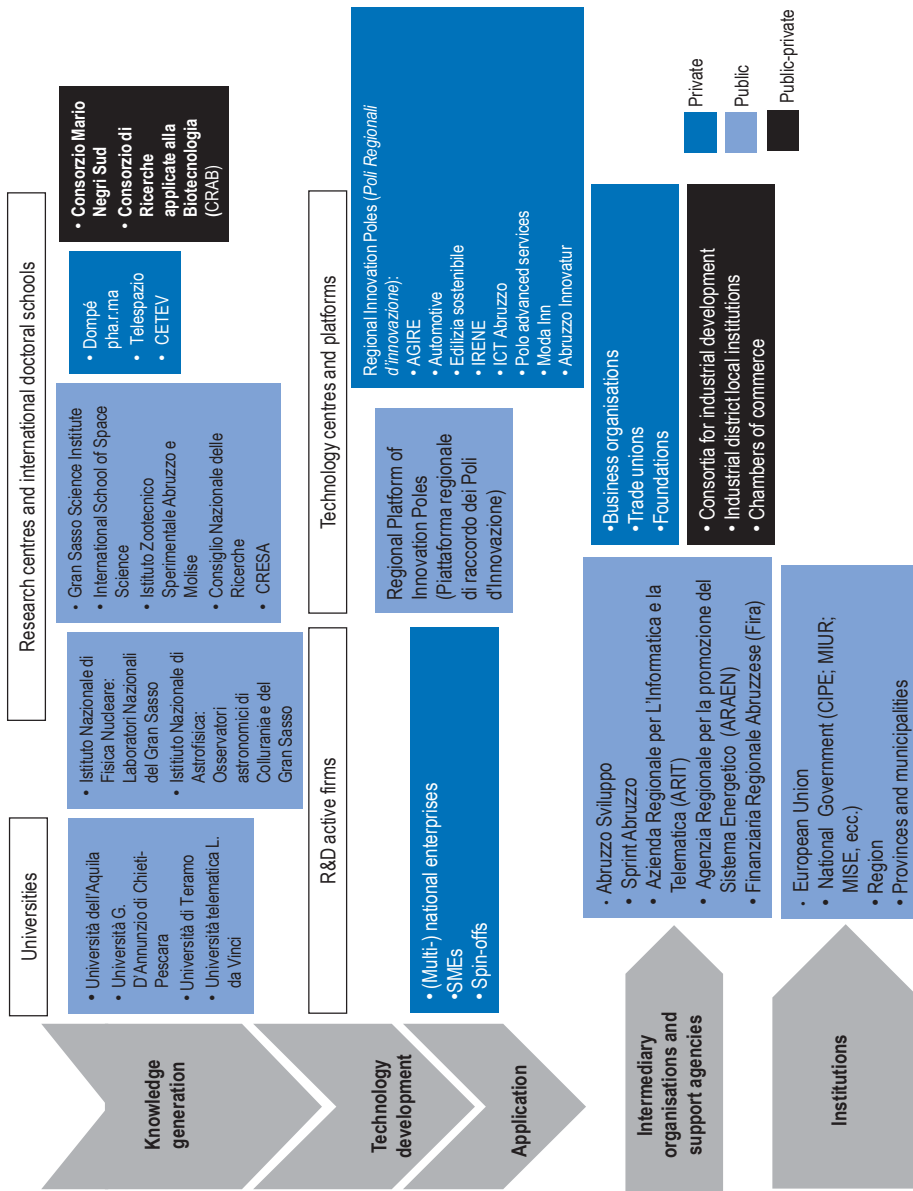


Source: OECD, based on [www.abruzzosviluppo.it](http://www.abruzzosviluppo.it).

A strong Abruzzo Sviluppo, in terms of strategy development and institutional capacity, could help address the fragmented regional governance. This implies that the regional public and private stakeholders recognise the agency's role and work with it, including different municipal and provincial authorities as well as the firms, higher education institutes, and other actors supporting regional innovation and development. At the moment, it is not yet clear how the different actors of the regional innovation system will co-ordinate and integrate their responsibilities and functions to increase the effectiveness of a single integrated strategy for regional development (Figure 4.3). The agency needs to have a keen awareness of the region's different types of firm needs, from the multi-nationals located in the region to the range of SMEs. This prominent role would also require that the agency takes into consideration the role of heritage and culture in the area's regional development as well as other efforts in the region, such as the smart city agenda of L'Aquila (Chapter 6).

To support the regional strategy and Abruzzo Sviluppo's action, an effective regional information and policy intelligence system is needed. As this is a difficult task, regional universities and research centres could carry out a joint research programme, in partnership with local institutions, aimed at better identifying development metrics and trends, prospects and policy options. The different tasks for building an effective regional information and policy intelligence system include sound data, policy intelligence regarding the results and outcomes of policy interventions, the monitoring of the use of public funds, and these various activities also entail the several activities listed in Table 4.2. A policy intelligence system serves as the basis for core regional innovation policy instruments, such as the selection and funding of innovation poles. This data and policy intelligence is also required to work effectively in a multi-level governance context. As the co-ordinating development actor, Abruzzo Sviluppo would take the lead in the development strategy, the main goals of which would be clearly articulated and publicised, but strategy decisions would be taken on the basis of the inputs provided by all other actors and partners.

Figure 4.3. Abruzzo regional innovation system actors



Source: OECD, based on [http://cordis.europa.eu/abruzzo/rd\\_it.html](http://cordis.europa.eu/abruzzo/rd_it.html); [www.abruzzo sviluppo.it/](http://www.abruzzo sviluppo.it/); [www.regione.abruzzo.it](http://www.regione.abruzzo.it), accessed 15 December 2012.

Table 4.2. Tasks for building an effective regional information and policy intelligence system

Task	Activity
Data gathering	Annual or biennial surveys and analysis of regional business and supply chain linkages: this task should be discussed with the national statistical institute (ISTAT) and regional institutions. The possibility to link data already collected for administrative purposes with official statistical archives should be carefully explored. CRESA has recently established a new statistical observatory on the earthquake area ( <i>Osservatorio sulle trasformazioni territoriali delle aree colpite dal sisma</i> , OTAS), in partnership with local institutions and universities. A proposal could be made to extend its mandate to the entire region, in order to identify a specific actor to be in charge of conducting regular surveys on regional business chain linkages.
Statistical indicators for long-term analysis and policy prioritisation	Profiling, compilation and publication of baseline indicators on all aspects of the regional economy, including funds allocated and expenditure for innovation activities. A scoreboard of indicators will be selected, in a view to compare Abruzzo with other transition regions in the European Union. The construction of a regional input-output table co-ordinated by the universities in conjunction with Eurostat would be desirable.
Strategic analysis	Regional SWOT analysis of all aspects of the skills, human capital and technology context. Relevant sources include strategic analyses already carried out by the region's planning bodies and by Abruzzo Sviluppo.
Reconnaissance	Assessment of other EU regions' innovation policies and regional development strategies, with particular reference to other EU transition regions.
Connecting L'Aquila city with the wider Abruzzo region	Establishment and promotion of design, technology, and service-delivery supply-chain linkages between the development agenda for L'Aquila and the wider Abruzzo region.
Policy monitoring and evaluation	Abruzzo Sviluppo develops sound indicators with respect to selection and monitoring of publicly funded projects, with a focus on outcomes, and ensures external evaluations of large projects.

Other external actors, such as development agencies from other EU countries, could also be chosen to monitor the actions of Abruzzo Sviluppo. External peer review is an important learning tool for all institutions and peer review could be both relevant and useful in this context. The European Commission, Joint Research, the IPTS Institute for Prospective Technological Studies in Seville, already hosts the EU S<sup>3</sup> Smart Specialisation “Platform” for the peer review of regional development programmes, so an institution such as this could be ideally placed to perform such a role.

Abruzzo Sviluppo may look to many international examples of regional development/innovation agencies for good practices. The new paradigm for such agencies emphasises a strategic, networking and systemic role over a top-down, resource provider role (OECD, 2011a). In some regions this is taken on by a single agency, such as Scottish Enterprise (United Kingdom), and in others the responsibilities are split between the regional development agency and an innovation network agency, such as SPRI and Innobasque, respectively, in the Basque Country (Spain).

Building widespread consensus about the regional strategy has been partially addressed by the *Patto per lo sviluppo dell'Abruzzo* (Abruzzo Development Pact). Signed in 2011, the pact brought together the region, trade unions, business associations and other local partners. This stakeholder platform complements the policy platform established by the regional development law and aims to promote dialogue among interested actors, so as to increase accountability and effectiveness of local development policies. Such agreements serve an important goal in building consensus around regional economic development goals. Catalonia's Agreement on Research and Innovation served a similar role; however, the lesson for Abruzzo is to quickly translate that consensus into prioritised actions (Box 4.3).

### Box 4.3. The Catalan Agreement on Research and Innovation (CARI)

The Catalan Agreement on Research and Innovation (*Pacte Nacional per a la Recerca i la Innovació*) is the outcome of a high-visibility and ambitious process to mobilise the main actors of the Catalan S&T and innovation system around a common vision of the challenges ahead. It forged a consensus not only on long-term objectives regarding the performance of this system and its contribution to the region's competitiveness and social welfare in a global environment, but also on the actual commitments that the actors have to make to reach these objectives. The CARI provides a roadmap for institutions' individual or collective actions in support of the agreed objectives.

However, as the CARI was designed for building consensus, not as a planning document, it has to some extent led to a blurring of the hierarchy of policy priorities. The CARI produced 131 recommendations, too often presented without due attention to policy complementarity requirements or resource implications. There was no evaluation or estimation of the possible costs of the proposed support programmes and expected additionality on private expenditures. It can be argued that the very process of consensus building involving a large number of stakeholders, a process that was not submitted to resource reality checks, can in fact lead to an inflation of recommendations. That inflation is due, in part, to a lack of trade-offs among participants. These priorities had to be established in the subsequent regional science, technology and innovation plan.

*Source:* OECD (2010), *OECD Reviews of Regional Innovation: Catalonia, Spain 2010*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264082052-en.

Beyond a one-time pact, some regions are institutionalising a more on-going advisory body of public, private and civil society actors that meet regularly. In Denmark, for example, the regions have successfully instituted a regional growth forum comprised of such leading actors that meet four to six times per year to review strategy and action plans (see later Box 4.4).

In addition to horizontal co-ordination within the region, Abruzzo needs to effectively engage with national and supra-national governments (vertical co-ordination) to align support behind its strategy. National ministries, such as the Ministry for Education, University and Research, the Ministry of Economic Development and the Minister for Territorial Cohesion are essential actors to support the regional innovation strategy. Around one-third of the Structural Funds for European Cohesion Policy in Abruzzo are directed to actions to support the regional innovation system and additional funds from the *Fondo Aree Sottoutilizzate* are allocated through the regional instruments of *Accordi Programma Quadro* (APQ).<sup>3</sup> Similarly, stronger governance and clear regional priorities will be necessary for Abruzzo to engage and benefit from the Adriatic-Ionian Marco region project.<sup>4</sup>

Given the small size of the Abruzzo region, any attempt at promoting structural shifts in its development path must be driven by a consistent approach co-ordinated among all institutional levels. Although the integrated platform approach is largely participatory “from the bottom”, the necessity of vertical co-ordination implies guidance, information and possible appropriate matching resources from the central government and beyond. Italian regions have recently obtained the constitutional acknowledgement of their autonomous competence in industrial policy. However, the benefits stemming from reducing the distance between policy makers and local stakeholders do not necessarily

outweigh the costs related to the lower scale of available tools, as well as the adverse external effects of uncoordinated regional policies.

There is a need for a co-ordinating role of national authorities with respect to regional economic development and innovation policies. In fact, most OECD countries show a considerable overlap in the types of instruments offered at both national and regional government level in the same country (OECD, 2011a). The rationale for that role is based on the existence of both positive and negative externalities in sub-national government policies. For example, by supporting the selection process of localised co-financed projects, central authorities share information about the national objectives and the opportunities which exist at the regional level. Central governments can act as co-ordination mechanism to support appropriate place-based specialisation that would contribute to national targets and could benefit from national support. This guiding role of national authorities might be necessary to achieve the proper scale of intervention, reduce the risk of wasteful duplications, and manage the inter-dependence among regions.<sup>5</sup>

One area for vertical co-ordination where national authorities could be more effective than regions, as well as to mitigate against wasteful competition, is that of internationalisation. Foreign direct investment (FDI) is particularly important in the case of Abruzzo, where attraction of multi-national enterprises (MNEs) has declined in recent years. Generally national authorities have the bargaining power to negotiate with MNEs, although regional development agencies are essential partners to create attractive regional conditions and to increase the ability of local productive systems to benefit from FDI. Another example for a clear national policy role is public support to the international activities of local firms. As in other Italian regions, a one-stop-shop for internationalisation policies (Sprint) has been established to co-ordinate the provision of services by national and local public institutions. However, its role seems very weak, due to various factors including a lack of adequate human and financial resources. The recent decision to close the regional branches of the Italian Trade Promotion Agency (ICE) is another concern. The chambers of commerce already offer a range of internationalisation services and the new Law for Regional Development entrusts Abruzzo Sviluppo with a support role in this field. However, the ability of local public actors to produce the required advanced business services appears limited, and even the scale of their traditional intervention may prove inadequate to tackle the size and rapid change of international markets. A clearer division of labour between national institutions, with their network of foreign offices, and regional actors, with their easy access to local enterprises, would therefore be desirable.

### ***Abruzzo needs to select strategic priorities for public support***

The core of the current strategy set up by the region through Abruzzo Sviluppo is a set of regional innovation poles that could provide an excellent base for the application of an integrated policy platform. Regional innovation poles should encourage innovation activities of member firms, knowledge spillovers among them, technology transfer, network linkages. In principle, they should reflect the existing regional pattern of sector specialisation, but their activities might be aimed at identifying new business opportunities, under the proposed principle of related variety. Existing and projected innovation poles cover virtually the entire regional economic structure, ranging from relatively strong specialisation sectors in high-tech industries, to traditional productions challenged by international competition (Table 4.3). Abruzzo Sviluppo should play a clearly defined role in providing an actual connection among poles and the rest of the

regional economy. Such a role should take into consideration stakeholder concerns about the openness of access to the platforms.<sup>6</sup>

Table 4.3. **Abruzzo's regional innovation poles**

Name	Members	Description
AGIRE – Agro-food innovation	83	<ul style="list-style-type: none"> <li>• Includes enterprises, research centres and universities</li> <li>• Has reached a co-operation agreement with a pre-existing consortium led by the University of L'Aquila, aimed at establishing a technological district on Food Innovation, Safety and Quality</li> </ul>
Automotive	71	<ul style="list-style-type: none"> <li>• Includes firms and the Faculty of Engineering of the University of L'Aquila and the Faculty of Economics of the University of Chieti-Pescara</li> <li>• Focuses on sectoral innovation and “transversal methods” by which automotive production links with green technology</li> <li>• Also promotes vocational training and tertiary education, with the creation of an Automotive Campus located near the region's most important manufacturing area</li> </ul>
IRENE – Innovative and Responsible Economy Network	240	<ul style="list-style-type: none"> <li>• Includes firms and non-profit associations</li> <li>• Seeks to encourage members to upgrade potential in social innovation and civil economy</li> </ul>
Edilizia Sostenibile: Innovation in sustainable construction	70	<ul style="list-style-type: none"> <li>• Includes the University of Chieti-Pescara</li> </ul>
ICT Abruzzo	55	<ul style="list-style-type: none"> <li>• Includes Micron Technology and the most important regional producers of aero-space electronics, as well as the University of L'Aquila</li> </ul>
Polo SA	77	<ul style="list-style-type: none"> <li>• Advanced services</li> </ul>
Moda Inn	53	<ul style="list-style-type: none"> <li>• Members related to textile, clothing, leather and shoe industries</li> </ul>
Abruzzo Innovatur (tourism)	46 for 2 000 firms	<ul style="list-style-type: none"> <li>• Groups other local business associations: Alto Sangro Turismo; Compagnia degli Appennini; Consorzio di Promozione e Sviluppo Turistico Overland; Consorzio Abruzzo Promotion; Abruzzo Travelling; Cooperativa Adriatica; Consorzio Abruzzo Relax; Consorzio Riviera del Sole; In Fiera</li> </ul>

Source: [www.abruzzo sviluppo.it/poli.php](http://www.abruzzo sviluppo.it/poli.php), accessed 15 December 2012.

However, not all the innovation poles show the same growth potential; therefore this report suggests that prioritisation for public support is needed. In addition to the existing eight poles, five more will be added (including chemical-pharmaceutical, energy and furniture industries) for a total of 13. While some poles may have proven successful, others may lack any significant connection with universities and research centres, which raises doubts about their ability to result in innovation and growth. Abruzzo needs to assess the effectiveness of different innovation poles in its decisions for future support as well as considering a more limited number of poles, or if not a prioritisation of financial resources towards those poles deemed most promising.

Many OECD regions struggle with setting priorities and have worked over time to make these tough choices regarding areas of priority for public support, be they sectors, technologies or clusters. For example, the former Northeast region of England's Strategy for Success was originally launched in 2002 by the Northeast of England Regional Development Agency. The strategy began with five centres of excellence that support the five sectors/areas of priority. The region refocused the strategy to three centres based on progress of the centres over time and a realisation of the need to further focus regional public support around a more limited number of fields (OECD, 2008).<sup>7</sup> The region of



Southern Denmark is another example where the number of priorities had to be reduced considerably with the merger of the four former counties, offering several interesting lessons for Abruzzo (Box 4.4) The fact that municipal leaders in the region were actively involved in the debate and selection of regional priorities ensured that the region did not waver in the face of lobbying for limited regional resources.

#### Box 4.4. Building consensus around regional strategy priorities: Southern Denmark

The region of Southern Denmark, while in a more knowledge-intensive country than Italy, shares many common challenges for strategy development with Abruzzo. The region, created from the merger of four former counties, has 1.2 million inhabitants and four main urban centres: Odense (188 000), Esbjerg (115 000), Vejle (105 000) and Kolding (88 000). There are outflows of students and workers, particularly to the capital (Copenhagen) and the country's second largest city (Aarhus). The 2008 crisis revealed weaknesses in the industrial structure, particularly for low-skilled workers. There are a range of different specialisations across the region, many in medium- to low-technology sectors. The University of Southern Denmark has multiple campuses in the region, the result of previous mergers, but is not among the country's top in attracting R&D funds. The successive regional strategies, the latest being 2012-2020, offer some lessons for Abruzzo regarding strategy development that include:

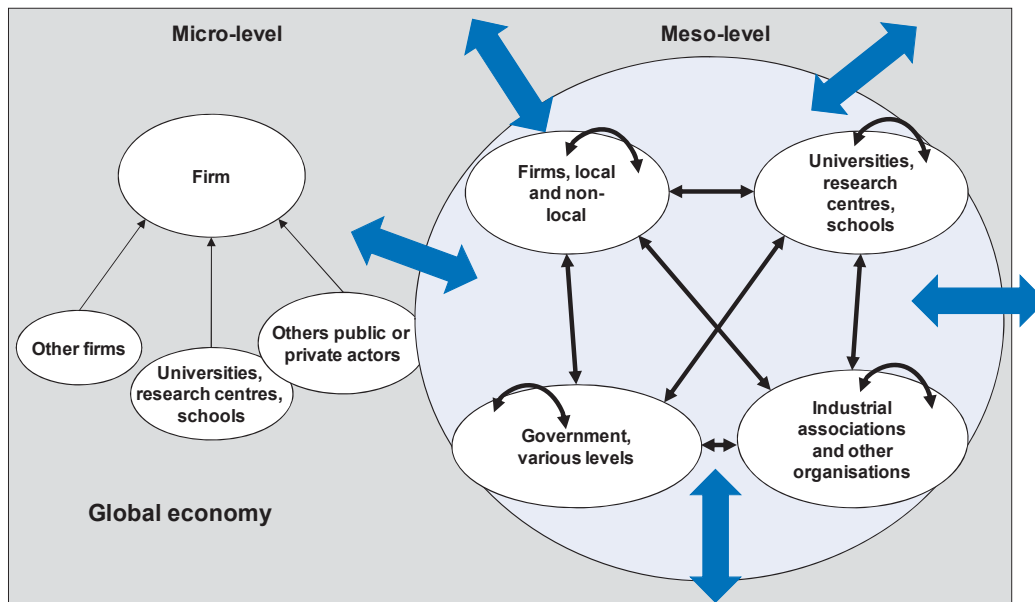
- Bringing regional stakeholders around a vision. The Regional Growth Forum, a public-private board that meets up to six times a year, helps guide the strategy development and the ongoing selection of priorities for funding. It is comprised of regional and municipal public officials, business persons (6 of 20 positions), representatives of the higher education and research community, and trade unions. A secretariat within the regional government provides support to this body to ensure its functioning.
- Making tough choices for prioritisation with a focus on growth. After the sub-national reforms, the newly created region (merging the four counties) had to come to a consensus for a development strategy. National government set the framework for regions to focus on innovation and growth, and this helped gain regional support around that common goal. The previous four counties each had 5 to 15 priority sectors. Through studies and choices, the list was reduced to four priority sectors in the first round, and three in the second round, dropping food-related industries that despite interventions were not seen as having future growth potential.
- Broad approach to innovation. To complement science and technology-intensive approaches, the innovation promoted in the region includes user-driven innovation and innovation in public services. For example, the experience economy sectors often require innovation in the user experience, particularly in tourism. The public support to welfare technology includes strategies for helping to use public procurement in the region's hospitals as a vehicle for promoting growth in local firms, and in particular for helping them transition from IT in general to applications in welfare technology. The use of policy instruments to promote demand-driven innovation is at the forefront of regional innovation policy.

Source: OECD (2012), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264178748-en.

## Connecting businesses

Abruzzo's ability to promote the upgrading and restructuring of its economy relies on stronger connections in and beyond the region. At the micro-level, this involves interactions by a particular firm. At a meso level, this concerns interactions among many different public and private actors within the region and in the wider global economy (Figure 4.4). Policy can facilitate the creation of new linkages within the system among different firms and knowledge generation or innovation support institutions.

Figure 4.4. Regional innovation system linkages: From the micro to the meso



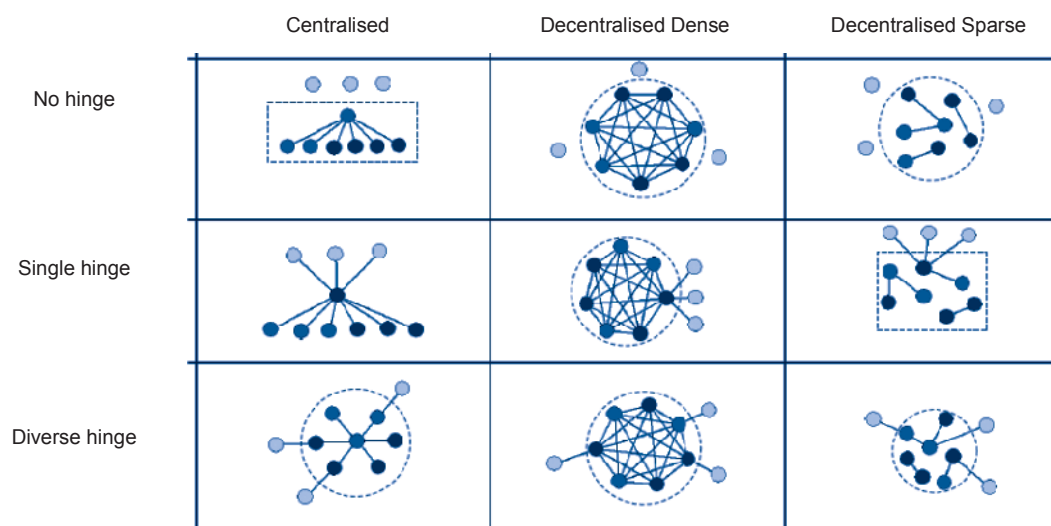
*Note:* A regional innovation system is a localised network of actors and institutions in the public and private sectors whose activities and interactions generate, import, modify and diffuse new technologies within and outside the region (e.g. Howells, 1999; Evangelista et al., 2002).

*Source:* Adapted from Iammarino, S., R. Padilla and N. von Tunzelmann (2008), “Technological Capabilities and Global-local Interactions: The Electronics Industry in Two Mexican Regions”, *World Development*, Vol. 36, No. 10.

Abruzzo's situation resembles most that of a decentralised sparse model due to a low level of inter-firm and other actor linkages (Figure 4.5). The region does have a few gateways (hinges) outside the region. When measured by co-patenting collaboration across regions, this is generally within Italy (almost two-thirds) and if international, mainly within the EU, such as with the region of Hessen (includes Frankfurt), Germany.<sup>8</sup> Large and technologically advanced firms – local but also foreign-owned – can act as gatekeepers that import knowledge that may (or may not) benefit other co-located firms, depending on the regional absorptive and systemic capacity and on the complementarities between the knowledge inflows and the local knowledge base. Such firms can even influence the circulation of knowledge in the region without being necessarily located *in situ* (as in the case of global buyers or distributors). In a region like Abruzzo where those connections are not sufficiently developed either internally within the region or externally

with the rest of the world, a first step is to support these internal connections so that the region reaps greater benefits from those firms and institutions with global connections. And since many of those global gateways are “opportunistic” MNEs, complementary policies are needed to better connect the multi-national enterprises (MNEs) to other small and medium enterprises (SMEs) in the region to ensure greater positive benefits from MNE presence.<sup>9</sup>

Figure 4.5. **Regional innovation system: Typology of external and internal linkages**



*Source:* Adapted from Benneworth, P. and A. Dassen (2011), “Strengthening Global-Local Connectivity in Regional Innovation Strategies: Implications for Regional Innovation Policy”, *OECD Regional Development Working Papers*, 2011/01, OECD Publishing, doi: 10.1787/5kgc6d80nns4-en.

***Understanding and support innovation capacity of firms is the first step to ensure an effective economic diversification and restructuring***

The overall framework within which businesses operate is one of the key success factors for stimulating sustained entrepreneurship and innovation, and public institutions affect such frameworks. A principal precondition enabling and supporting innovation is a positive attitude towards risk, enterprise and new technologies. Government can influence these attitudes through information and support campaigns, the way they regulate access to capital (credit), and bankruptcy. Innovators, entrepreneurs and investors are discouraged if bankruptcy legislation fails to achieve the appropriate balance between providing adequate creditor protection and encouraging a climate of risk taking. The region should identify ways to ensure that the national regulatory framework in the credit and bankruptcy domains is supportive to the needs of the Abruzzo economic operators, in particular by avoiding unnecessary barriers and stigmatisation, while also avoiding fraudulent practices.

Furthermore, the region should investigate regulatory and administrative bottlenecks that slow down time-to-market, create uncertainty of investment or increase development costs. Per survey respondents in L'Aquila, the highest barriers to entrepreneurship include bureaucracy, finance and tax burden, followed by lack of public support and services and infrastructure.<sup>10</sup> Tools such as administrative burden reduction programmes address only a narrow proportion of the overall regulatory costs borne by businesses, and thus should be complemented by other, more comprehensive competitiveness assessments at the regional level. Further approaches to reduce barriers to innovation include reforming the licensing and permit system, and rationalising inspection practices.<sup>11</sup>

The nature of financing for firm innovation and growth is another consideration for Abruzzo to include in its policy toolkit. Firms face two decisions: an “investment decision” based on an assessment of the costs and benefits of an investment, and a “financing decision” based on obtaining the capital that best matches cash flows and risks (OECD, 2012a). Accordingly, Abruzzo should explore how to support “business angels”, particularly for investments in intangible assets, in addition to venture capital funds that reduce the one-off, up-front costs of investigating possible investments in new enterprises. SMEs should be assisted to develop more effective financing plans so as to access private capital.

The technology level of SMEs in Abruzzo is much lower than that of larger firms. SMEs, in Abruzzo as elsewhere, operate mainly in traditional sectors (e.g. handicrafts, food industry, agricultural and environment-related activities, tourism industry, cultural activities and historical and artistic heritage). This calls for measures also to increase scale in SMEs and stimulate demand for innovation, even if in low or medium-technological sectors. The region's larger firms are active particularly (although not exclusively) in more advanced and technology-intensive industries (i.e. automotive, electronics, chemicals and pharmaceuticals).

The effectiveness of public programmes for economic diversification and restructuring depends on the capacity of firms and entrepreneurs to take advantage of them. Consequently, there is a need for rigorous baseline analysis of the business capacity of the existing stock of SMEs to compete and to grow. Abruzzo Sviluppo has committed to such objectives by signing a Programme Agreement “Abruzzo 2015” with the Ministry of Economic Development in April 2011.<sup>12</sup> The approach pursued with Abruzzo 2015 is to foster and strengthen inter-firm linkages and business networks to improve economic competitiveness. Accordingly, Abruzzo should fully implement in a timely manner the baseline assessment of the characteristics of the existing businesses and actors in Abruzzo in terms of *i*) innovation and competitiveness capacity, *ii*) needs for structural interventions; and *iii*) the requirements for potential beneficiaries of future supporting programmes of the conditions and potential of foreign direct investment in the regional and local economic fabric; and of networking opportunities.

In the Abruzzo region, and particularly in the province of L'Aquila, there is a noticeable lack of innovation support services for small firms. This includes technical support, legal and financial advice, or technological brokers, all of which can promote SME innovation and foster localised networks (see also Minister for Territorial Cohesion, 2012). There are no registries of business services for firms to access. At the same time, there are overlapping entrepreneurship promotion activities, resulting in duplication and co-ordination problems. Moreover, entrepreneurs are either not

fully aware of, or are largely sceptical about, the few existing business-support services available.<sup>13</sup> As there are also services provided by the private sector, including different chambers of commerce and business associations, increasing capacity through support from the region and its universities is one opportunity to better use the existing network of innovation support suppliers. In addition, funding institutions should allow regional firms to access innovation-related research and service providers outside of the region if they are best placed to do so.

Advanced business services is an area in which the policy framework established by the new Regional Development Law is expected to generate considerable benefits. However, it is currently difficult to assess whether this expectation will be met, particularly in the field of internationalisation (trade, traditional inward and outward foreign direct investment, off shoring/international subcontracting, participation in global production networks, etc.). A streamlined connection of firms to advanced business and innovation support services is a further important constitutive element of such framework. Such services should help identify more effectively potential for business development – for instance through customer-focused market research, enhanced branding and marketing strategies, and the introduction of performance measures that are focused on improvements in market position and customer satisfaction.

OECD regions and countries use a range of strategies for making innovation support services available and accessible. While in the past regions have sought to develop a “one-stop-shop” model for firm support centralised by one agency, the proliferation of programmes and entities has made this more difficult. Therefore, the so-called “no-wrong-door” is a system whereby entities provide cross-referrals so that firms are directed to the right provider, regardless of their entry point. Some regions have financed brokers directly to help SMEs. However, there exist examples where regions have found this can create a conflict of interest because the same broker doing the diagnostic is also the service provider, selling its own services regardless of whether they are the most adapted to the SME’s needs. Therefore many public authorities are opting for voucher-type options. In those cases, it is the firm that selects the right service provider for itself. When there is a lack of such service providers, some regions have tried to stimulate the creation of brokers and providers in the private sector by organising training and offering certification services for them so that SMEs can count on a minimum quality guarantee.

There is also a problem of demand for innovation support: few SMEs perceive the need and are willing to pay for the services of innovation brokers. Stimulating demand for innovation is especially challenging for small firms in lower technology sectors that lack the scale and know-how to invest in innovation – such as in tourism. The aforementioned support service vouchers in small amounts are a way to make firms innovation-aware. Many programmes seek to connect firms with universities or technology centres. In addition to technology-based innovation support, there are many opportunities for SME growth through non-technological innovations, as the Basque Country’s Aldatu programme illustrates (Box 4.5). Often firms that invest in non-technological innovation to modernise nonetheless accompany such investments also with technological upgrading (OECD, 2010a).

**Box 4.5. Developing non-technological innovation in small firms:  
Aldatu (Basque Country, Spain)**

This scheme supports innovation projects within the scope of the 2010 STI strategy of the Basque Country. Support is granted for innovation advisory services to projects aiming to reframe the company strategy, to introduce organisation and market innovations and to develop innovation capabilities. Criteria for funding are:

- The projects selected for support will significantly change the SMEs' business strategy.
- The innovation projects will significantly affect the company's presence in one or more markets. Alternatively, the SMEs will seek to improve their services to the customers through the development of new and tailored product strategies. Or, they should aim to develop new, or substantially changed, communication and interaction channels with the customers.
- The organisational innovation projects will facilitate the creation of new collaboration networks or new marketing networks. They may also support the set-up of new supply or purchase platforms.

Aid under this scheme can also be granted for the development of an integral innovation management system. Such an integral approach systematically considers activities for the development of ideas, the set-up of innovation projects and the measurement of innovative project results. Under the scheme, all activities can be undertaken in collaboration with two or more enterprises. Eligible costs are only the external consultancy costs. They are purchased at market price with public funding of up to EUR 90 000 per enterprise per year, not to exceed EUR 200 000 per enterprise within any three-year period. The maximum aid intensity is 50% of the eligible project costs. The current programme (2009-2013) has a total budget of EUR 30 million, approximately EUR 6 million annually.

*Source:* OECD (2011), *OECD Reviews of Regional Innovation: Basque Country, Spain 2011*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264097377-en.

***Policy efforts in Abruzzo should seek to facilitate business networks, in particular among SMEs***

While northern Italy is world-renowned for strong inter-firm networks, insufficient inter-firm linkages is a structural problem which Abruzzo shares with the rest of the *Mezzogiorno*. The region does not show strong economic linkages among local firms, nor inter-firm downstream or upstream networks (localised, inter-regional, international). Industrial districts are not a relevant share in Abruzzo's economy, with the possible exception of the Val Vibrata system in the north-eastern part of the region. This area is specialised in traditional sectors, but has been seriously hit by the fierce competition of low-wage countries and the global crisis. More generally, inter-firm linkages and networking capacity appears to be a challenge among local entrepreneurs.<sup>14</sup>

However, Abruzzo appears to be relatively attractive to foreign multi-national enterprises (MNEs), as compared to the low benchmark of other Italian regions. Employees in affiliates of foreign MNEs represented 6% of total employment in Abruzzo, above the national average (5.2%), and the region's advantage is even larger in the

manufacturing industry.<sup>15</sup> Abruzzo ranks fourth among Italian regions, following Lombardy, Lazio and Piedmont, whose shares are likely over-estimated by the fact that some MNEs open their Italian headquarters in large cities such as Milan or Rome even if their plants are located elsewhere (e.g. in the *Mezzogiorno*) (see Chapter 1). The most important case of multi-national presence in Abruzzo is the Val di Sangro area, which, notwithstanding the problems created by the global crisis, remains a good example of an automotive pole centred around a core of large multi-nationals (Sevel, Honda, Pilkington, Denso) linked with local firms. In other parts of the region, however, foreign MNEs rely on only a very few specialised supplier ties with local SMEs (CRESA, various publications; Iapadre, 2012).

Policy efforts in Abruzzo should therefore seek to create and strengthen inter-firm linkages. Italian and international examples illustrate how this can be done among SMEs, even in more traditional sectors, such as through effective promotion of consortia and other forms of multi-company collaborations (Box 4.6). Such tools help SMEs to exploit economies of scale and integrate small traditional activities into vertical chains. Through supplier development and export programmes, regional firms can be connected with large externally controlled enterprises to tap into global production chains (Box 4.7). Public efforts at promoting inter-firm networks will fail if there is not effort to upgrade firm competencies so that they may better engage in collaboration.

#### Box 4.6. Examples of inter-firm linkages in Italy

The number of business network contracts is rapidly growing in Italy, as a response to the problems raised by international competition. However, the number of participating firms remains very low: around 1% of total Italian firms). Some recent policy measures, at national (Law 33/2009) and European level (EIB credit line and the COSME 2014-2020 programme), are aimed at stimulating the growth of network contracts among SMEs, for example by allowing consolidated tax management and facilitating access to credit.

Successful examples of inter-firm linkages promoted by specific regional policies include: Habitech ([www.dtt.it/english/](http://www.dtt.it/english/)) a technological district in the areas of energy and environment in the province of Trento, with an active participation of universities and research centres, and Luce in Veneto ([www.luceinveneto.it/new/index.php?lang=en](http://www.luceinveneto.it/new/index.php?lang=en)), a business network in illumination engineering, promoted by the Veneto region.

Examples of business networks promoted in southern regions in traditional sectors are: “Il bello della meccanica” ([www.ilbellodellameccanica.it/indexen.html](http://www.ilbellodellameccanica.it/indexen.html)) based in the so-called TechnoValley of Mozzagrona (province of Chieti) in Abruzzo, but connecting firms located in five regions, and participated by the University of Chieti-Pescara; Consorzio Cento Masserie ([www.centomasserie.it/php/home.php](http://www.centomasserie.it/php/home.php)), a rural development business group promoted by a leading local firm in the Apulia region.

*Source:* Fondazione Bruno Visentini (2012), “Contratti di rete – un’analisi comparativa”, [www.fondazionebrunovisentini.eu/category/document](http://www.fondazionebrunovisentini.eu/category/document) and Intesa San Paolo (2012), “Le aggregazioni di rete: modello vincente per la sostenibilità e lo sviluppo”, Rapporto sulle piccole imprese e analisi comparata tra piccole e medie imprese manifatturiere – 2011-12, Il 2° Osservatorio Intesa Sanpaolo-Mediocredito Italiano sulle reti d’impresa, Unicredit, [www.unicredit.it/content/dam/unicredit/chisiamo/Superindice/IMPRESE/RAPPORTO\\_PI.PDF](http://www.unicredit.it/content/dam/unicredit/chisiamo/Superindice/IMPRESE/RAPPORTO_PI.PDF).

#### Box 4.7. Supplier development: Nuevo Leon, Mexico

Supplier development programme: The state of Neuvo Leon in Mexico has made supplier development a priority in its economic development strategy. In the context of the automotive cluster, supplier development actions include:

1. Increasing the competitiveness of existing suppliers through programmes for SMEs, a Tier 2 supplier committee, training programmes for Tier 1 on purchasing and supplier development, best practice sharing, defining components needed, catalogues of equipment at discount, definitions of skill profiles, etc.
2. Identifying potential suppliers through programmes to evaluate different suppliers (plastics, machines, tools) and a catalogue of common suppliers.
3. Developing infrastructure and capacity for suppliers lacking in region through a training programme for plastics and die casting and a project to analyse the business case of steel forging in Mexico.

Source: [http://claut.com.mx/Comite\\_de\\_Development\\_de\\_Proveedores\\_CLAUT\\_en.php](http://claut.com.mx/Comite_de_Development_de_Proveedores_CLAUT_en.php) and OECD (2009), *OECD Reviews of Regional Innovation: 15 Mexican States 2009*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264060135-en.

Brokers associated with the regional innovation poles could help identify where there is relevance for small firms. The poles are a helpful platform for bringing different regional stakeholders. The public financial support offers an incentive to overcome the non-cooperative attitudes still prevailing among local SMEs, as well as to make regional development policies more accountable and effective. On the other hand, there is the risk that pole members seek to exclude outsiders from access to public support. The poles cannot serve all firm needs and must remain somewhat selective to be effective. Many other tools are required to address the need for upgrading local SMEs. But brokers responsible for outreach could serve to identify where the poles could be relevant for innovation-ready firms. This would also address concerns raised by SMEs and micro-firms about access to the poles.<sup>16</sup> One lesson from the French *Pôles de compétitivité* programme was that the pole structure resulted in problems for SMEs, relative to large firms, in terms of pole governance and negotiation power in the development of projects (OECD, 2007).

#### ***Business-university links could be strengthened***

Globalisation pressures and the importance of innovation have intensified the need for firms to benefit from external sources of knowledge creation, such as universities. The role of a university in local and regional socio-economic development is thus crucial in the model of innovation system for its teaching mission, research mission and third mission of economic development (OECD, 2007). Universities can help bridge different knowledge bases present in the region (i.e. science-based and engineering-based), and therefore spur the process of diversification based on related variety if building on the existing regional economic structure.



Both universities and firms have various motivations for collaborating and interacting, and while universities can make considerable contributions to economic restructuring, they are not a panacea for low-capacity firms. The range of policy instruments to promote business-university linkages needs to take into account the type of university, which type of link, with which type of firm, where, and at what stage of regional economic development (Table 4.4). The relationships are different between a world-class university and a multi-national enterprise and a regional university interacting with lower-technology SMEs.<sup>17</sup> The scope and objectives of collaboration between university and firms in a give region varies greatly, determining in part the effectiveness of the partnership. In the case of Abruzzo, active involvement of the universities in the innovation poles will also support the regional goal of upgrading through restructuring using related technologies and other forms of innovation support.

Table 4.4. **Types of university-business collaborative linkages**

<ul style="list-style-type: none"> <li>• Creation of physical facilities including campus laboratories, incubators and co-operative research centres</li> <li>• Setting up spin-off companies</li> <li>• Joint research agreements (involving research undertaken by both parties)</li> <li>• Contract research agreements (commissioned by industry and undertaken only by university researchers)</li> <li>• Consultancy work (commissioned by industry, not involving original research)</li> </ul>	<ul style="list-style-type: none"> <li>• Training of company employees (through course enrolment or personnel exchanges)</li> <li>• Postgraduate training in the company (joint supervision of PhDs)</li> <li>• Secondments to industry (short or long-term)</li> <li>• Attendance at conferences with industry and university participation</li> <li>• Attendance at industry sponsored meetings</li> <li>• Creation of electronic networks</li> </ul>
--	---

Source: D'Este, P. and P. Patel (2007), "University–industry Linkages in the UK: What are the Factors Underlying the Variety of Interactions With Industry?", *Research Policy*, Vol. 36, No. 9.

As the primary business-university link is through education of the workforce, Abruzzo's universities should promote higher level of graduate and post-graduate education, particularly in mathematics, science, technology (including ICT) and management. The University of L'Aquila is, among the three universities of the region, the one more focused on technical and natural sciences fields (Table 4.5). An important step in the direction of broadening the supply of graduate education in the area of L'Aquila is the newly established (2012) Gran Sasso Science Institute (GSSI) (*Scuola Sperimentale di Dottorato Internazionale*), a joint effort of the Ministry for Research and Education and for Territorial Cohesion.<sup>18</sup> The Doctoral School aims at reinforcing the existing excellence of the National Institute of Nuclear Physics (INFN) Gran Sasso National Laboratory by representing a pole of excellence for international researchers. Interestingly, the law establishing the GSSI explicitly mentions the objective of pursuing excellence in basic science, building on the existing competences of the INFN. Further, the GSSI aims at pursuing competences toward the "intermediation between research and enterprises, in the fields of mathematics, physics, informatics, innovation management and local development".<sup>19</sup> Notwithstanding the relevance and excellence of the GSSI, other initiatives with positive impact on the majority of low and medium-technological firms and on the labour market of the area hit by the earthquake should be envisaged (OECD, 2009b).

Table 4.5. Number of students enrolled in all degree courses, by university

University of Chieti-Pescara		University of L'Aquila		University of Teramo	
Faculty	Year 2011/2012	Faculty	Year 2011/2012	Faculty	Year 2011/2012
Architecture	3 006	Biotechnology	1 051	Agriculture	578
Education sciences	1 343	Education sciences	1 179	Law	3 004
Economics	4 090	Economics	3 339	Veterinary medicine	1 173
Literature and philosophy	1 850	Philosophy	1 854	Political science	1 458
Management	2 422	Engineering	4 617	Communication sciences	1 138
Medicine	3 799	Medicine	3 715	<b>Total</b>	<b>7 351</b>
Pharmacy	2 926	Physical education	2 465		
Psychology	5 401	Psychology	2 914		
Mathematical, natural, physical sciences	476	Mathematical, natural, physical sciences	3 228		
Social science	1 201	<b>Total</b>	<b>24 362</b>		
Physical education	2 146				
<b>Total</b>	<b>28 660</b>				

*Source:* University of L'Aquila and MIUR for University of Chieti-Pescara and University of Teramo. Post-graduate courses are not included.

Supporting firms through university research is often a main target for business-university linkages. In Abruzzo, the biggest firms and MNEs have strong and consolidated research collaborations with the regional university system, but a strategy is needed for SME-university relationships. The role of universities, research centres and other higher education institutions, such as the Gran Sasso Science Institute, the Mario Negri Sud Institute, the Space Academy Foundation, and the Reiss-Romoli School, is central in providing the necessary competences to be transformed into capabilities at the firm level.<sup>20</sup> As already stated in the aftermath of the earthquake (OECD, 2009b), laboratories jointly operated by academic and industrial researchers can provide a means for ongoing knowledge-sharing in areas of direct relevance to firms. In some areas where the potential for adapting and developing innovation is already high, business aids regulated by EU horizontal rules could be appropriately aimed at promoting immediate industrial effects.

Raising the quality of research, and thus teaching, would also benefit business-university linkages, therefore greater specialisation and complementarity across the three universities in the region would support this goal. The current situation appears to be one of a duplication of initiatives and programmes, with an associated failure to achieve economies of scale that support excellence. Network-based collaboration – an idea already tabled in the mid-2000s – is one strategy.<sup>21</sup> Possible lessons of collaboration in the main faculties of universities in the region may be learnt from the Swiss Public Administration Network (SPAN), a co-operative venture between four academic institutes in Switzerland offering post-graduate teaching, doctoral training and a research project in public governance.<sup>22</sup> The N8 in the North of England is another network-based model for certain priority areas of research, with the goal of competing more effectively for national research funds (OECD, 2008). University-business research projects could also be co-ordinated between the three regional universities, especially for basic upstream research still far from market applications. And finally, there could be an increase in the level of competition for public research contracts focused on internal centres of excellence, as has been done in Germany (Box 4.8).

**Box 4.8. Promoting academic excellence:  
The Excellence Initiative in Germany**

Since 2005, the Excellence Initiative has sought to strengthen top, forward-looking research and to make German science and research more visible in the international scientific community. To that end, a competition was organised to select outstanding projects in three areas: 39 graduate schools to promote young scientists and researchers; 37 Clusters of Excellence to promote cutting-edge research; and 9 institutional strategies on projects to promote top-level research. Setting those goals implied a radical shift away from the previously held belief that all universities are equal and hence should be treated equally. Instead, the Excellence Initiative pursued a meritocratic approach.

*Source: www.excellence-initiative.com.*

The regions would benefit from more extensive SME involvement with universities, but different types of brokers are required. And dedicated resources (public and/or private) are needed given the transaction costs for a university to interface with SMEs. One of the roles of local universities could be the training of specific profiles of technology brokers, able to help the technological upgrading of SMEs/firms in traditional sectors as well as to access relevant university research. The idea of technology brokers could be extended to innovation brokers, that support non-technological (management and organisational) innovation (see prior paragraph on connecting firms). In addition, business incubators (as opposed to high-tech incubators) co-financed by public and private sources are another option. Some recent research has shown that public capital investment in incubators appears to influence particularly lower levels of innovation, promoting the start-ups of firms not yet on the technological frontier.

While evidence shows that impact of university spinoffs is most relevant for high-technology sectors especially, they can constitute a mechanism to optimise the university-business relationship with potential to help diversify the regional economy. In Abruzzo, there are pockets of excellence for creating new knowledge and ideas, but the biggest challenge is in the dissemination and pick-up of the results in local firms through their application to marketable solutions. Between 2002 and 2008, eleven spin-offs have been generated jointly with the University of L'Aquila, while no new start-up was registered thereafter (Luongo and Alecci, 2012). The region, jointly with or on behalf of national government, should map and minimise any regulatory and/or administrative obstacle to the exploitation of government-funded findings that could lead to innovations. They can also increase the capacity of their spin-off activity through a variety of measures such as higher quality projects and coaching.<sup>23</sup> Universities in regions struggling with economic transition have been able to capitalise on university spin-offs, such as Newcastle (North-East England) or Twente (Netherlands) (Box 4.9), even if those impacts are not most visible through job creation.

#### Box 4.9. University spin-offs and regional development: Newcastle and Twente

**Newcastle, North-East England:** One of the first regions in the world to industrialise (from the 1780s onwards), this region experienced an economic decline throughout the entire 20<sup>th</sup> century, from accounting for 10% of annual global shipping output to the virtual disappearance of its once-dominant coal, steel and ship-building industries. Newcastle University did not really have a systematic policy for encouraging academic enterprise until the 1980s. Thereafter, it began to engage more seriously with regional innovation activity and spin-off promotion, encouraging professors and lecturers to run businesses to commercialise research findings and set up hybrid research groups “controlled” by one or more leading academics. Individuals in collaborating businesses have been brought into the wider university “family” by involving them in institutions like the Equity Committee, Senate and visiting lectureships, to bring their knowledge of entrepreneurship into the university without undermining the university’s strong position in international academic circles.

**Twente, The Netherlands:** Twente is an old textiles region, experiencing growth in this industrial sector from 1830 to the early 1900s. From the end of WWII, the industry was shedding textile jobs, and the Technical University of Twente (UT) was created as an explicitly experimental institution in 1962 to revitalise the declining textiles industry. The university established a networking organisation, the Twente Technology Circle (TKT) to help firms sell to large regional businesses; entrepreneurs took over the TKT after two years, and developed it into focussing on managing collaborative innovation support programmes. A key element of the UT approach has been the separation of the professoriate from the entrepreneurial activity; the majority of the firms are founded as being totally independent from the university in employment terms. A number of the firms have grown to become important innovation actors in their own way, complementing what the university does, and helping other firms – particularly high-technology start-ups – to deal with the problems of business foundation (alumni approach). Recently, UT developed an alternative, more active technology commercialisation mechanism, the so-called Knowledge Accelerator model, in which staff is funded to commercialise an idea within a company partly owned by the university. However, the central feature of the Twente model to date has two parts: first, the university has opened itself up as a home for entrepreneurs, then second, the university has used the spin-offs which have later emerged from this “openness” policy, to portray itself as an entrepreneurial university. This has enabled UT to persuade investors – both government and private sector – that investing in activities for SMEs and commercialisation will produce profits and desirable policy outcomes.

In both regions, the total direct economic footprint of the spin-off companies is small, with university spin-offs employing a few thousand people and with relatively few linkages to other regional businesses. Spin-offs have, however, made an observable difference when they have been used to build up other supportive activities and it is these supportive activities which have a broader regional impact. In the case of Newcastle, spin-offs were a mechanism to identify and build trust with key regional actors such as business angels, entrepreneurs and venture capitalists bringing them into the broader Newcastle commercialisation family. In Twente, spin-offs formed their own networks around the university. In both cases, the strong boundary between the wider university community and the region created a “space” for high technology economic development. In each case, the university has supported spin-off formation because there has been a “pay-back” for the university’s other missions, teaching and research.

*Source:* Benneworth, P. and Charles (2006), case studies, [www.staff.ncl.ac.uk/p.s.benneworth/pubs.htm](http://www.staff.ncl.ac.uk/p.s.benneworth/pubs.htm).

Given the multitude of possible business-university linkages, Abruzzo should review how to best take advantage of these different options. While the most common approach is to focus on the quality of research, in the case of Abruzzo there are relatively few firms engaged in basic or advanced R&D activity. Technology and innovation brokers will be critical for boosting innovation capabilities in firms across the economic structure. University spin-off support is another opportunity, but expectations of impacts should take into account that the most important contribution is not in the number of jobs, but rather a secondary impact through the development of other supportive activities with broader regional impact. The quality of traditional education activities performed by universities can be boosted by systems to monitor outcomes, such as those promoted by the OECD AHELO project.<sup>24</sup> Greater complementarity, specialisation and networking across the three universities in the region can improve their research excellence. But the range of other linkages (see also Table 4.9) including traineeships, and the co-operation with local firms in education activities (business visits and testimonials, job market fair, exchange of teachers, managers and technicians, etc.) reaches a broader range of SMEs and is sorely needed in Abruzzo. For example, the university could train firms in the tourism sector for improved information system management.

## Skills and employment

The three universities of the region (Teramo, Pescara-Chieti and L'Aquila) have in the past decades exported their education services mostly towards other regions of southern Italy. This report suggests that the University of L'Aquila has now the potential to increase its national and international role, by creating synergies with the newly established doctoral school the Gran Sasso Science Institute, regaining its role of “residential” university linked to the territory, and qualify L'Aquila as a city of “higher education and research” (see Chapter 6).

More generally the universities of the region have an important role to play in the regional innovation strategy, as providers of education, training and research of relevance to the regional labour market and the innovation firms. Similarly to other OECD regions, Abruzzo faces two challenges regarding its skills formation and best use of skills in the region.

### ***Vocational training and worker retraining should increase in supply and scope***

There is a need for intermediate and specific skills in addition to general tertiary education. Vocational training and professional qualifications not only could provide these much-needed skills, but could also be an opportunity for older workers to re-skill and/or bring new ideas into existing professions. The OECD Skills Strategy has highlighted the important role of both stronger vocational training in the school system as well as lifelong learning to better develop, supply and use skills (OECD, 2012b). There is some evidence that the number of graduates taking part in training programmes, professional qualifications and internships has risen (from 32.9% in both 2008 and 2009 to 37.6% in 2010).

Several distinct initiatives for retraining workers exist, but not in the context of a co-ordinated effort for regional development goals. It is difficult to gain a general overview of what is available and/or what activities are specific to the *cratere versus* those more generally addressed to lagging regions (e.g. the *Mezzogiorno*). The Abruzzo region has recently been advertising the “Creamed” project, whose aim is to foster innovation and creativity in SMEs by training creative leaders. The training combines face-to-face workshops with long-distance tutoring. However, the project is part of a larger programme addressed to the whole Mediterranean region and it is not tailored to the specific needs of Abruzzo or L’Aquila.

Vocational training could be reconsidered given post-earthquake needs. L’Aquila province advertises courses for professional qualifications to become tourist promoter, beautician, hairdresser, wine and oil taster, as well as courses in ICT and English language.<sup>25</sup> A combination of under-investment in the public school system and poorly monitored private initiatives receiving public funds leads to the widespread perception that the vocational education system does not perform adequately its functions.<sup>26</sup> For an effective re-launch of the local economy, certain activities seem more fundamental than others. For example, to re-launch the tourism industry vocational training could focus on the diffusion of foreign languages, as well as other skills to support tourism operators that are environmentally friendly and require strong knowledge of local history, environmental landscape and culture.

A pilot scoping study should be undertaken for the establishment of an Abruzzo-wide network-based technical-training academy. It would be aimed at widespread up-skilling in the middle-skills and technical skills arena – with stakeholder involvement from manufacturing and engineering firms as well as from service industries. One international model is Austin Polytechnic (Chicago, United States). It is a technical-training academy aimed at the lower and mid-level technical skills, whose curriculum is devised in partnership with the manufacturing and engineering associations – according to their skills shortages and local industry needs. The emphasis is on job-placement, internships, skills-upgrading and wider community engagement.<sup>27</sup>

### ***Policy actions to offer opportunities for and make productive use of skilled graduates are urgent***

For more peripheral OECD regions, the real challenge is retaining highly skilled graduates. Highly educated individuals often prefer to live in bigger urban complexes where employment opportunities are more favourable and diversified. Furthermore, the more educated individuals are, the more mobile they become. A natural disaster, such as the earthquake that hit L’Aquila, might have devastating consequences if the most educated migrate out of the region.

Abruzzo suffers from both insufficient student retention and job-education mismatching through over-education relative to Italy and the *Mezzogiorno* even before the earthquake. Analyses show that the situation in Abruzzo is particularly problematic (Box 4.10). And, unlike Italy as a whole, a degree in science and engineering does not seem to have a positive impact on the employability of graduates in Abruzzo. On the other hand, the region is aligned with the national average in recording a negative effect of a degree in social sciences on the probability for the graduate to be employed.<sup>28</sup>

### Box 4.10. Graduates in Abruzzo: Inter-regional mobility and education-job (mis)matching

#### Key findings on inter-regional mobility of graduates:

- The share of Laurea degree graduates remaining in Abruzzo for work is lower than the national average while that of the three-year graduates is in line with national spatial mobility trends. In Abruzzo, that figure for Laurea graduates is 66.3% *versus* a national rate of 74.3%, and this despite a higher share of in-movers to Abruzzo for studies (33.7% against a national average of 25.6%). Among in-movers to Abruzzo, approximately one-third of graduates originate from universities of the northern regions, mainly of those in Emilia Romagna (with a share of 29.35%). Around 60% of students come from central regions (with the highest share recorded in Lazio, 23.92%), while a negligible proportion comes from the rest of the *Mezzogiorno*. More or less the same shares are found for the graduates with the new three-year degree.
- Student retention is greater for Laurea degree graduates than the new three-year programme graduates. While for Laurea degree holders the share of stayers *versus* in-movers and out-movers is approximately the same, for graduates with a new three-year degree the proportion of stayers drops substantially relative to out-movers, which represent more than 58%.
- The regional destination of graduates with a Laurea degree from Abruzzo's universities is around 50% to the central regions, with a share of almost 30% to the Lazio region alone. An additional 24% of out-movers go to northern regions and around 20% to the *Mezzogiorno* (mainly to Puglia, 14.7%, possibly due to a high number of returners to that region after completing studies). In general the same geographical patterns are found for graduates with a new three-year degree; however a much larger share of graduate moves (or moves back, in the case of returners) to be employed in the other southern regions.

#### Key findings on migration and job (mis)matching:

- The total share of graduates with a degree that both the employer and employee deem important for the job ("objective matching") is lowest in Abruzzo (49.19%). This is lower than the country as a whole (58.36%), and even with respect to the average of the *Mezzogiorno* regions (60.91%). This worrying figure is the result of the combination of the lowest share of skill matching for migrants (41.84%) – graduates from other Italian universities that move to Abruzzo to be employed – and one of the lowest for non-migrants (51.15%).
- The total share of skilled graduates with a degree deemed not necessary for the job by both the employer and employee ("objective over-education") in Abruzzo (25.50%) is among the highest in Italy. Abruzzo follows Veneto (26.93%) and Friuli (25.98%), due to the large job-education mismatching among both non-migrants and migrants.

Notes for key findings on inter-regional mobility of graduates: The Laurea degree is the traditional five-year college degree. The Nuovo Ordinamento is a new three-year college degree programme. Analysis is based on data that refers to the entrance of graduates into the labour market three years after they completed their studies, and in this analysis the data was collected in 2007 and refers to 2004 graduates. Migrants do not include those who leave the region of study to go back to their home region (i.e. returners). Stayers are those for whom the study region is the same as the current employment region. Out-movers are those for whom the study region is not the same as the current employment region, and this group includes returners to the region of family origin and migrants that are out-movers but not returners. In-movers are those who move into the region as migrants or returners.

Notes for key findings on migration and job (mis)matching: The indicator of education-job (mis)matching devised by Ungaro and Verzicco (2005) is based on the Laurea degree (5-year) graduates using the following categorisation:

		Was the degree effectively necessary to do the job?	
		YES	NO
Was the degree formally required?	YES	Objective education-job match	Subjective over-education
	NO	Subjective education-job match	Objective over-education

Source: OECD, based on Iammarino, S. and E. Marinelli (2012), "Education-job (Mis)matching and Interregional Migration: Italian University Graduates' Transition to Work", *CIMR Working Papers*, Birkbeck College, London, and Marinelli, E. (2011), "Graduates on the Move: Knowledge Flows and Italian Regional Disparities. Migration Patterns of 2001 Graduates", PhD thesis, London School of Economics and Political Science.

The first data published in 2011 show a worsening of the graduate job market. According to the survey on the *Condizione Occupazionale dei Laureati* (working conditions of graduates), graduates were much more likely to be unemployed at the end of 2009 than the year before (18.1% *versus* 11.8%) even though the figure for 2010 shows some improvement (15.9%). Average net nominal salaries have also been declining, from EUR 1 252 per month in 2008, to EUR 1 243 in 2009 to only EUR 1 150 in 2010.

It is difficult to assess to what extent this worsening of the graduate labour market is due to the earthquake, or to more general macro- and micro-economic conditions. Di Pietro and Mora (2011) offers some support to the fact that the earthquake was responsible for the deterioration of the graduate labour market. The study compares the performance of L'Aquila pre- and post-earthquake with the performance of a “counterfactual”, i.e. a city that shares many common characteristics with L'Aquila but had not been affected by the earthquake. They identify this counterfactual in the city of Perugia. Their results show that, while there is no evidence that the earthquake had a negative effect on the local labour force participation overall, there have been differential effects within subgroups of the population.<sup>29</sup> Furthermore, one of the consequences of a natural disaster is a shift in the types of jobs, which become available. During the reconstruction period, the construction sector expands and so does the demand for low-skilled individuals performing manual activities in this sector, which is expected in the future for Abruzzo.

Avoiding a human capital drain should be a priority for regional and local action. Although there is no consensus on what is the best strategy to reduce the drain of skilled people from more peripheral areas, retention programmes for recent graduates can generally be classified into three categories:

- indirect strategies via an improvement of job-skills matching;
- on-the-job training, placements and internships; and
- direct financial benefits targeted specifically at graduates.

*i)* Successful graduate retention depends on the availability of desirable jobs for graduates. But graduates also need to know what skills will be needed. This requires the identification of a method to connect the production of graduates (supply side) to available (or soon-to-be-available) jobs (demand side) (Box 4.11). The demand for college graduates in various sectors of the economy must be measured and monitored: some empirical evidence on the education-job matching of graduates in the mid-2000s for the Abruzzo region shows quite worrying results, even prior to the earthquake disaster and in comparison with the rest of the *Mezzogiorno* (Box 4.11). Since the recruitment and education of graduates is a multi-year process, workforce demands must also be anticipated (IFPI, 2000).



### Box 4.11. Job-skills matching programmes: OECD examples

#### Utah's (United States) Partnership for Education and Economic Development

The Partnership is a not-for-profit corporation with an associated foundation. It includes business leaders, educators, government officials, and economic development leaders who meet regularly to assess the means by which higher education can best serve the state. The Partnership makes judgments about workforce needs, including calling for short-term programmes to answer specific needs, as well as recommendations on long-term research and development needs. The Partnership receives state funds earmarked through the education, higher education, and economic development budgets, in addition to private funding. Half of the Partnership's funding comes from the state, while half comes from businesses' contributions.

#### Georgia's (United States) Intellectual Capital Partnership Program (ICAPP)

There are a number of individual programmes under the umbrella of ICAPP which amount to a total of approximately USD 3 000 000 in the university's budget. One programme belonging to ICAPP has the explicit aim of "help[ing] businesses use the resources of Georgia's colleges and universities to meet their workforce needs, including access to college-educated employees, recent research, and free business advice" thus improving the matching of graduate skills with the needs of Georgia's current and prospective employers. The University System uses the studies funded by ICAPP to assess the education and training needs for employees in high-quality, high-growth, knowledge-based industries. Among the services offered by ICAPP is GeorgiaHire, a free online recruiting tool that matches employers with college-educated employees. GeorgiaHire's website allows students and alumni from more than 90 of Georgia's colleges, technical colleges, and universities to post their résumés for free. Companies can also post job listings online for a small fee.

#### Bocconi University "Job Gate"; "SOUL" (*Sistema Orientamento Università Lavoro*) Consortium of the Universities in the Lazio region; Campus Mentis; University of L'Aquila "Career and Open Days" (Italy)

There are examples of "good practice" in trying to match demand and supply of graduate skills in Italy too. However, the universities take these initiatives upon themselves and incur all the costs. There is very little governmental involvement and, as a result, the financial resources are limited and these initiatives do not have the breadth and scope they need. Moreover, different universities have different resources available and those in more peripheral areas – where these initiatives are most needed – are penalised.

*Source:* The Utah Partnership for Education and Economic Development (1990), "Education, Business, Government: A Report of the State Board of Regents-State Board of Education Task Force on Education and Economic Development", Utah, ASU University Consortium Design (2012), case studies, <http://universitydesign.asu.edu/db/georgia2019s-intellectual-capital-partnership-program-icapp>, [Jobgate.unibocconi.it](http://jobgate.unibocconi.it), [www.uniroma1.it/didattica/placement](http://www.uniroma1.it/didattica/placement); [www.univaq.it/news\\_home.php?id=5217](http://www.univaq.it/news_home.php?id=5217).

ii) The second strategy is to anchor graduates (or highly skilled individuals in general) into the local economy through job placements, internships and on-the-job training. A university degree provides individuals with more generic skills that can be used in a variety of contexts and occupations. Internships, placements and on-the-job training provide workers with more specific skills, linked to particular sectors and/or occupations. As such, these programmes not only serve the purpose of making a university education more applied, but they also allow highly skilled individuals to integrate into the local economy.

### Box 4.12. Knowledge transfer: OECD examples

#### Knowledge Transfer Partnerships (United Kingdom)

Graduates are employed by a SME for a period between 6 to 36 months to work on a specific project and deliver real outcomes under the joint supervision of an academic and a person internal to the business. The projects are part-funded by 13 government organisations. The scheme started in 1975 based on the idea of “learning by doing” and it applied only to engineering projects. It is now covering a wide range of companies. It has been estimated that for every GBP 1 million of government funds spent the average benefits to the company amounted to a GBP 4.25 million annual increase in profit before tax. Many of the graduates involved in KTPs project are then hired full-time by the company where they worked. The programme allows the employers to evaluate the graduates based on actual performance in the workplace, rather than on academic records alone. It is also a means to develop more innovative projects with the involvement of an academic researcher.

#### “Third Frontier” Internship Program – Ohio (United States)

Established in 2002, the programme links Ohio students with rewarding internship opportunities that provide great hands-on experience within Ohio’s private sector business community. The programme reimburses up to 50% percent of the intern’s wage, or no more than USD 3 000 for a 12-month period. Following an intern’s graduation, the firm has the opportunity to offer full-time employment to an individual who has already previous experience with the working of the organisation.

#### Bocconi University “Internship Programs” (Italy)

The internship programme of Bocconi University is very active. Internships both within Italy and abroad are advertised and a newsletter is produced regularly with tips and suggestions to students looking for an internship. However, universities vary greatly in the quantity and quality of their contacts with the business community and so does the ability of employers to fund internships. This ability is normally greater in larger companies than in SMEs, which are, therefore, at a disadvantage. Different industries might also have different resources to invest in internships. This is where financial support from governmental institutions becomes important.

*Source: [www.ktponline.org.uk](http://www.ktponline.org.uk), [www.development.ohio.gov/bs\\_thirdfrontier](http://www.development.ohio.gov/bs_thirdfrontier), [www.unibocconi.eu/wps/wcm/connect/Bocconi/SitoPubblico\\_EN/Navigation+Tree/Home/Services/Career+Service/Students+and+Graduates/Internship/INTERNSHIPS\\_new\\_Vago+2010+11+04+03+04](http://www.unibocconi.eu/wps/wcm/connect/Bocconi/SitoPubblico_EN/Navigation+Tree/Home/Services/Career+Service/Students+and+Graduates/Internship/INTERNSHIPS_new_Vago+2010+11+04+03+04).*

*iii)* Some more peripheral areas have gone all the way to offering direct financial support and/or incentives to graduates who decide not to leave the community. Although this solution is appealing because it provides visible results in the short-term, it is also very costly. Hence, it is not sustainable over the long term. However, in extreme cases – such as natural disasters – these incentives might provide a way out of an economic impasse and create the necessary initial human capital critical mass that can tip the balance between being an unsuccessful and a successful local economy. For example, the fee waiver introduced after the earthquake for the University of L’Aquila, (which will be in effect until the year 2014) has had a positive impact in the number of new entrants who increased to 7 217 in the academic year 2010/2011 (from 6 245 in 2009/2010 and 5 215 in 2008/09); However, this stimulus could rapidly fade out as data on the academic year 2011/12 signal a reduction of around 362 students.

### Box 4.13. Graduate retention: OECD examples

#### Saskatchewan Graduate Retention Program (Canada)

The Government of Saskatchewan (one of the provinces of Canada) issues post-secondary graduates a tax exemption of up to CAD 20 000 that can be used toward Saskatchewan income tax.

#### Queensland, New South Wales and Victoria allowances and incentives (Australia)

In Australia the use of allowances and incentives is very common to achieve a more balanced redistribution of graduates over the territory, especially in certain critical occupations such as teachers and health professionals. The “attraction and retention of professionals in rural areas” was recognised as a “national priority” in Australia in the 2007 National Youth Roundtable and, as a result, different states introduced allowances targeted at certain high-skilled professionals. The government of Queensland, for instance, offers allied health professionals permanently located in eligible rural and remote districts and health-care facilities an extra salary of AUD 60 to AUD 100 per week. In 2008 incentive payments up to AUD 12 000 were available for recently graduated teachers who decided to work in a kindergarten in rural Victoria. New South Wales launched a “rural and remote incentive pilot programme” for medical, nurses and allied health practitioners. The incentive comprises an initial “attraction package” (which includes AUD 5 000 cash bonuses per annum, housing assistance, a computer) and a “retention package” (including professional development and travel allowances).

*Source:* Government of Saskatchewan (2012), “Advanced Education, Employment and Immigration: Graduate Tax Benefit Programs (GTE/GTC)”, [www.aeei.gov.sk.ca/graduatetaxbenefit](http://www.aeei.gov.sk.ca/graduatetaxbenefit) and Corcoran J., A. Faggian and P. McCann (2010), “Human Capital in Remote and Rural Australia: The Role of Graduate Migration”, *Growth and Change*, Vol. 41, No. 2.

The exceptional situation in L’Aquila, where an already difficult condition was exacerbated by the earthquake, calls for a re-thinking of the region’s skills strategy. Such a strategy needs to prevent skilled graduates from leaving as well as ensure a good matching between demand and supply. What solution is best depends on the amount of resources that can be made available. With sufficient resources, the optimal solution would be a combination of the aforementioned strategies to develop both short-term and long-term solutions. Incentives and allowances (such as the university fees exemption) work best in the short-term but are unsustainable in the long-term. Tools to improve the matching between supply and demand of skills are the best long-term strategy but they require time to be properly devised and developed.

## Conclusions and main recommendations

Abruzzo has an opportunity to build on its regional advantages and diversity to support economic restructuring and regional growth. The generation and diffusion of innovation is not dependent on purely economic factors as it is influenced also by a region’s social, cultural and institutional characteristics. The process of “reconstruction” of regional advantages should be based on the concept of regional integrated platform, which should aim to achieve *i*) technological upgrading and sectoral structural change on the basis of *ii*) related variety and *iii*) a diverse knowledge base. This should be achieved on the basis of *iv*) an evidence-based policy platform able to facilitate inter-sectoral linkages and knowledge flows across the entire economy. To do so, the region should consider a series of steps to meet the objectives outlined in this chapter.

Not only creating but also retaining human capital in the region should be a key priority for intervention. There has to be a clear policy to improve the matching between local demand and supply of skills. This is true not only for more advanced skills and knowledge (tertiary education) but also for more intermediate-type skills which are sought after by local SMEs.

Abruzzo will need to make targeted strategic priorities and address governance in order to upgrade and restructure the economy. The increasing number of innovation poles at the core of the current regional strategy requires prioritisation based on the most promising avenues for economic upgrading through related variety. Abruzzo Sviluppo has been designated by the region as an important public actor for implementing regional action. Its capacity and networking role should be strengthened to help address the dispersed public governance within the region across different provinces and municipalities. Building on the Abruzzo Development Pact, ongoing strategy guidance from public, private and non-profit actors could also serve to unite regional innovation system actors around the regional goal. Regional efforts will also need to be supported by better data and policy intelligence, to which regional universities and Abruzzo Sviluppo could contribute. The strong strategy and more coherent governance will allow the region to better engage with national policy makers and beyond, such as in the Adriatic Ionian Macro region.

For the objective of connecting businesses, the regional policy instruments need to upgrade firms that are not innovation ready and cultivate inter-firm linkages among multi-nationals, SMEs and universities. The various policy tools in place – notably the innovation poles – are oriented in the right direction of support transition through related variety. However, they will succeed only insofar as they are able to ensure strong connectivity and openness. Such connectedness is needed within and beyond the region by developing and strengthening inter-firm and inter-industry backward and forward linkages, and knowledge networks among different types of actors (e.g. business firms, universities, educational system). Universities have a range of opportunities for university-business linkages that can be increasingly tailored to the economic development needs of the region. Providing the right environment for attracting and retaining multi-national enterprises, as well as building the absorption capacity among the region's firms to benefit from their presence, is a priority. Technology and innovation brokers in the regional innovation poles and universities are needed to help local SMEs understand the need to innovate and to guide the SMEs to the right innovation support providers. Of course the general framework and administrative conditions for firms concerning innovation and entrepreneurship must be in place.

The region needs to promote adapted higher education and vocational training that will support better opportunities for and effective use of skilled graduates and workers. Universities have an important role to play in the regional economy as drivers of economic development, such as the role of the University of L'Aquila for the city, but also as providers of education, training, and research of relevance to regional labour market and innovation needs. Given the education-job mismatches in Abruzzo, both more sophisticated vocational training as well as more relevant university education are critical. And finally, for Abruzzo to make better use of skilled graduates currently employed in the region, as well as better retain and attract skilled graduates, more efforts are needed to ensure there are jobs that make use of their skills.

## Notes

1. The concept is based on new Schumpeterian combinations of valuable, non-imitable and context-specific resources – e.g. combinations of skills, talent, creativity and quality – which may generate increasing diversity conducive to growth (Braczyk et al., 1998; Cooke, 2007; Rutten and Gelissen, 2008).
2. See Chapter 1 for details.
3. Around EUR 90 million of the total EUR 345 million of the Abruzzo POR FESR 2007-2013 were allocated to actions for regional innovation and firms support.
4. The macro-region includes around 25 million people and foresees Abruzzo as leading partner together with other Italian and south-eastern European regions
5. This does not imply the need to revise the current constitutional division of competences, nor to put in question the bottom-up approach which is essential for the success of place-based development policies. What matters is that the national policy makers should be able to exert an informed orientation role, based on a clear prioritisation strategy and vision of development opportunities, so that regions and other local authorities may find it beneficial to be partners and co-ordinate their actions both vertically and with peer regions.
6. Per OECD-University of Groningen interviews conducted in 2011-2012.
7. The strategy's initial design had four key elements: *i*) give centres of excellence to support relevant technologies; *ii*) an exploitation company to support commercialisation of technology; *iii*) a cluster development programme focused on networking across regional assets; and *iv*) public-private leadership by a new institution the Science and Industry Council (ultimately created in all English regions before the regions were abolished in 2012).
8. With respect to inter-regional innovation linkages (as proxied by co-patenting collaborations), Abruzzo was connected only to three Italian regions in the mid-1980s (Lombardy, Piedmont and Emilia-Romagna). Between 1996 and 1998, co-patenting collaboration with inventors in other regions had increased and was mostly involving Italian and European inventors (respectively 44% and 45% of co-patent application with an inventor in another region), followed by inventors in North America (11.6% in Canada or the United States). By the second half of the 2000s (between 2005 and 2007), the relative weight of extra-regional collaboration within Italy had increased (64% of the total), whereas the one of other geographical areas decreased (27.3% for the EU and 7.5% for North America). Since the second half of 1990s, the non-Italian regions with most linkages with Abruzzo have been Hessen (Germany, where Frankfurt is located) and Ohio (United States).
9. For an explanation of opportunistic hinges, see Benneworth and Dassen (2011).
10. Per OECD-University of Groningen interviews to stakeholders conducted in 2011-2012 and reported in the OECD-University of Groningen Community Survey in L'Aquila.

11. Some of the potential consequences of a bad licensing system are: *i*) reporting of priority areas for business (with sectoral associations); *ii*) unnecessarily restrict entry into a market and/or competition within a market; *iii*) providing barriers to businesses operating in the informal sector moving to the formal sector; *iv*) severely limit the supply of important goods and services (e.g., taxis or medical services); *v*) result in standards being unnecessarily high and otherwise distortive; *vi*) be costly and/or difficult for governments to administer and properly enforce; and *vii*) licenses can be misused to provide a highly inefficient and costly way of collecting revenue (IFC, 2010).
12. See [www.abruzzo sviluppo.it/reti-d%E2%80%99impresa-per-l%E2%80%99innovazione-e-la-competitivita-/55/](http://www.abruzzo sviluppo.it/reti-d%E2%80%99impresa-per-l%E2%80%99innovazione-e-la-competitivita-/55/).
13. Per OECD-Groningen interviews conducted in 2012.
14. This emerged also as a widely perceived issue from the OECD-Groningen interviews conducted in 2012.
15. See the ICE-Reprint database, available at <http://actea.ice.it/ide.aspx>; data quoted as of 1 January 2009.
16. Per OECD-Groningen interviews conducted in 2012.
17. Per OECD (2011a), those relationships can be grouped into three broad categories: *i*) Relations between multi-national enterprises and world-class universities. Multinational enterprises externalise part of their research and development activities and are looking for laboratories, scientists and students. *ii*) Relations between higher education institutions and small high technology firms (spin-offs and knowledge-intensive business services). *iii*) Relations developing in a regional context between firms, often SMEs, and the local higher education institutions. Here firms are looking for short term, problem-solving capabilities. These services are often promoted by means of regional clusters around higher education institutions.
18. See [www.ministrocoesioneterritoriale.it/documenti/attivita-legislativa/legge-4-aprile-2012-n-5-scuola-sperimentale-di-dottorato-internazionale-gran-sasso-science-institute-gssi/](http://www.ministrocoesioneterritoriale.it/documenti/attivita-legislativa/legge-4-aprile-2012-n-5-scuola-sperimentale-di-dottorato-internazionale-gran-sasso-science-institute-gssi/).
19. See Point 3 of Article 1bis, Law 35, 4 April 2012.
20. In the recent literature, the distinction between competences and capabilities has proved very effective also in terms of deriving policy implications. Whilst competences are understood as enhanced inputs to produce goods and services, capabilities generally involve different forms of learning and the accumulation of new knowledge, eventually embodied in new products and new processes (von Tunzelmann, 2009b).
21. The Mirror Foundation ([www.fondazionemirror.it/](http://www.fondazionemirror.it/)), for instance, launched the idea of a single engineering school (*politecnico*), which may still have some merits.
22. See [www.swipan.ch](http://www.swipan.ch).
23. Van Burg et al. (2008) highlight: *i*) improving the quality and the scale of the projects awarded; *ii*) fostering entrepreneurial ideas and attitudes; *iii*) providing access to advice, coaching, and training; and *iv*) creating a collaborative network organisation of investors, managers and advisors.

24. For more information, see [www.oecd.org/education/highereducationandadultlearning/testingstudentanduniversityperformancegloballyoecdsahelo.htm](http://www.oecd.org/education/highereducationandadultlearning/testingstudentanduniversityperformancegloballyoecdsahelo.htm).
25. See [www.provincia.laquila.it](http://www.provincia.laquila.it).
26. This perception was reiterated in OECD-Groningen interviews conducted in 2012.
27. See <http://austinpolytech.org>.
28. The econometric analysis carried out in Iammarino and Marinelli (2012) with regression results (ordered logit and probit models with Heckman correction) have to be taken with caution when considering each of the 20 administrative regions.
29. The earthquake was associated with a statistically significant 4.6 percentage points increase in the probability of participating in the labour force for the lowest educated people (i.e. primary school or less) and a significant 10.4 percentage points decrease in the probability of participating in the labour force for the highest educated people (i.e. tertiary education).

## *Bibliography*

- Asheim, B., R. Boschma and P. Cooke (2011), “Constructing Regional Advantage: Platform Policies Based on Related Variety and Differentiated Knowledge Bases”, *Regional Studies*, Vol. 45, No. 7.
- Bank of Italy (2012), *Report on the Abruzzo Economy*, No. 15, June.
- Benneworth, P. and Charles (2006), case studies, [www.staff.ncl.ac.uk/p.s.benneworth/pubs.htm](http://www.staff.ncl.ac.uk/p.s.benneworth/pubs.htm).
- Benneworth, P. and A. Dassen (2011), “Strengthening Global-Local Connectivity in Regional Innovation Strategies: Implications for Regional Innovation Policy”, *OECD Regional Development Working Papers*, 2011/01, OECD Publishing, doi: 10.1787/5k9c6d80nns4-en.
- Boschma, R.A. (2005), “Proximity and Innovation: A Critical Assessment”, *Regional Studies*, Vol. 39, No. 1.
- Boschma, R.A. and R. Wenting (2007), “The Spatial Evolution of the British Automobile Industry: Does Location Matter?”, *Industrial and Corporate Change*, Vol. 16, No. 2.
- Boschma, R.A. and S. Iammarino (2009), “Related Variety, Trade Linkages and Regional Growth in Italy”, *Economic Geography*, Vol. 85, No. 3.
- Boschma, R.A., R. Eriksson and U. Lindgren (2009), “How Does Labour Mobility Affect the Performance of Plants? The Importance of Relatedness and Geographical Proximity”, *Journal of Economic Geography*, Vol. 9, No. 2.
- Braczyk, H.-J., P. Cooke, M. Heidenreich and G. Krauss (eds.) (1998), *Regional Innovation Systems: The Role of Governances in a Globalized World*, UCL Press, London.
- Confindustria – Retimpresa, [www.retimpresa.it/index.php/en](http://www.retimpresa.it/index.php/en).
- Cooke, P. (2007), “To Construct Regional Advantage from Innovation Systems First Build Policy Platforms”, *European Planning Studies*, Vol. 15, No. 2.
- Cooke, P. (2009), “Economic Development Policy as an Evolutionary Envisioning Process”, report to the OECD Centre for Entrepreneurship and LEED, mimeo.
- Corcoran J., A. Faggian and P. McCann (2010), “Human Capital in Remote and Rural Australia: The Role of Graduate Migration”, *Growth and Change*, Vol. 41, No. 2.
- CRESA (Centro regionale di studi e ricerche economic e sociali) (2012), *Congiuntura Economica Abruzzese No. 3.2012*.
- Crescenzi, R. and A. Rodríguez-Pose (2011), “Reconciling Top-down and Bottom-up Development Policies”, *Environment and Planning A*, Vol. 43, No. 4.



- D’Este, P. and P. Patel (2007), “University–industry Linkages in the UK: What are the Factors Underlying the Variety of Interactions With Industry?”, *Research Policy*, Vol. 36, No. 9.
- Di Pietro, G. and T. Mora (2011), “The Effect of the L’Aquila Earthquake on Labour Market Outcomes”, *Working Paper IEB No. 41*.
- Eurada (2011), “Directory of ‘No-Nonsense’ Activities to Build S3-minded Regions”, scoping document for Agora 2011, European Commission, [http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/smart\\_specialisation\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf).
- Evangelista, R., S. Iammarino, V. Mastrostefano and A. Silvani (2002), “Looking for Regional Systems of Innovation: Evidence from the Italian Innovation Survey”, *Regional Studies*, Vol. 36.
- Fondazione Bruno Visentini (2012), “Contratti di rete – un’analisi comparativa”, [www.fondazionebrunovisentini.eu/category/document](http://www.fondazionebrunovisentini.eu/category/document).
- Foray, D. et al (2012), “Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3)”; accessed March 2012, <http://s3platform.jrc.ec.europa.eu/s3pguide>.
- Frenken, K., F.G. van Oort and T. Verburg (2007), “Related Variety, Unrelated Variety and Regional Economic Growth”, *Regional Studies*, Vol. 41, No. 5.
- Government of Ohio (2012), “Ohio Third Frontier”, [www.development.ohio.gov/bs\\_thirdfrontier](http://www.development.ohio.gov/bs_thirdfrontier).
- Government of Saskatchewan (2012), “Advanced Education, Employment and Immigration: Graduate Tax Benefit Programs (GTE/GTC)”, [www.aeei.gov.sk.ca/graduatetaxbenefit](http://www.aeei.gov.sk.ca/graduatetaxbenefit).
- Howells, J. (1999), “Regional Systems of Innovation?”, in D. Archibugi, J. Howells and J. Michie (eds.), *Innovation Policy in a Global Economy*, Cambridge University Press, Cambridge.
- Iammarino, S. (2011), “Regional Innovation and Diversity”, in P. Cooke, with B.T. Asheim, R. Boschma, R.L. Martin, D. Schwartz, F. Tödtling (eds.), *Handbook of Regional Innovation and Growth*, Edward Elgar, Cheltenham, UK and Northampton, United States.
- Iammarino, S. and E. Marinelli (2012), “Education-job (Mis)matching and Interregional Migration: Italian University Graduates’ Transition to Work”, *CIMR Working Papers*, Birkbeck College, London.
- Iammarino, S., R. Padilla and N. von Tunzelmann (2008), “Technological Capabilities and Global-local Interactions: The Electronics Industry in Two Mexican Regions”, *World Development*, Vol. 36, No. 10.
- Iapadre, L. (2012), “Il sistema produttivo territoriale dell’ICT a L’Aquila”, in M. Cersosimo and G. Viesti (eds.), *Il Mezzogiorno tecnologico: Una ricognizione in sei distretti produttivi*, Invitalia e Dipartimento per lo Sviluppo e la Coesione Economica, Rome.

- IFC (International Finance Corporation) (2010), “Policy Framework Paper on Business Licensing Reform and Simplification”, Washington, DC.
- IFPI (Indiana Fiscal Policy Institute) (2000), “Survey of Current Practices in Postsecondary Graduate Retention”, Indianapolis, Indiana.
- Intesa San Paolo (2012), “Le aggregazioni di rete: modello vincente per la sostenibilità e lo sviluppo”, Rapporto sulle piccole imprese e analisi comparata tra piccole e medie imprese manifatturiere – 2011-12, Il 2° Osservatorio Intesa Sanpaolo-Mediocredito Italiano sulle reti d’impresa, Unicredit, [www.unicredit.it/content/dam/unicredit/chisiamo/Superindice/IMPRESA/RAPPORTO\\_PI.PDF](http://www.unicredit.it/content/dam/unicredit/chisiamo/Superindice/IMPRESA/RAPPORTO_PI.PDF).
- Luongo, A. and M. Alecci (2012), “Università degli Studi dell’Aquila, Fabbrica di conoscenza per la rinascita del territorio”, report by the University of L’Aquila.
- Marinelli, E. (2011), “Graduates on the Move: Knowledge Flows and Italian Regional Disparities. Migration Patterns of 2001 Graduates”, PhD thesis, London School of Economics and Political Science.
- Minister for Territorial Cohesion (2012), *L’Aquila 2030: Una strategia per lo sviluppo economico*.
- OECD (2007), *Higher Education and Regions: Globally Competitive, Locally Engaged*, OECD Publishing, Paris, doi: 10.1787/9789264034150-en.
- OECD (2008), *OECD Reviews of Regional Innovation: North of England, United Kingdom 2008*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264048942-en.
- OECD (2009a), *OECD Reviews of Regional Innovation: 15 Mexican States 2009*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264060135-en.
- OECD (2009b), “Spreading the Eagle’s Wings so it May Fly: Re-launching the Economy of L’Aquila Region after the Earthquake”, [www.oecd.org/gov/regionaldevelopment/43307733.pdf](http://www.oecd.org/gov/regionaldevelopment/43307733.pdf).
- OECD (2010a), *Measuring Innovation: A New Perspective*, OECD Publishing, Paris, doi: 10.1787/9789264059474-en.
- OECD (2010b), *OECD Reviews of Regional Innovation: Catalonia, Spain 2010*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264082052-en.
- OECD (2011a), *Regions and Innovation Policy*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264097803-en.
- OECD (2011b), *OECD Reviews of Regional Innovation: Basque Country, Spain 2011*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264097377-en.

- OECD (2012a), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264178748-en.
- OECD (2012b), *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*, OECD Publishing, Paris, doi: 10.1787/9789264177338-en.
- OECD and University of Groningen (2012), *Building Resilient Regions after Natural Disasters: Abruzzo 2030: On the Wings of L'Aquila*, issues paper presented at the workshop in L'Aquila, 17 March 2012.
- Pike, A., A. Rodriguez-Pose, J. Tomaney (2007), "What Kind of Local and Regional Development and for Whom?", *Regional Studies*, Vol. 41, No. 9.
- Regione Abruzzo (2012), Regional Law No. 40: "Promotion and Development of the Regional Economic System", 8 August 2012, <http://leggi.regione.abruzzo.it/asp/redirectApprofondimenti.asp?pdfDoc=xNormativa/docs/leggi/2012/LR402012.pdf>.
- Rutten, R.P.J.H. and J.P.T.M. Gelissen (2008), "Technology, Talent, Diversity and the Wealth of European Regions". *European Planning Studies*, Vol. 16, No. 7.
- The Utah Partnership for Education and Economic Development (1990), "Education, Business, Government: A Report of the State Board of Regents-State Board of Education Task Force on Education and Economic Development", Utah.
- Van der Burg, E., C.N. Olivers, A.W. Bronkhorst and J. Theeuwes (2008), "Pip and Pop: Auditory Signals Improve Spatial Visual Search", *Journal of Experimental Psychology: Human. Perception and Performance*, Vol. 34.
- von Tunzelmann, N. (2009), "Regional Capabilities and Industrial Regeneration", in M. Farshchi, O. Janne and P. McCann (eds.), *Technological Change and Mature Industrial Regions: Firms, Knowledge and Policy*, Edward Elgar, Cheltenham.

## *Chapter 5*

### **Improving the use of the cultural heritage and natural environment**

*Abruzzo enjoys an extraordinary cultural heritage and benefits from exceptional environmental assets. This chapter suggests that these should be seen as important economic opportunities. Indeed, this territorial capital offers great potential for development if used intelligently. The chapter looks at the key elements needed to develop a strategic vision for tourism in Abruzzo and for promoting and expanding the use of natural and cultural resources. After reviewing Abruzzo's history of leadership in natural conservation policies, the chapter discusses two main aspects of drawing benefits from this territorial capital: a market strategy for expanding the tourism offer and a sustainable infrastructure to improve the use of natural resources.*

## Introduction

This chapter outlines the key elements necessary for developing a strategic vision for improving the use of the vast cultural heritage and the remarkable natural resources of Abruzzo. The approach taken in this chapter is inspired by the literature on tourism marketing (Fyall and Garrod, 2005) and by the literature on the economics of outdoor recreation (Manning, 1999) and of cultural heritage (Navrud and Ready, 2002), in addition to drawing on the experience of regional stakeholders and those responsible for state-of-the-art tourism centres and other relevant institutions.

The value of the region's cultural heritage has long been appreciated and the first national natural park (the Abruzzo National Park) dates back to the 1920s. Since the early 1990s Abruzzo has been the leading region in Italy in natural conservation policies.

In keeping with the typical settlement patterns in the Italian Apennines, the "sights to see" for cultural heritage and natural resources in Abruzzo are small in scale and highly dispersed over the territory of the region.

The marked decline in population since the 1950s has brought about a large and widespread under-employment of the cultural and natural resources. Already at the end of the 1980s, after three decades of demographic decline, cultural and natural resources in remote areas were largely unused. A large part of the potential of the region's cultural heritage remains untapped, and rural landscapes are decaying because they have not been put to good economic use or because they have simply been abandoned.

Abruzzo still has today a substantial amount of territorial capital, that is to say cultural heritage and natural environment, that can help to generate employment and income. The tourism sector can potentially play an important role either as a key driver of future regional economic development, or as a major supporting sector in the mountainous area of the region. Providing a stimulus to agriculture on the basis of the short food supply chain, and the cultural dimension of food supply, tourism may prove to be the only way out from decline and stagnation in the interior areas of Abruzzo. Improvements in the hospitality sector can foster a strong reputation for quality service, reinforce the branding of the area amongst existing and new visitors, and promote mutually beneficial ties to citizens and businesses within the community.

During the period 1997-2008, efforts were made to put unused buildings back into use for tourism hospitality, to upgrade existing structures and to expand the offering of hospitality in small villages, with positive results in terms of increased numbers of tourists. Yet, in recent years, for various political and economic reasons and as a consequence of the 2009 earthquake, attention shifted away from the focus of upgrading the regional tourism strategy (Bini 2012).

To fully exploit the region's territorial capital, Abruzzo should integrate natural resources management into local and regional development strategies. To develop a strategic vision with regards to tourism must be a key component of the overall long-term regional development plan. An integrated plan would help to promote the many goods and services currently or potentially available in the area (high-quality foods, residential services, cultural and eco-tourism), which are increasingly demanded at

national and international level. Second, the integration of conservation into regional development projects would help reap the economic, social and environmental benefits of sustainable tourism and other entrepreneurial opportunities in the highly fragmented mountainous territory of Abruzzo. The experience of Slovenia in turning the declining areas identified by *Natura 2000* into assets for economic development by integrating spatial planning, *Natura 2000* protection and economic measures into a coherent regional development strategy, could be of interest for Abruzzo (OECD, 2011).

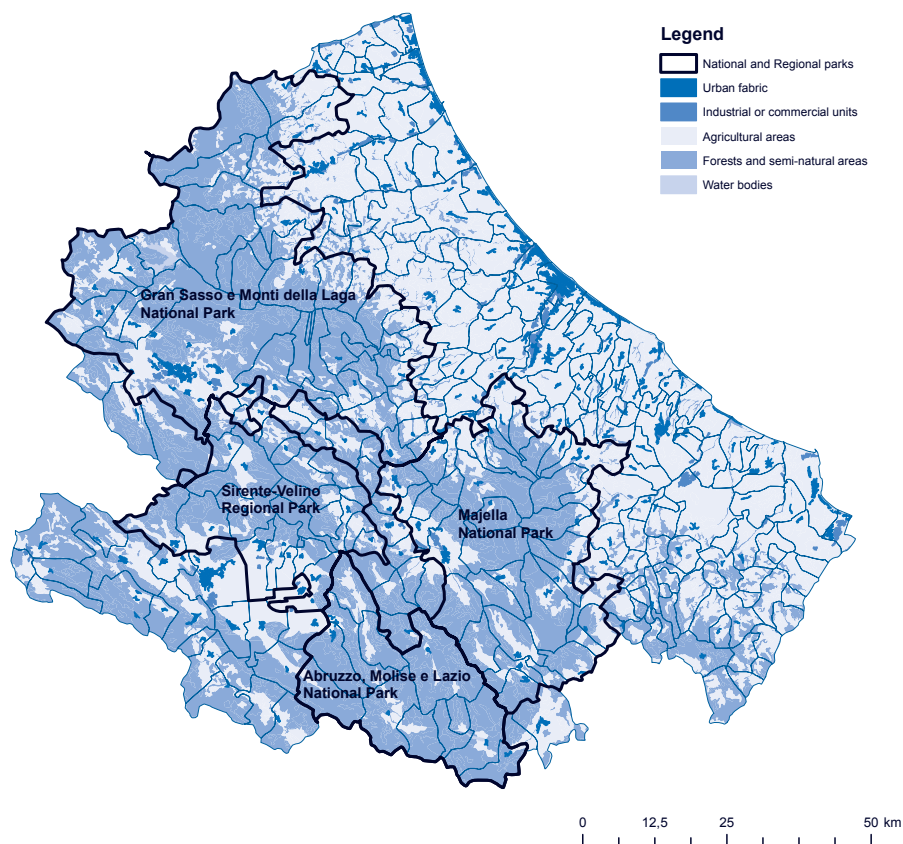
In order to systematically explore how local and regional tourism activities can be further developed, the report begins with an appraisal of the current and potential tourism products and of the role of regional identity and branding in encouraging tourism in the area. The focus is on redefining and reinventing the tourism experience in the region and to allow it to develop a fresher and stronger identity as a tourism destination in the central part of Italy. Second, strategies for enhancing the economic exploitation of the available assets are put forward in some detail. This second part is particularly focused on those goods and services which can be delivered at a relatively low cost by local stakeholders and on the identification of the most prominent obstacles that currently appear to be standing in the way of such development. For each obstacle solutions are suggested.

### Natural conservation and regional development in Abruzzo

Abruzzo is a mountainous region: its territory stretches over the central part of the Italian Apennines, and hosts the highest peaks of this chain (Gran Sasso: 2 912 m; Majella: 2 793 m), which cuts through Italy from the north-west to the south. Most of the region which is not comprised in the main urban areas is part of a national or regional natural park. The Apennines are inhabited mountains characterised by the human landscape and the biodiversity associated with it. The settlements in the interior part of Abruzzo are composed of dispersed small and very small towns (with the exception of the medium-sized towns of L’Aquila and Sulmona), with very low population densities and specific architectonical values.<sup>1</sup>

The law on protected areas established in 1991 (“Legge quadro sulle aree protette”, Law 394/91) paved the way for a new approach to conservation policy. This law introduced an articulated institutional setting for the management of protected areas, striking a balance between the national and local perspectives and also between the conservation of natural environment and development. Thanks to this law many natural parks were established in the 1990s and Italy’s protected territory was greatly extended. The law represents a watershed in the history of Italian conservation policies also because it gives notable importance to the conservation of cultural capital in addition to that of natural capital. Indeed, the Italian national parks established in the 1990s are very much inhabited parks, and the territories are largely constituted by rural landscapes (Box 5.1).

Figure 5.1. Natural parks in Abruzzo



Source: OECD, based on ISTAT data.

Natural parks are institutions that protect the individual's right to nature and cultural landscapes perceived as a source of collective identity. Natural parks are also territorial systems delivering ecological and recreational services. Moreover, in the European tradition natural parks are instrumental to local development. Natural parks are territories where social diversity and recreation can thrive. Finally, natural parks are places where new forms of sustainable production and consumption processes can be tested. This complex web of functions should be underlined in the public discourse in order to understand the role of natural parks in society and to assess the social return of the investment appropriately. Tools like social reporting and environmental accounting and reporting would be very useful for assessing and valuing national parks' positive impact on individual and societal well-being. By appreciating the range of benefits a natural park generates, visitors will regard themselves as stakeholders in conservation and local development and not only as consumers of the services delivered by the protected territory.

### Box 5.1. Law on protected areas (Law 394/91)

Italian national natural parks are governed by a National Park Agency formed by a complex governance system in which national and local interests are represented in a balanced way. The president, the board and the council are the key actors of the National Park Agency. The president and the members of the board are appointed directly by the Ministry for the Environment in accordance with the concerned regions and provinces. On the board national and regional interests are represented. In addition, the Park Council, made up of the mayors of the municipalities located in the park and representatives of the concerned regions and provinces, is the interface between the territory and the Park Agency.

The Park Council is responsible for the economic development of the territory of the park. It has to devise and approve the park development scheme every four years and upgrade it every two years. The Park Council is also responsible for the budgetary process: the Park Agency Board cannot operate without the budget's approval by the Park Council.

Municipalities whose territories, or part of their territories, fall within the boundaries of a national park are obliged to transfer part of their power and functions to the Park Agency, in particular in the field of spatial planning and management of territorial capital (natural resources and human landscapes mainly). The planning scheme is the key policy instrument. It is proposed by the Park Agency – the Park Agency Board and the Park Council are both involved in the process – but must be approved by the regions concerned and finally by the Ministry for Environment to acquire legal status.

This complex inter-municipal and multi-layer governance system is aimed essentially at preserving the local cultural heritage of small municipalities, as a crucial element of national identity, while scaling up to improve service delivery and policy implementation.

The governance of the natural parks has proven to be effective in reconciling national and local interests and balancing conservation and development policies. However, more recently, the complex governance mechanism has proven to be easily blocked by political vetoes and bureaucratic sluggishness. The hope that national parks would foster local development in marginal mountainous and rural areas has been undermined to some extent. Yet conservation is still considered of primary importance in Italy, given the region's geography and history.

While Abruzzo has been one of the leading regions in adopting natural conservation policies, it is now time to revamp activities related to the natural and cultural environment to improve and expand the production of tourism goods and services. The earthquake that hit the Turkish region of East Anatolia in 2011 has spurred a thorough analysis of good practices for designing recovery strategies for sectors relying on the regional natural environment (Box 5.2)



**Box 5.2. Paving the way to revamping activities related  
to the natural environment: The Van earthquakes (Turkey)**

When two earthquakes hit Van (Turkey) on 23 October and 9 November 2011, Anatolia was one of the poorest and proportionally most populated regions in Turkey. The industrial fabric was particularly weak, with low employment rates and general low-skill labour forces. Against this background, expecting that reconstruction and recovery strategies would result in drastic improvements and endogenously boost economic growth was unrealistic. In particular, a large amount of financial aid on its own was not likely to be enough to improve the region's development. Long-term development could only result from the attraction of structural investments to allow entrepreneurs to diversify business activities and the unskilled labour force to find work. Economic development had to be promoted on the basis of some of the most important natural assets that the region could offer. In addition, life-long training programmes and social policies needed to be focused on enabling locals to participate in a more articulated but efficient and productive labour market.

On the basis of that analysis carried out by the Eastern Anatolia Development Agency on the medium- and long-term impacts caused by the earthquakes, an intervention plan was established to ensure targeted action through a comprehensive approach. For instance, recovery strategies were implemented to seek multiplier effects by stimulating employment and avoiding creating disincentives to work. In this respect, a voucher-type system (instead of the provision of in-kind or cash relief) was favoured, in which coupons could be used to buy goods and services by regional producers. Public spending was aimed at encouraging regional producers, notably in key sectors of high-growth potential. For instance, while animal husbandry in the region is merely for subsistence, it has the potential to contribute to economic growth, for instance through contracted agriculture models where entrepreneurial risks are shared with the public sector in the short term. An example of such public-private sector co-operation is the establishment of common milk collection centres for rural farmers. The development of agriculture is expected to have positive spill-over effects into the regional tourism sector.

Another promising sector is renewable energy. The Van and Hakkari provinces are within the leading region in Turkey in terms of solar energy potential, producing a minimum 7 000 MW with current technology. The Eastern Anatolia Development Agency calculates that it is possible to create 12 000 temporary and 1 100 permanent jobs with a 1 000 MW investment.

*Source:* Eastern Anatolia Development Agency, 2012.

## Improving and expanding the production of tourism goods and services

### *Existing resources should be connected to produce high-quality goods and services*

The overall aim of a strategy for improving the tourism sector in Abruzzo is to maximise the national and international awareness of the region as a sustainable and high-quality tourism destination. High-amenity-preference tourists, including gastronomic tourists, or tourists interested in nature, biodiversity, history, religious heritage, or natural and environmental beauty, are all tourists who are attracted to integrated tourism offerings which build on local production, and which cater to their various tastes. This is true irrespective of whether their tourism activities and preferences involve private car usage, specialised coach facilities or bicycle-based tourism.

Two broad objectives emerge for a tourism strategy in Abruzzo. First, because of the high fragmentation and small size of cultural and natural resources in Abruzzo, a territorially integrated approach is required to promote and increase the use of existing resources. Actions to meet this objective could include the restoration and connection of historical centres, as detailed below, networks to increase hospitality for returning locals, thematic circuits for outdoor activities, and services for natural parks. Second, new goods and services should be produced to improve the quality of the tourism supply and increase the economic return. Actions to meet this second objective could include investment in infrastructure and sustainable mobility and the upgrade of the marketing strategy, as described below.

The territorial specificity of the cultural assets and ecological systems is a challenge to regional tourism policies in Abruzzo and should be addressed with an appropriate governance mechanism. Past experiences in the management of natural parks can provide useful lessons (Box 5.1) to the regional government now in charge of the regulation and planning of the local tourism systems. The scattered and small size of cultural and natural resources also requires the strong engagement of local stakeholders and entrepreneurs. There are a number of economic goods (and corresponding “economic sectors”), that can be produced to ensure the territorial capital of the Abruzzo region is put to the best possible use. The most relevant goods are:

- naturalistic tourism
- cultural tourism
- temporary/permanent residence
- neo-rural production processes
- high-quality agriculture and gastronomic tourism

The level of production of these goods should substantially increase in Abruzzo in the next two decades. This is not an easy task. In fact, in order to produce high-quality goods and services organisational efforts are needed to co-ordinate and promote the different elements (such as quality of landscape, biodiversity, architectural values, etc.), making up the touristic goods. The most challenging aspect for the strategy to valorise the territorial capital in Abruzzo is to generate a sufficient economic return to continue and increase production, investing in the maintenance of the extant capital and adding more capital to the current stock. Even if the potential demand for tourism goods and services in the territorial capital of Abruzzo will not be very large in absolute values, a high-quality integrated supply may generate a demand that is sufficiently high to employ most of the currently idle territorial capital of the interior areas, in turn increasing local employment and income, and reversing the medium-term demographic decline.

A strategic rethinking of the tourism vision for Abruzzo also opens up the possibility of offering experiences for specifically targeted groups of tourists, such as those most appreciative of high-quality amenities and a focus on eco-tourism. Such explicit targeting would offer long-term advantages in a specific niche of national and international tourism.

### ***Connecting restored historical centres will produce attractive tourism systems***

The region's cultural heritage was damaged by the 2009 earthquake. The Ministero per i Beni e le Attività Culturali has identified 485 monuments in need of restoration in the area affected by the earthquake, 127 of which are in the city of L'Aquila. Despite this large number, most of the cultural heritage remained untouched by the earthquake, and the heritage value of even the damaged monuments will remain intact after restoration.

The physical reconstruction of L'Aquila has attracted much attention as a consequence of the economic impact and human losses of the 2009 earthquake. Yet L'Aquila is not the only centre in need of intervention. There are a number of towns whose historical centres are of extraordinary cultural importance, but have not been maintained for various reasons (for example, loss of population or resettlement of the population outside the town centre). Among the cities deserving attention is Sulmona, with about 25 000 residents and the second largest historical centre in Abruzzo after that of L'Aquila. If urban renewal and restoration were achieved in the outstanding historical centre of Sulmona it could rapidly become a key asset as a main European tourist destination.

Many historical centres in the area affected by the earthquake will regain their physical identities. Yet the Abruzzo region should address the question of the state of its historical centres at regional level, so that its urban areas might be assets on the global tourism market. Sulmona is certainly not the only case, but it should be the focus of an urban renewal plan implemented simultaneously with that of L'Aquila, and comparatively requiring a very limited amount of financial resources. Increasing the value of these historical centres could complement the tourism strategy which seeks to promote human landscapes and natural resources in the region.

There is a further point worth stressing. The cities of L'Aquila and Sulmona are only one hour away one from one another by car or train, and they are both very close to Rome and its metropolitan area. They are connected through a scenic railway line cutting through the regional park of Velino-Sirente, and serving a succession of small towns along the way. By up-grading the railway connection between Sulmona and L'Aquila, by restoring to its former beauty the historical centre of Sulmona and reconstructing the historical centre of L'Aquila, and by supporting the local development initiatives of the small historical towns in the Subequana Valley, within five to eight years an extraordinarily attractive tourism system will emerge which offers an urban dimension (L'Aquila, Sulmona), a town of historical significance, with its settlement pattern typical of the Subequana Valley (Fontecchio) and rural and environmental amenities.

One of the reasons why L'Aquila was such an attractive city to live in before the earthquake was its access to a large variety of natural and recreational services. Most of the goods and services demanded by tourists and visitors – and locally produced – are also of high value for residents. The availability of these goods and services greatly increases the well-being of the local population and the attractiveness of places. Families with children seek out particular types of goods and services. Certainly there is a large demand for activities such as mountain hiking, yet playgrounds for children in well-chosen places and highly innovative in terms of sensorial, visual and practical experiences are also goods for which a potentially large demand can be expected from local residents and from tourists and visitors. Considering the potential demand from the residents of the metropolitan area of Rome to supply goods and services explicitly oriented to families with children may prove a successful strategy. The supply potential for tourism in and around L'Aquila could target different segments by offering high-quality services and experiences (Box 5.3).

### Box 5.3. Supply potential for tourism in the surroundings of L’Aquila

The city of L’Aquila has a variety of potential activities for tourism and some of them were offered before the earthquake. These activities and new ones should become the backbone of an integrated strategy of redevelopment of the city if supported by adequate market research.

First, the vicinity to the airports of Rome and Pescara could be better exploited, in order to receive inflow of tourists from afar and potentially to trigger the inflow of capital investment associated with the ownership of second homes, as happened in Tuscany, Umbria and Marche. This would also guarantee the supply of fresh capital enabling the conservation and maintenance of much of the older rural and urban building stock. The internationalisation of local estate agents may help transfer to L’Aquila those success stories of other regions that have undergone similar developments, while at the same time helping to avoid making the mistakes made elsewhere in regions with similar ambitions that were not achieved. For example, all that is needed to limit investors’ enthusiasm are reports of disappointing experiences from buyers at the beginning of the process. Something of the sort has taken place in Puglia, where a series of negative experiences in 2006-7 reported in the UK press managed to undermine the property market. However, in the last three years the real estate owned by foreigners in Puglia has grown from 7% to 20% with a market strategy that offers a combination of countryside, sea and small historic towns. Importantly, such a strategy should be also aimed specifically at creating a distinctive identity for L’Aquila as a tourist destination and as a recognisable brand.

L’Aquila itself can offer a rich menu of cultural events especially in the summer (music, theatre and cinema shows both in open air and indoor venues). The inclusion of such offerings in larger and well-established initiatives nearby (such as the Pescara Jazz festival) could increase the attractiveness for tourists.

L’Aquila is also a great destination for religious tourism, as it is the only location in the world in which Catholics can be granted total forgiveness for their sins annually if, after confession and holy communion, they visit the Basilica of Saint Mary of Collemaggio on 28 August. The idea of starting a series of high-profile religious and cultural events leading up to 28-29 August and in the days following deserves some serious attention, and is undertaken in other similar contexts elsewhere across Europe.

L’Aquila also hosts various religious *confraternite* (brotherhoods) with a very long history dating back to the Middle Ages. Such organisations might consider taking upon themselves the task of organising open days in which their history, their values and the aims of their associations are explored.

Finally, the University of L’Aquila and the Gran Sasso National Laboratory can significantly contribute to the shaping of the L’Aquila brand as a tourism destination by promoting extra-mural initiatives to bring foreign students and visiting researchers in closer contact with the city and its natural and cultural resources. These types of programmes are one way of helping to shape a local and regional brand by raising awareness of recognisable and distinct local identity. They will also help to forge a stronger bond with the city and the various smaller settlements that belong to the municipal territory, which goes well beyond the academic sphere.

### ***Improving the infrastructural endowment will help to increase the use of natural resources***

There are three popular destinations around L’Aquila for outdoor winter sports (for skiing in particular): Campo Imperatore (50’ drive north-east of L’Aquila), Campo Felice (30’ south of L’Aquila) and the further destination of Ovindoli (30’ west and then south

of L'Aquila). Local stakeholders in the tourism industry seem to have reached some degree of consensus in their ambition to become “the favourite ski resort in the south of Italy”. However, the average snow fall during winters may not make it an ideal sector to focus on as the economic returns remain highly uncertain.

One of the main reasons skiing tourism is less profitable than it used to be is that due to climate change, snow precipitation and low temperature are not only diminishing on average but are now concentrated over a limited period in the winter (generally not longer than from mid-January to mid-March) and this reduces the overall exploitation of the ski-fields' capacity. Campo Imperatore has a slight advantage with respect to the other locations because of its higher altitude. One possible solution is to use the ski-fields also during other seasons by stimulating other outdoor activities: for example, mountain bikers could use the ski-fields during the dry seasons. This solution has been adopted in Prato Selva (Teramo) which has encouraged mountain biking during the spring by organising mountain bikers' gatherings and races, which have proven very successful.

A more promising investment in infrastructure is the extension of the bicycle network, and it is also much more in line with the conservation policy that the Abruzzo region considers as its hallmark. Cycling is a low-impact sport and can be practiced with various degrees of effort. The main roads within the Gran Sasso and Monti della Laga Park (for example, from Fonte Cerreto to Campo Imperatore, then to Rocca Calascio and then back to the plain) have great potential for attracting bikers because of their views overlooking the beautiful mountain landscape (already enjoyed by many local bikers). The planning of cycling routes to be attractive for road and mountain bikes requires them to be adequately supported by regularly dispersed resting points. These should have weather shelters to protect bikers from rain and sun. Such an initiative could certainly attract cycling visitors, especially if supported by relatively aggressive marketing campaigns in the first years, with advertising through specialised travel agencies, as well as on web pages and in sport magazines.

In line with the overarching objective of sustainable mobility, the regional railway network should be the focus of more attention and substantial investment to up-grade technologies and accessibility. The railway lines of Terni-L'Aquila-Sulmona and Sulmona-Isernia, the latter currently out of use but not dismantled, are assets in themselves as they cut through remarkable landscapes and bordering historical towns and connect potential tourist destinations. Besides offering the experience of travelling by train in a remote and beautiful area, these railway lines might play an important role in making tourism sights accessible, and in improving the well-being of local residents by delivering the fundamental good of mobility, in particular to elderly people living in the remote towns of the Apennines.

The railway line Pescara-Sulmona-Rome should be also upgraded in order to improve the sustainable accessibility of tourism destinations and also to deliver the service of mobility to residents. The intersection in Sulmona of the line Pescara-Rome with the railway line towards L'Aquila and Terni and the railway line towards Isernia (to be re-activated) assigns to the regional railway network a clear potential to foster local development and tourism, and also to increase residents' well-being.

Maps of trails and well signposted itineraries for access to natural resource sites are also very important. Well-marked trails and well-maintained rest areas with adequate guidance and explanations in guide books printed in different languages and brochures in hotels and information centres are a necessary, but not sufficient, means to the successful management of tourist flows in protected and conservation areas. Visitors expect to have

clearly marked directions from the main roads accessing the region, to the car parks at destination sites, to the point of access to conservation areas, and to all other locations of interest. They also expect well-maintained and visible trails (walking, horse and bike trails) leading from sufficiently large and closed-circuit camera-protected car parks to the sites of tourist value. At the moment in many areas in Abruzzo this is often not the case.

In terms of botanical circuits, the Apennine region also offers a great deal of biodiversity, especially in terms of wild flowers. Wild flora and naturalistic trails can attract many enthusiasts from all over the world if they are adequately promoted. The months of June and July are ideal for such treks which are best experienced with local guides. Links with botanical associations, university departments and other institutions should be the obvious avenues through which such form of tourism can be promoted. An organised tour with organised mini-bus pick-ups from various hotels in the city should be made available upon request by tourists.

### ***A marketing strategy is needed to promote high-quality services and a regional brand***

In order to implement an effective tourism strategy it will be necessary to develop more professionalism and higher standards in the local tourism industry. This will help create a more competitive and modern culture of tourism promotion and will require standardised tourist-centred information management through various kinds of media. Local operators must nurture a local hospitality sector which is capable of delivering a “smart” and “characteristic” tourism experience for most visitors, prompting them to pass on their recommendations to visit to others, and encouraging them to go back Abruzzo.

To facilitate learning and skills transfer, local managers operating in this industry need to be exposed to how tourism has developed and is managed elsewhere, so as to appreciate the experience that travellers from abroad commonly expect nowadays in destinations of this kind. It will also be necessary to implement an integrated effort at making the whole “L’Aquila-Abruzzo hospitality system” more appealing, more welcoming and easier to navigate than it is at the moment, especially for first-time visitors. While a more aggressive marketing strategy is of primary importance, the means to providing the promised tourism experience is essential. A disappointing first visit by new tourists will dampen the enthusiasm.

In other words, it is necessary that public institutions and private operators work together to increase the standard of the hospitality industry so as to match those standards which are nowadays commonly expected elsewhere in Europe and in the world. Only in this way can a L’Aquila-Abruzzo tourist brand be established beyond the narrow borders of the currently existing tourist catchment. This should not be too difficult considering that nowadays some other areas have successfully managed to establish a distinctive brand within the European tourism market starting from a much smaller set of natural and cultural heritage endowments, and certainly building on a much shorter history.

Four actions need to be considered when planning the extension of any tourist market:

1. Increase the scope of the tourism catchment by marketing more broadly and expanding the tourism offer quantitatively and qualitatively;
2. Extend the period over the year in which tourist attractions and events are proposed (market lengthening);

3. Improve the ease with which the tourism experience can be planned and performed by, for example, reducing the search costs and the transaction costs to tourists (market heightening);
4. Monitoring the tourism experience and inducing return visits. This involves systematically collecting feedback and assessments from various categories of visitors to understand what they enjoyed and what disappointed them in their visit, as well as prospecting for further tourism products and services.

Each of these four dimensions listed above necessarily pose some challenges to the hospitality industry, tourism operators and other institutional stakeholders in L'Aquila and Abruzzo, who in order to fully embrace such challenges, will have to develop substantial versatility and expand their skill base.

The Abruzzo region should be promoted well beyond Italy. The vicinity to Rome, with its two international airports, should be an element to stress in any promotion strategy. Three specific groups should be targeted across Europe and farther afield: older tourists – particularly interested in the gastronomic, heritage and religious dimensions of tourism; families with children, particularly interested in outdoor activities in safe and stimulating environments; young and relatively young tourists interested in outdoor sports such as cycling, hiking, mountain biking, snowboarding and climbing.

Promoting Abruzzo, with its complex territorial capital, at national and above all international level requires specialised and well-trained human capital. To prioritise the training of tourism and marketing agents, real estate brokers and hospitality providers, who are fluent in English, and also preferably German, and who are also experienced in modern information and communications technologies for information provision and marketing should be regarded a key intermediate objective.

Besides the promotion of the whole region with regards to its general features, specific places and their assets should also be promoted. For example, one innovative way of attracting tourists to L'Aquila might be to establish a relationship between its roles as a city of knowledge (with the presence of the University of L'Aquila and the Gran Sasso National Laboratory) and as a tourism destination. From one side the city should offer customised trips to local cultural, heritage or natural amenities for all of the visiting researchers, scientists and students, as a standard part of their visits to the city. From the other side, tourist visiting L'Aquila for the cultural heritage it hosts, should be aware of its knowledge base and have the opportunity to access services supplied by the University of L'Aquila or the other research and cultural centres.

The neo-rural sector and the rural sustainability movement can become attractive, and as such can be a lynchpin for rural property development. Every year hundreds of relatively young retired couples from northern Europe plan to retire in rural areas with warmer climates. Many wish to maintain themselves in a physically active manner and are interested in various rural activities (e.g. producing their own food), in opportunities to learn new practical skills, in experiencing life in small communities, and in generally enjoying good weather. This trend can be synergistic to the local neo-rural sector initiatives such as those currently taking place in Pescomaggiore, in which the communal ownership of farm equipment, communication technologies and high-quality hospitality might be particularly attractive to these retirees. The extension of life expectancy and the generally improved health conditions of many segments of the older age group suggests that this kind of trend has potential. However, such a line of development will require that local economy is able to support second home owners or people wishing to settle in these

communities with a variety of services, including health providers, high-speed broadband, public transport, and community satellite television, etc.

Modern tourists are increasingly aware of their options, have greater access than ever before to information (including reviews from other tourists), and are also increasingly choosy regarding their own preferences and wishes. At the same time, an ever-increasing environmental awareness and sophistication on the part of tourists means that sustainability is becoming an ever-more pressing consideration in terms of their own leisure choices. This is particularly the case for both older and higher-income tourists as well as for student tourists.

Integrated tourism offerings spanning different amenities, different services and different hospitality and tourism providers need to become standard fare and the integrated information platforms with multiple web links, online access and booking facilities must be easily accessible to foreign tourists. The local tourist agency should be put in charge of overseeing the organisation and management of this information flow. Ideally a network of local guides conversant in English and German and also with modern information technologies needs to be educated and promoted, so that visitors can be assisted both in-person and remotely, via Internet-based tools.

Any marketing strategy for Abruzzo should prioritise the valorisation of locally produced goods and services in local and rural communities and mobilise the engagement of all business associations and entrepreneurs in building these networks or local knowledge, marketing and promotion. To establish a “Made in Abruzzo” brand for all local artisanal-produced products – based on ongoing data provision and transparency regarding authenticity, sustainability, transparency and verifiability – will be a further step in the same direction.

Abruzzo is historically a region of emigration and many of his former residents have maintained the property of houses or lands. In addition, many of those who have left the interior areas have relocated within a distance that easily permits to maintain strong ties (Rome, Pescara or the coast of Abruzzo). Visiting the Apennines in August, the month in which most Italians take their holiday, one can experience how large is the phenomenon of returning locals, those who live elsewhere, but have a family or links to the town of origin. While this category of tourists does not provide a sufficient volume of tourism-related income to trigger new private investment, with a wider range of offerings they can constitute a steady foundation for tourism.

Finally, reliable information on tourist flows and outdoor activities is missing. This lack of appropriate information is not limited to the Abruzzo region, yet it is a very unsatisfactory state for a region that is planning to turn tourism into one of its main economic pillars. In order to complement the policies outlined above, to set up an accurate and encompassing monitoring system of the tourism sector, to establish rigorous systems for receiving on-line feedback, for data-collection, monitoring and evaluation, should be added to the other items on the policy agenda.

## Conclusions and main policy recommendations

At present, Abruzzo is heavily under-utilised in terms of tourism potential. Yet Abruzzo has an extraordinary set of amenities on which to develop a genuinely sustainable tourism brand. The Abruzzo tourism brand can become extraordinarily rich both in depth and variety. However, in terms of both distinctiveness and credibility



Abruzzo has to ensure that the utilisation of the relevant territorial capital is underpinned by a broad-based approach to sustainability.

In terms of developing a strategic vision for using the amenities of Abruzzo it is essential to identify the various sustainable tourism possibilities, to improve the areas where these offerings are weak, and also to build systems for communicating and delivering tourism offerings based on the rich variety of cultural, historical, religious, musical and natural amenities which are locally available. These information flows need to be provided to tourists of different kinds through different media and in a consistent and low-cost manner.

This report strongly recommends taking a long-term perspective on the re-use of cultural heritage and natural environmental assets and to abandon the hypothesis that relevant results can be attained in the short period. Abruzzo should build on its competitive advantage of decades of local development policies in the mountainous areas and integrate nature conservation planning into regional development policy.

Abruzzo should develop an integrated plan for its natural environment and cultural heritage that better connects the small development projects dispersed in the region. Building on the past experiences of conserving its natural environment, Abruzzo should focus on the social and environmental quality of each local development project to develop a sustainable tourism strategy. The territorial specificity of the cultural assets and ecological systems is a challenge to tourism policies in the Abruzzo and should be addressed with an appropriate governance mechanism to generate effective policies and actions.

Abruzzo could produce extremely high-quality tourism services on the basis of the existing territorial capital. Abruzzo should put together and increase the variety of valuable elements to produce marketable tourism products such as naturalistic tourism, high-quality agriculture, temporary residences, outdoor activities, etc. While a complex task, the result would give Abruzzo a stable niche in the national and international markets.

## Note

1. There are 113 municipalities within natural parks in Abruzzo: Half of them have a population smaller than 1 000 people and 80% smaller than 2 000.

## *Bibliography*

- Bini, A. (2012), “Il difficile rilancio dell’Abruzzo interno”, in E. Minardi and R. Salvatore (eds.), *Osservare, Comprendere, Progettare per Ricostruire a partire dal terremoto in abruzzo( O.R.eS.Te)*.
- Calafati, A. (2006), “Traditional Knowledge and Local Development Trajectories”, *European Planning Studies*.
- Calafati, A. and F. Mazzoni (2002), “Conservation Policies and Local Development in National Parks”, *Italian Journal of Regional Science*, No. 3.
- Fyall, A. and B. Garrod (2005), *Tourism Marketing: A Collaborative Approach*, Channel View Publication.
- Kotler, P. and Philip J. Kotler (2008), *Marketing for Hospitality and Tourism*, 5<sup>th</sup> edition, Pearson Education India.
- Manning, R.E. (1999), *Studies in Outdoor Recreation: Search and Research for Satisfaction*, Oregon State University Press.
- MacEwen, A. and M. MacEwen (1987), *Green Prints for the Countryside? The Story of Britain’s National Parks*, George Allen and Unwin, London.
- Navrud, S. and R. Ready (2002), *Valuing Cultural Heritage: Applying Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts*, Edward Elgar.
- OECD (2011), *OECD Territorial Reviews: Slovenia 2011*, OECD Publishing, doi: 10.1787/9789264120587-en.



## Chapter 6

### An agenda for L'Aquila towards 2030

*The chapter outlines four inter-related pillars around which to redevelop L'Aquila, on the basis of the city's existing assets and potential. The first pillar, embodied in the smart city concept, relates to the use of new technologies to deliver innovative services for energy efficiency, sustainable mobility, health and information sharing. The second aspect looks at strengthening the role of the university and research centres to generate income and jobs. The third theme discusses how the reconstruction of the historical centre of L'Aquila could foster cultural life and commercial offering to creative investors and entrepreneurs. Finally, the fourth pillar looks at community engagement to improve the governance of the city and the quality of life of its community.*

## Introduction

The design of a development strategy in a post-disaster region requires the identification of the potential assets that make the place unique, and a recognition of the changes in roles and governance necessary to implement the desired actions. L'Aquila now has the opportunity to become a prototype and a template for modern 21<sup>st</sup> century living: a place which explicitly builds on, interlinks, and celebrates its heritage, its culture, its environment, its businesses, and its science and technology, and does so with the express intention to involve all of society in the creation of high-quality living for present and future generations. As discussed below, this vision for L'Aquila can be encapsulated in the concept of a knowledge-driven, smart, creative and open city, a city which exploits new technologies to enhance the quality of life of all its citizens, young and old. But in order to discuss such an approach, it is necessary to give explicit consideration to the territorial dimensions of the challenges and opportunities.

The city of L'Aquila was dramatically hit by the 2009 earthquake. Although the area affected was much larger, 57 municipalities comprising a total of 144 000 people in an area of around 2 390 km<sup>2</sup>, the large majority of casualties and damage happened in the city of L'Aquila. In the recent history of earthquakes in Italy – i.e. since 1950 – no city has been directly hit by an earthquake on the scale of that which hit L'Aquila. L'Aquila is a highly polycentric city, not as a consequence of recent spatial development processes, but for historic reasons. Among the first ten municipalities in Italy that were candidates for area extension, its pattern is characterised by a pivot settlement (the “historical centre”), and a number of smaller settlements (“towns”) of variable but significant relative size. The historical centre of L'Aquila – which the earthquake damaged so extensively as to make it uninhabitable until reconstruction – is one of the most renowned in Italy for its architectural and historical values. In addition, most of the sub-centres forming the municipalities of L'Aquila, some of which severely damaged by the earthquake, are also of notable architectural and historical value.

Giving appropriate consideration to its inner territorial diversity – as discussed in the previous chapter – this report suggests that a place-based perspective should be adopted in the design of a development strategy for the Abruzzo region. It was also suggested that the best choice for defining a “place” is to interpret the territory of the Abruzzo region in terms of its “functional areas” (or inter-municipal clusters). This allows for a more logical and coherent mapping between the economic processes and opportunities and the territorial realities of the region. In this report it is strongly suggested, first, that each local system ought to outline a long-term development strategy – and, consequently, that a regional strategy should be designed on the basis of a synergetic interaction with the various local systems' development strategies. This should be done for the leading functional urban areas as well as for the small mountain local systems. However, in terms of the individual local systems within Abruzzo, this report only contributes to the visioning process of L'Aquila, the one local system that more than any other in the Abruzzo region needs to re-invent its future. Yet the framework which is proposed in this chapter is of direct relevance also for other urban areas in Abruzzo, and also more generally for other OECD regions aiming to build their resilience to difficult natural and economic conditions.

Being deeply rooted in the Italian imaginary for its architectural splendour and being also the cultural and political capital of the region, L'Aquila attracted an enormous national and international interest as a consequence of the earthquake that devastated its architectural fabric and social structure causing 309 casualties. Awareness that L'Aquila, after the disaster, was a very difficult policy issue grew very rapidly, and the public debate over its future became difficult and tense.

From a policy perspective, L'Aquila after the earthquake is a real challenge. First, physical reconstruction, as a consequence of the architectural peculiarity of the settlements making up the city and in particular its historical centre, is extremely difficult. Yet reconstruction conserving the architectural and historical identity is to be considered a moral imperative. One can also add that “conservation by reconstruction” is one of the most deeply-rooted features of the Italian national identity and Italy also has an unrivalled expertise in this arena. Second, it soon became obvious that there was a risk that the earthquake might trigger a rapid economic decline, considering also that the city has gone through a decade of economic stagnation. Third, was that it became apparent that the city should have exploited the option of rebuilding its physical fabric and social structure to design and implement a very ambitious agenda, making the city “jump into the future”, as one of the most advanced cities in Italy in terms of environmental sustainability, social cohesion, civic involvement - catching up in two decades with the most developed European cities.

The reconstruction issue has proven to be a very difficult one. The Italian Minister for Territorial Cohesion has succeeded in designing and implementing a new governance system of the reconstruction process during 2012 with the objectives to accelerate the process of reconstruction and maintaining architectural identity, while ensuring fairness and transparency of procedures. A return to the responsibility of the ordinary public administration, empowered by additional capacities in local administrations is also a distinctive objective of this governance system.<sup>1</sup> An explanatory forecasting of the future economic development trajectory of L'Aquila was recently conducted in a study promoted by the Minister for Territorial Cohesion. This study underlines the importance of maintaining and possibly increasing employment in two main sectors of the city economy, namely the manufacturing sector and the higher education and research sector (Minister for Territorial Cohesion, 2012b). The key importance of these two sectors for the future development of L'Aquila is discussed in the report, which stresses that a stabilisation of the employment in the manufacturing sector – possible only through a technological up-grading – and a marked expansion of the higher education and research sector could be sufficient to stabilise the long-term trajectory of the city and its functional urban area.

L'Aquila municipality has recently proposed the new edition of its Strategic Plan which, after a new phase of consultation with local stakeholders and citizens, will guide the choices of reconstruction and future projects in the city. The Strategic Plan features four axes of intervention, on the historical centre, urban and social quality of life in the polycentric city, new economic opportunities and strengthening of administrative activities for the reconstruction.<sup>2</sup>

This chapter focuses on the development of a vision of L'Aquila as a “city of tomorrow”, against the background of the “European model of city” as outlined above. A vision that could turn into a strategy in due time and then in a set of policies and interventions leading the city of L'Aquila to fulfil the ambitious objective of becoming a city with a high quality of life by 2030. The quality of life is interpreted in this chapter both as correlated to the well-being of the population and as a critical factor of attractiveness and economic success in a globalised world. This chapter can provide additional evidence and some orientations for the strategic choices that local and regional governments will have to take and implement.

In this chapter it is suggested that a vision of the city can be built on four pillars:

- L'Aquila as a knowledge-driven city
- L'Aquila as a smart city
- L'Aquila as creative city
- L'Aquila as an open and inclusive city

### **L'Aquila as a knowledge-driven city: Higher education and research**

#### ***The economic base of the city, the presence of the university and other cultural and research centres allow to revision L'Aquila as a knowledge-driven city***

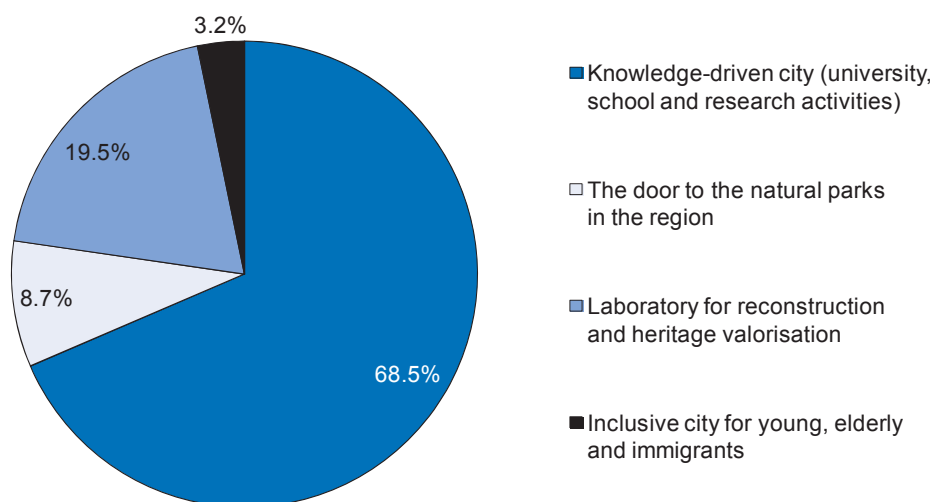
The economic and social structure of L'Aquila allows to revision the city as a knowledge-driven city of national and international significance, as already stated in previous OECD work (OECD, 2009). First, it hosts a large university; second, it hosts the world-renowned Laboratory of Gran Sasso and the newly established Gran Sasso Science Institute (GSSI doctoral school); third, as any other capital city hosts the production of services with a high content of human capital.

With a knowledge-driven city we mean a city in which a significant share of employment is directly or indirectly accounted for by production processes that use highly skilled human capital. Yet knowledge goods are very complex to produce, and their production, as private or public goods, requires to be supported by long-term policies, and the knowledge sector is very much sensitive to the general condition of the city, in particular quality of life, environmental sustainability, and cultural openness.

In the case of L'Aquila, the knowledge sector has a key position in the economy of the city. The university sector was, before the 2009 earthquake, one of the most important components of the economic base and its expansion should be considered of over-riding importance.

That L'Aquila should re-brand itself as a knowledge-driven city is also confirmed by the citizens' preferences, as expressed both in the OECD-University of Groningen Community Survey and in public meetings (Figure 6.1).

Figure 6.1. Which slogan would you choose to re-brand L'Aquila?



Source: OECD-University of Groningen Community Survey (June 2012). See Annex 3.A1 for details on the survey.

### *The University of L'Aquila should aim at increasing the share of resident students*

With about 24 000 university students – out of a population of about 70 000 people – L'Aquila qualified as a “university city” before the 2009 earthquake. As often happens in Italy, only a fraction of the students enrolled – about 35% in this case – were actually residents, and residential students have a significant economic impact on the city. After the earthquake, while the number of enrolled students has not changed much, the proportion of residents has dropped to about 20%. Indeed, the earthquake severely damaged the University of L'Aquila, disrupting the teaching and research activity. Appropriate actions to return to the pre-earthquake *status quo* are certainly necessary, but associated with the concept of L'Aquila as a knowledge city, a more ambitious objective should also be considered.

To set for the city the objective of becoming a university city meeting top European standards seems highly reasonable. Under this scenario, the University would aim to maintain the current number of enrolled students, but would also aim to increase the share of the residential students up to 80-90% (see Minister for Territorial Cohesion, 2012). This would turn the University of L'Aquila into a key pillar of the local economy in terms of employment and income generated. But it would also change the morphology of the city – with all of the associated consequences in terms of goods demanded and quality of the local relational capital of having 20 000 young residents.

There are solid grounds on which L'Aquila could set this ambitious aim. Before the earthquake, the university enjoyed a strong reputation in various fields. Moreover, the proximity of the metropolitan region of Rome offers a very large potential catchment area. The city has a territorial context that offers an



extraordinary variety of amenities. These are factors on which to base an expansion strategy aiming at becoming a university of significant national and also international standing.

However, in order for such a vision to be realised, there are three issues to be addressed. First, it would be necessary to redefine the spatial organisation of the university. The 2009 earthquake damaged most of the university buildings, and now the teaching and research activities are located in different and distant locations of what is a highly dispersed city. A plan redefining the location of the university buildings, based on a specific spatial concept (such as a campus within the city, or at its margins, or a multi-locational campus strictly within the perimeter of the historical centre of L'Aquila) would be required. Linked to this, the public transport from the city and the surrounding municipalities to the university should be reorganised. Second, it would be necessary to redefine the under-graduate and post-graduate study offerings in order to find sufficiently large and stable niches in the national and international market of higher education. Third, it would be necessary to manage students' residential needs in a way that is functional to the development of the city and is also cost-effective, avoiding rent-seeking behaviours.

The opportunity to explore these possibilities and to undertake many of these types of initiatives now arises with the reconstruction and redevelopment agendas being set locally and regionally. In particular, many of these developments would need to be framed within the broader re-visioning process of L'Aquila as a “living laboratory” of research, as discussed in the sections below. The university, also in conjunction with the other regional universities, is in a position to play a leading role in driving the knowledge city agenda, by closely linking its research portfolio with all of the lines of redevelopment being undertaken locally and regionally and with strong links with local firms (Box 6.1).

In considering and exploring the role of the higher education sector in helping to drive the knowledge city and the creative city agendas discussed below it is important to involve highly reputable organisations such as the *Accademia di Belle Arti di L'Aquila* (L'Aquila Academy of Art) and the school of music, *Conservatorio di Musica Alfredo Casella*. Although the scale of their activities, and consequent economic impacts, cannot be compared with that of the university, their presence and the acknowledged quality of their teaching greatly strengthen the notion of L'Aquila as a knowledge city, and offer additional lines of expertise which can be brought to bear on the re-visioning process of the city.

### ***The recently established doctoral school linked to the Gran Sasso National Laboratory can make the city even more identifiable as a place of research***

The presence in the city of the world-renowned Gran Sasso National Laboratory of the Italian Institute of Nuclear Physics significantly adds to the reputation of L'Aquila as a city of research. Over the years, and against the background of the internationally recognised excellence of the physics community, the Gran Sasso National Laboratory has established itself as a research premise of undisputable significance, giving to L'Aquila a very special signature.

The National Institute of Nuclear Physics has recently launched a new interdisciplinary research centre and international doctoral school – the Gran Sasso Science Institute (GSSI) – that in three years will have about 100 doctoral students and

### Box 6.1. The role of the higher education sector in the recovery of Christchurch (New Zealand)

Christchurch city in Canterbury (New Zealand) was struck by four earthquakes of magnitude 6.0 or higher between 4 September 2010 and 23 December 2011. The second of these, on 22 February 2011, caused 185 deaths and devastated the city's central business district. There have been more than 11 000 aftershocks associated with these events. The New Zealand Government declared a National Emergency on 23 February 2011, which remained in place until 30 April 2011.

While it is still early to evaluate its impact on the long-term redevelopment of the area, the university has played important roles in the recovery process. Both local universities – the University of Canterbury and Lincoln University – have shared their own experiences and learning from the earthquake publicly ([www.canterbury.ac.nz/emergency/documents/shakenbutnotstirred.pdf](http://www.canterbury.ac.nz/emergency/documents/shakenbutnotstirred.pdf)). The University of Canterbury has over 200 projects covering all scientific, economic, social and environmental aspects of earthquake-related issues ([www.research.canterbury.ac.nz/earthquakeresearch/index.shtml](http://www.research.canterbury.ac.nz/earthquakeresearch/index.shtml)) for which information and access points for the general public on each of the projects is publicised and updated. At the same time, scholars from Lincoln University have played a key role in examining the economic aspects of the earthquakes (<http://researcharchive.lincoln.ac.nz/dspace/handle/10182/4275>), the redesigning of the new regional development strategy in the post-earthquake period based on a re-examination of the regional economic assets, and the disruptive impacts of the earthquakes on the region's economy (Dalziel and Saunders, 2012).

The experience of Christchurch suggests that the presence of a strong university in the city can also be attractive for current and new firms and the business community. While there have been some criticisms regarding the fact that the needs of the business sector were downplayed during the response, with possible long-term negative consequences for business survival and jobs, some important practical steps have been taken. A small retail part of the central business district, for example, was opened as “The Restart Mall” in November 2011 to mark the province's anniversary day. Offices in the city centre are beginning to be used again for business services, and an overall plan for the rebuilding of the central city has been approved.

*Source:* Adapted from Dalziel, P. and C. Saunders (2012), “Regional Development Before and After an Earthquake: The Canterbury New Zealand Experience”, *Australasian Journal of Regional Studies*, Vol. 18.1.

more than 20 post-doctoral researchers. The GSSI will be located in L'Aquila, and it will make the city even more identifiable as place of research in the world, generating strong synergies with the university.

### ***Advanced services will be demanded during the reconstruction of L'Aquila***

Some components of the manufacturing sector in L'Aquila are technologically very advanced and already express a demand of advanced services not currently offered. Advanced services are also necessary to increase the efficiency of the public administration and they will be demanded by the construction sector in the next decade during which the complex physical reconstruction of the city will be completed. Spin-offs from the university and also from the already existing enterprises should find an ideal context in which to flourish in the next years in L'Aquila. These opportunities also relate to the issues discussed in the regional innovation strategy.

Taken together, these local demand challenges in L'Aquila, the local environmental context, and the “creative cities” agenda that can be driven (see below) – mean that L'Aquila and the wider Abruzzo region can become an ideal place to run small and innovative firms in the field of advanced services. By meeting these challenging local demands, firms operating in the advanced service sector in Abruzzo will also be helped to compete at national and international level. In this case the proximity of Rome with its potential market may constitute an opportunity more than a threat.

## **L'Aquila as a “smart city”**

### ***L'Aquila can define a smart city agenda to guide its redevelopment***

There is a large gap between the actual and potential technological organisation of cities in OECD countries, as a vast array of new technologies is currently only marginally applied. The introduction of new available technologies would radically change *i)* the energy efficiency and environmental sustainability of the city; *ii)* the provision of private and public services; *iii)* the learning potential of individuals and organisations. The smart city concept emphasises the possible inter-relationships between new technologies and new systems of activities, organisation and governance. These can be identified, harnessed, and fostered in beneficial ways for social progress (Box 6.2).

There is no single template for a smart city and different localities are experimenting with different approaches. In each locality, the smart city challenge is to identify the appropriate social, economic and environmental priorities which the local smart city agenda is designed to respond to, and to identify the best ways to achieve the desired outcomes. The process of policy-prioritisation necessarily involves processes of deliberation between all interested local stakeholders, and such local and bottom-up approaches mean that a smart city vision cannot be imposed from outside.

A widespread and strong sense of ownership by the local community is essential for any smart city programme to be sustainable and successful. At the same time, partnerships among different cities and different actors can be effective for learning and pilot actions can act as catalysts for innovation, as envisaged in recent programmes launched by the European Commission and the Italian Government (Box 6.3).

### ***Implementing a smart city agenda, L'Aquila could promote demonstration effects for other cities***

L'Aquila could then aim at becoming a laboratory of innovation and promote demonstration effects for the region and other cities:

- to configure new energy and sustainable environmental management systems;

### Box 6.2. The “smart city” concept

The concepts of “smart cities” has arisen over the last two decades in different parts of the world due to the increasing awareness of the role that the application of knowledge and technology, via innovation, creativity and R&D, all play in the modern economy. In some cases the “smart city” or “intelligent city” concept is defined in terms of “knowledge-intensive cities” or “creative cities”, but essentially these labels all refer to the same broad agenda. Knowledge-intensive cities and smart creative cities are regarded as being both the strategic vehicles for today’s global competition and the major economic drivers of the modern global economy (Van Geenhuizen and Nijkamp, 2012). At the same time, the smart city concept has also emerged as one way of responding to the competitive and environmental challenges associated with modern globalisation.

The major theme embodied in the smart city concept is the idea that new technologies and systems can be deployed in novel ways in order to simultaneously improve various broad dimensions of social progress, namely:

- to improve the competitiveness and underlying resilience of the city;
- to improve the environmentally determined (natural and built) quality of the life of the citizens;
- to improve the well-being and health of the citizens;
- to improve the governance and institutional fabric of the city.

The smart city approach is based on the argument that in today’s global economy, the competitiveness and performance of a locality, and also the quality of life and well-being of the citizens, are increasingly related to the “soft” infrastructure of the community; namely the quality of the knowledge available to citizens and the ways in which this knowledge is used and deployed by the community. The emphasis here is therefore very much on the role of soft infrastructure matters such as social systems, institutional and governance systems, and the ability of such systems to foster local innovation and creativity by in part building on new hard technology-based infrastructure opportunities and by doing so in ways that recognise opportunities and constraints presented by the physical and biological environment.

The smart city concept does not imply that “hard” infrastructures such as road, commercial land assets, digital and energy networks are not important. On the contrary, the smart city approach recognises that these “hard” assets are absolutely necessary and promotes the search for novel ways of deploying such technologies. At the same time, however, investments in hard infrastructure or new technologies are not regarded as being in any way sufficient to ensure growth and development. The reason is that in the modern economy, finding ways to ensure that both hard and soft assets are as complementary as possible to each other is the essential challenge, and the shift in the global economy implies that increasingly it is the soft assets rather than the hard assets that play the dominant role in the search for such complementarities. In essence, building new physical infrastructure or investing in new technologies does not drive growth and development. Rather, the smart city approach emphasises that maximising the links and complementarities between soft and hard assets, and doing so primarily by focusing on the soft infrastructure challenges, is the best way to ensure a locality achieves its maximum development potential.

In the early descriptions of smart cities much of the discussions tended to focus almost exclusively on technological, digital and advanced scientific possibilities. Over recent years, however, it has become very apparent that a successful smart city agenda requires a much more holistic approach involving social, institutional and territorial considerations.

*Source:* OECD, based on Van Geenhuizen, M. and P. Nijkamp (2012), *Creative Knowledge Cities: Myths, Vision and Realities*, Edward Elgar, Cheltenham.

- to establish information technologies to improve the delivery of health services and social engagement to the population, particularly for the elderly; and
- to set-up information and communication technologies to improve information flow in the city.

### Box 6.3. Smart cities and communities: European Commission and national calls for proposals

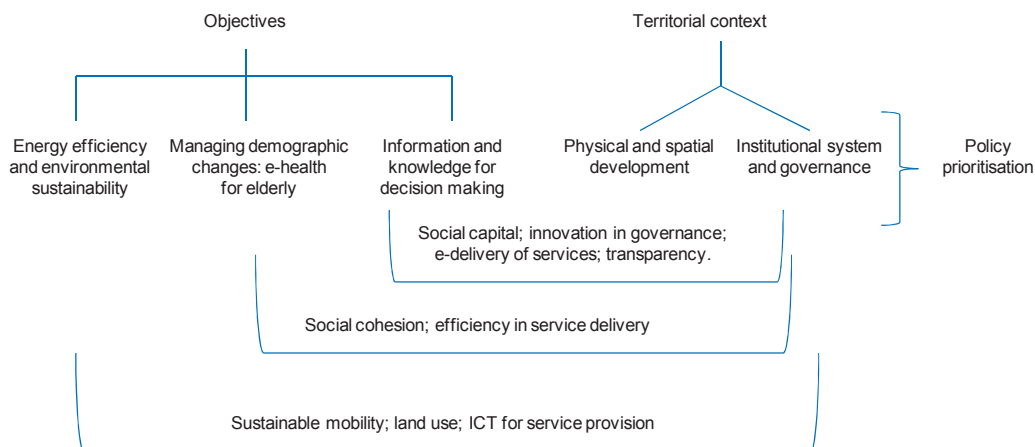
The European Commission recently launched the Smart Cities and Communities European Innovation Partnership project. The partnership proposes to pool resources to support the demonstration of energy, transport and information and communication technologies (ICT) in urban areas. According to this project, industries are invited to work together with cities to combine their technologies to address cities' needs. This will enable innovative, integrated and efficient technologies to roll out and enter the market more easily, while placing cities at the centre of innovation. The EU will provide funding for the awarded partnership through yearly calls for proposals, starting with an estimated EUR 365 million in 2013.

The Italian Ministry of Research and Education launched a national call for proposals for smart city projects in 16 thematic fields that include also social innovation. All Italian regions could participate with projects at the geographical scale of municipalities and metropolitan areas. The funds allocated for the rewarded proposals are EUR 655 million.

Two proposals from the Abruzzo region were approved for funding: the first one, VITALE (VisiTing Abruzzo: an intelLigent Experience), aims at developing an integrated and interactive platform for tourists and service providers in the cultural and heritage industry. The project involves the University of L'Aquila, the National Research Council (Institute for Construction Technologies), and three firms (Thales Alenia Space, Technolabs and Itaco Systems) for a total cost of EUR 16 million. The second proposal, Smart Aging, aims at improving the information systems of the National Health System, using extensively tele-medicine techniques and building databases on risk parameters for the ageing population. The project involves the Abruzzo region, the University of Chieti, the National Research Council (Institute of Translational Pharmacology), and a group of firms (Beep Innovation Srl, Oncoxx, Tbs It Telematic & Biomedical Service) with a total cost of EUR 23 million.

Source: European Commission Energy, [http://ec.europa.eu/energy/technology/initiatives/smart\\_cities\\_en.htm](http://ec.europa.eu/energy/technology/initiatives/smart_cities_en.htm) and Italian Ministry for Education, University and Research, [www.istruzione.it/web/ricerca/smart-cities-and-communities-and-social-innovation](http://www.istruzione.it/web/ricerca/smart-cities-and-communities-and-social-innovation).

Figure 6.2. Objectives for a smart city agenda in L'Aquila



Before detailing the objectives for the application of a smart city agenda in L'Aquila, three aspects need to be recalled:

- First, the three objectives for the smart city agenda in L'Aquila require a specification of the territorial context (Figure 6.2). For what relates the optimal spatial scale at which to apply the smart city concept, according to the discussion conducted in Chapter 1 on the relationship between the city and its territory, the smart city agenda refers to the entire functional urban area of L'Aquila.
- Second, smart systems generally imply new modes of co-operation, because such systems span traditional sectoral, institutional or jurisdictional arenas. The design and implementation of a smart city agenda requires governance innovation because successful smart city programmes combine technology-led innovation with institutional innovation across the private, public and civil society sectors. Such innovation will reshape the information flows in the city, responding more effectively than in the past to the community needs and demands.
- Finally, the objectives of energy efficiency, e-health delivery and information for decision making should not be considered as exhaustive but rather templates for a smart city agenda. An additional objective could include the redesign of the urban and peri-urban mobility through the reuse of the existing railway line that cuts through the city territory, the strengthening of the connections of the polycentric area of L'Aquila and the improvement of public sustainable transportation within the city and with the surrounding municipalities. The improvement of the sustainable mobility in the functional urban area of L'Aquila is also regarded by the participants at the World Café meeting as one of the five main development objectives for L'Aquila (see Box 3.2). L'Aquila is one of the largest municipalities in Italy in terms of land and, conversely, one of less densely populated. The spatial development of the past decades has taken place mainly outside the main centre along the east-west axis and a number of small municipalities contiguous to L'Aquila generate additional mobility in the territory of workers and students. The projects implemented in the years after the earthquake, included the new housing settlements, have not reduced the degree of dispersion of the city. As a consequence mobility has always been a key issue to address for L'Aquila. As the reconstruction proceeds L'Aquila should address the mobility issue within the smart city agenda, stressing the importance of sustainable mobility and finding sources of inspiration in many European cities that have been confronted with the same issue.<sup>3</sup>

***The reconstruction of L'Aquila could be the occasion to implement a sustainable energy policy***

Recent developments in technology, business strategy and institutional behaviour are increasingly advocating moving away from centralised and line-based systems of provision of goods and services. Improvements in decentralised energy systems – from rooftop passive and active solar systems to small-scale wind turbines and biomass-based gas and electricity generation – all reduce the need to rely on centralised power generation and distribution. L'Aquila finds itself in a bifurcation point to decide the nature and modes of service provision to the community in the next decades. The city can either recreate the kinds of infrastructure system that was built and used over the past 50 years, or it can take full advantage of the technological improvements which have occurred since then and deploy new network systems, host underground high capacity fibre-optic cabling, utilise renewable energy sources and redesign buildings to increase energy efficiency. Such a shift would be a major step forward in ensuring the long-run

resilience of the city to future events. A more detailed discussion of issues is included in the Annex 6.A1.

Communication technology, in combination with sensors and controls can help fine-tune the use of energy and water to optimally meet instantaneous demands. Monitoring the system performance over time and space can then provide important information to make adaptive management decisions as needed. The Smart Ring project recently approved by the Municipality of L'Aquila to be carried out by ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) seems to point in this direction. The project, in its design phase, aims at building a “smart ring” of about 4 km around the historical centre of the city to include a system of energy-saving public lighting; the monitoring of traffic and air quality; a system of smart mobility based on a fleet of electric buses; smart building techniques based on remote sensing and applied to a number of buildings in the historical centre; and a “smart participation node”, conceived as an interactive platform to facilitate communication between citizens and local policy makers. Similar projects could aim at finding a solution to produce cheap sustainable energy and provide business with a series of ancillary services related to energy, transportation, and communication.

L'Aquila could aim to become a carbon-neutral city in the next decades. The aim would be to achieve, as far as possible, the reliance on local sources of renewable energy, and using systems implemented by the local community explicitly designed to capitalise on the local assets and resources, in ways which also foster and provide for the local community.

An agenda for L'Aquila to develop smart energy, water, communication and other infrastructure systems would not only respond to meet the environmental sustainability needs of current and future generations but would also generate unique and growing local business advantages. For this to happen a range of innovative activities across sectors are required, including but not limited to:

- Improved collaboration between the local universities and the private sector in order to incubate new businesses and scale up technologies.
- Innovations in government and financial institutions to create an investment-friendly environment that encourages innovation.
- The branding of the region as an innovator of smart development strategies, and an effective outreach communication of local activities to other cities and regions both nationally and internationally. In particular, the partnering of L'Aquila and Abruzzo with other cities and regions already embracing smart development concepts is important.

Reliable, cheap and adequate supplies of energy can favour business activities. Renewable sources of energy such as wind solar and biomass have significantly increased their cost-effectiveness. Recent OECD work demonstrates the importance of tailoring renewable energy deployments to the potential and characteristics of the territory (OECD, 2012a). Therefore, some institutional innovations may be required to give access to the energy resources or changes in tax law or in permitting processes to improve the link between renewable energy deployment and the local economy.

Securing and sustaining successes requires the development of strong linkages of innovative activities in one sector with the other activities across the rest of the local economy, and also the fostering of substantial local knowledge spillovers to other parts of

the economy. Public and private innovations must be aligned and stimulated via partnership arrangements. Moreover, research institutions and human capital resources located in L'Aquila could be connected with international networks researching on specific aspects related to biomass development as well as other sources of renewable energy. The successful local embedding of the new technologies and practices comes when the local and regional economy increasingly becomes oriented around those innovations by providing essential services in their support, be they variously in the form of: the educating and training of the workforce; the establishing of hubs in supply chains; the developing of new incentive systems and institutional arrangements; or the providing of the awareness and marketing of smart approaches in the region and beyond.

The deployment of these systems can reduce the vulnerability of the region to exogenous shocks, both because these types of systems are more readily replaced and brought back online than traditional centralised systems and because they can generate skilled local employment because the design, deployment and ongoing management and maintenance of these systems relies heavily on the local skills acquired by learning-by-implementing.

***Information technologies could be applied to improve the delivery of health services and social engagement of the elderly***

New technologies are being developed in many parts of the world which are aimed at improving the quality of the delivery of health services to the population, and in particular to older citizens. These technologies, which comprise interactive communication systems combined with domestic sensor systems can be deployed to respond to the challenges of mobility, heating and cooling, health care provision, social care and informal family support systems, amongst others. See Annex 6.A2 for details.

These types of technologies are typically based on combinations of tablet-based access points, sensor technologies, interactive Internet-based systems, inter-personal facilitator roles, and electronic systems-management and co-ordination roles. As a group, these types of technologies can be considered as “smart care” systems. These interactive and sensor-based systems can be combined with new decentralised and local network-based energy systems in order to improve the efficiency of domestic energy use, as discussed above, and also such systems can be developed to facilitate both domestic mobility and also health care provision at the level of the individual household.

For households facing the challenges of ageing, disability and limited mobility, sensor-based systems can offer new opportunities not only for better utilising redesigned living spaces, but also for increasing the support possibilities available to formal and informal caregivers.

In the local system of L'Aquila, characterised by small municipalities, spatially disperse and with high share of elderly population, the deployment of technologies to deliver health services and to foster social engagement for an ageing society can be crucial to maintain and improve the quality of health services and contain costs. L'Aquila<sup>4</sup> could provide a demonstration effect to reinforce the achievements obtained by the Abruzzo region in the Integrated Home Healthcare for Elderly Plan (*Assistenza Domiciliare Integrata*) in the Regional Development Programme 2007-2013 (Box 6.4). Possible actions could include: integrating domestic and home-based sensor systems for managing and facilitating energy, mobility and health-related matters with the customised web-based platforms for elderly and disabled people; training staff skilled at helping older age gain experience with interactive information technologies.



**Box 6.4. Targeting final objectives of public services provision:  
The integrated home healthcare in Abruzzo**

The current regional development policy in Italy addresses explicitly the need to improve the quality and availability of public services in southern regions as a way to improve people's well-being and create a favourable environment for competitiveness. It includes a performance-based mechanism for regions and the Ministry of Education linked to the achievement of quantified targets for the provision of public services, measured through 11 indicators in the period 2008-13. One of the targets considered was to increase the number of elderly treated in the integrated home health care (*Assistenza domiciliare integrata* – ADI). Although serious implementation challenges hindered in the last two years the full functioning of the financial rewarding mechanism (EUR 3 billion were foreseen to the achievement of targets in 2013 and a partial assignment in 2010 on the basis of the progress made), the system is producing important effects in terms of supply and quality of public services, at least in some regions and in some policy areas. The mechanism is currently being revamped, with some adjustments strengthening the performance-based approach in programming and implementation and the public access to monitoring data and reports, while giving less emphasis on the financial reward. Moreover, it is reinforced by a parallel Government initiative launched at the end of 2011 for southern regions, the Action Plan for Cohesion, that with a similar strong result-oriented approach, invests additional resources in two of the policy areas already tackled by the performance-based mechanism, Education and Child and Elderly Care.

The last available value of the ADI indicator (4.9% of elderly people in Abruzzo treated in the integrated home health care in 2010), puts the Abruzzo ahead of the southern regions and in line with the average value of the centre-northern regions. Differences among the three Territorial Health Agencies in the region are also limited.

These positive results reflect also the investments made through the Regional Social Plan approved in 2007 and the subsequent Local Plans (*Piani Locali per la non autosufficienza*, PLNA). Investments in tele-assistance, creation of integrated databases on patients and at-risk population, training of personnel for social and health care already planned and partially carried out in the Regional Social and Local Plans could be reinforced by a decisive use of smart technologies to assist elderly people at home.

*Source:* Ministry of Economic Development, Department for Cohesion Policy (2012), *Targeting Objectives of Public Service Provision*, [www.dps.tesoro.it/obiettivi\\_servizio/eng/ml.asp](http://www.dps.tesoro.it/obiettivi_servizio/eng/ml.asp).

***Information and communication technologies could also be applied to manage the flow of information necessary to the city's services***

The third pillar of a smart city agenda for L'Aquila would include using information and communication technologies to manage in an integrated way the flow of information necessary to the city services. Cities around the world have started developing sensor-based systems connected to a central platform for interactive monitoring and management of mobility, domestic and business energy use and other services to improve the efficiency of the city system (Box 6.5).

Such interactive electronic systems could also be used to provide co-ordinated information on social and health services, or tourism and cultural activities. In many countries these systems are being piloted via collaboration between universities, service providers and ICT firms. The local university presence in L'Aquila could therefore provide opportunities in terms of the technical support and technical management

requirements for tailoring these systems to the local context. Indeed, there are many examples whereby the formation of community-university partnerships has aided the implementation and adoption of these systems. Pilot programmes emphasise the interactive feedback processes between the systems-providers, intermediaries and systems-users (Rantz et al., 2005).

#### Box 6.5. The smart city approach in Santander (Spain)

Santander, a city of around 200 000 people on the northern coast of Spain, has implemented an integrated ICT system in the whole urban area through sensors connected to a central platform. The *Realidad aumentada* project already allows users to know the location of street parking spaces, when the next bus is coming, information regarding stores and public services, through their smart phones and informative panels around the city buildings. A second project *Pulso de la ciudad*, still in its piloting phase, will allow citizens to send information on the city to public officials (for example, of incidents, low quality of services, etc.) who will be able to intervene more promptly. According to the city mayor, the latter project will also get citizens closer to policy and will increase accountability of city officials.

*Source:* Mayor of Santander (2012), keynote presentation at the Smart City exhibition, [www.smartcityexhibition.it/#/questions](http://www.smartcityexhibition.it/#/questions).

This approach to the smart city concept is an opportunity to improve quality of life in cities, first by co-ordinating in an efficient and sustainable way all the services provided by the public administration to citizens, secondly by creating new business models and employment, finally by improving the quality of services delivered through the interaction with the users.

Universities can take the responsibility of being the focal point of innovation and acting as clearing-house. Such a focal point will become the repository of knowledge on all aspects related to development of smart systems including new products and processes; new services new designs and blueprints. The existence of such a repository allows the recording of the actual experiences of actors and investors in a transparent manner. The use of Geographical Information Systems and remote sensing techniques should be maximised and adapted so that evidence of progress on a range of different energy, environmental and social fronts can be communicated visually to the community. This helps to foster both knowledge and trust across all sections of society, allows potential newcomers to become better organised in their attempts to compete with incumbents in the realm of infrastructure development and implementation, and lets citizens improve the delivery of services through interaction and feedback.

Interactive sensor-based systems on city services can help increasing trust in institutions and building social capital (Blit-Cohen and Litwin, 2004). However, perceptions regarding the potential usefulness of new technological systems are very important in motivating access. Therefore a participatory approach, rather than a technology or institutional one, is recommended for the deployment of these new technologies.

## L'Aquila as a creative city

### *Creative occupations, which employ knowledge-related activities, produce positive returns to the local economy*

Increasingly competition in the modern global economy is shifting in favour of knowledge-related activities undertaken by knowledge-workers, and the importance of this shift is particularly important for the future of regions in all advanced economies. One important grouping of these knowledge-related activities are the so-called creative activities which are undertaken by one key cohort of the “knowledge-workers”, namely the “creative class” (Florida, 2002). While it is difficult to precisely define “creative occupations” and creative-type occupations can be found almost in any industry (Comunian et al., 2010), they are most often linked to particular sectors such as: design; media and communications; architecture; art, music and theatre; textiles, fashion and clothing; CAD-CAM software development; advanced engineering solutions; marketing and branding; leisure and food; galleries, heritage and culture. The work by Florida and his group suggests that young creative knowledge workers between the ages of 25 and 40 account for up to 80% of the value added in the US economy.

However, as Florida (2002) himself makes clear, it is not the sector or the industry which counts, but rather the knowledge context of the activities and the flexibility and variety of ways in which the knowledge can be applied (Florida, 2002). The key feature of creative activities is the ability to break the routines and redefine the system. The creative economy “is an evolving concept based on creative assets potentially generating economic growth and development” (United Nations, 2008a).

### *A small city like L'Aquila can become a creative city*

An agenda for L'Aquila to be a creative city relies on three aspects. First, the possibility for young and creative entrepreneurs to be part of a city which is quite literally rebuilding its artistic, architectural and cultural heritage, offers L'Aquila a real opportunity to foster youth creative activities as a crucial part of its development agenda. There is much evidence to suggest that creative workers tend to bestow greater benefits on the local economy beyond their wages, as their presence tends to increase the artistic and design content of the locality and thus its desirability.

Second, the provision of appropriate high-quality and relatively low-cost facilities specially customised for young people's creative activities can be an attractive pull in L'Aquila both to creative workers from other locations (while still allowing them to work within an easy contact distance with Rome) and will also encourage creative entrepreneurial activity on the part of local residents.

Third, once rebuilt, L'Aquila will be able to offer a combination of easily accessible urban and natural amenity goods, which can make the city attractive to creative workers despite possible lower wages than those offered in larger cities.

Given that L'Aquila is a small city it might appear initially to some observers that aiming to redevelop L'Aquila as a place for creative activities and creative workers is a far-fetched and unrealistic aim. The argument here is that the wages and market access offered by small and peripheral cities are lower than in other larger and more central locations. However, there are other strong arguments that such an approach can be realistic even in a small city, as long as the city aims at attracting highly educated and creative workers based on the quality of the local lifestyle offering.

Much of the literature on the subject of creative workers suggests that while creative workers do indeed command a higher wage premium than other workers, creative people (especially in more artistic professions) often do not earn equivalent wages to their peer groups - defined purely in terms of their formal education levels (Comunian et al., 2010 and 2011, Abreu et al., 2012). One possible explanation is that they accept lower wages in return for being able to enjoy the creative activities which are central to their occupations and/or in return for a higher quality of the physical, natural and social environment for both work and leisure (Comunian et al., 2010; Gabe, 2011).

Amenity considerations appear to play an ever-increasing role in people's decisions regarding the location of their work and living (Storper and Kemeny, 2012).<sup>5</sup> Small cities are not able to offer the scale or diversity of social amenities and social values that large cities are able to offer and which are regarded as being so important for the growth of creative activities (Florida, 2002). However, small and medium-sized cities, and in particular historical cities in Italy, display high quality-of-life, good quality of the environment, civic trust and social capital. Therefore, if properly configured, many small cities should be able to develop a local creative environment on the basis of liveability, sustainability, congeniality, and social capital (Kresl, 2012). This alternative approach is important because it offers a way for small and medium-sized cities to envision a local creative economy, responding to different people's preferences.

### ***Turning L'Aquila into a creative city: Provision of workspace and facilities***

In order to ensure a viable commercial offering to creative investors and entrepreneurs, the rebuilding of L'Aquila must involve the provision of appropriate high-quality and (relatively) low-cost workspaces and facilities which are specially customised for young people's creative activities. There are many examples where the rehabilitation of old buildings or old neighbourhoods provides exactly the ideal setting for fostering creative activities (Florida, 2002; Currid, 2007; Cooke, 2008). While in small cities offering commercially viable spaces for creative workers requires primarily a more efficient utilisation of existing assets (Kresl, 2012), in the case of L'Aquila old buildings will necessarily co-exist alongside newer buildings, so as to ensure enough price variation in local workspaces.

The new creative workspaces must be offered on rental terms which are attractive to risky start-ups. Competitive market rents which are typical of commercial activities will be prohibitive for young people's creative entrepreneurial ventures in their start-up phases. Therefore programmes designed to reduce these risks by rent-free or rent-subsidised periods, rent-deferred options, or rent-sharing schemes, are essential. This is particularly important in the case of L'Aquila, because the types of creative activities which could be potentially attractive to a small location such as L'Aquila are those which rely less on rapid knowledge changes mediated primarily via constant face-to-face interactions but instead require longer initial periods of consideration, trial and testing, and relatively less frequent face-to-face interactions with the major market centres (McCann, 2007).

In order to avoid scattering and fragmentation, one possible way forward here is via the establishment of a "creative quarters" or several "creative neighbourhood" areas, where groups of buildings, streets or squares are prioritised for the provision of creative activities. This would also enable the clustering of different types of creative activities in the same neighbourhood, a phenomenon which appears to be essential for the success of many creative activities (Gabe, 2011).

Next to spaces for creative activities, L'Aquila has the opportunity to develop networking systems to support young people's entrepreneurship systems tailored to the local context on the basis of its heritage, cultural and research assets.

However, fostering the youth creative economy in L'Aquila can only be successful if the provision of such workspaces is integrated within the strategy of building a "modern" city. Indeed, these integrated themes of redesign and development for sustainability should all be regarded as central to the vision of L'Aquila 2030. Any bids in response to L'Aquila architectural competitions aimed at transforming buildings for modern working and living while preserving their heritage value, should all be explicitly structured around finding new designs-solutions for modern working and living in a historically rich context which also aims to bolster its cultural and natural assets. Similarly, the submission by L'Aquila itself of a competitive bid for programmes such as the 2019 European Capital of Culture must be underpinned by a whole programme of ongoing actions and interventions, all of which build on, and knit together, these various themes.<sup>6</sup>

### ***Turning L'Aquila into a creative city: The role of the university and other cultural institutions***

Improving the supply of local human capital is an essential element of any knowledge-driven development agenda. However, in terms of developing a creative city agenda, improving human capital through improved education is not enough. It is also essential to find ways to harness the creative energies of the human capital within the immediate locality of the smart city programme, by fostering the local public participation and social engagement of these same people. This is a difficult matter because more highly educated people with higher levels of human capital are also more geographically mobile (Faggian and McCann, 2009, Faggian et al., 2007), and therefore finding ways to ensure that they remain in the locality is a major challenge. In terms of economic development, there is already much evidence to suggest that nowadays many successful cities and regions are home to high levels of creative activities and high numbers of "creative workers" (Comunian and Faggian, 2011, Faggian et al., 2007). Highly educated and creative workers command a wage premium over other workers, largely because of their high skills levels and because of their ability to generate employment via entrepreneurship and the application of new ideas. Moreover, the wage premium for creative workers is greater in regions and localities with larger shares of creative workers (Gabe, 2011), implying that localised knowledge spill-overs and spill-acrosses (Stolarick and Florida, 2006) are an important feature of diversified clusters of creative workers. However, finding ways to attract creative people is difficult (Olfert and Partridge, 2011), as it is difficult to find ways to foster their local participation and social engagement. One key element in attracting and retaining human capital and highly creative individuals is by improving and upgrading the local environment for work, recreation and residence, and universities and higher education institutions can play an important role in this regard.

Universities can play a major role in driving local and regional economic development by connecting with the civil society, the private sector and other public sector organisations (OECD, 2007; European Commission, 2011). Indeed, the University of L'Aquila has already been pro-active by hosting meetings aimed at enhancing engagement between local and regional stakeholders on matters relating to the role of knowledge and research in driving the regional development agenda. In the case of knowledge-related activities, to foster activities in the creative arts, universities can partner with other local organisations and institutions to showcase local creative activities

and they can bring potential creative practitioners through educational programmes in creative and artistic subjects (Comunian and Faggian, 2011). However, it should not be forgotten that currently the University of L'Aquila focuses on technical and natural science fields. If its role in fostering the emergence of a creative city should become stronger and more effective, one should plan to reinforce the role of the departments of human studies. The *Accademia di Belle Arti di L'Aquila* (L'Aquila Academy of Art), which offers graduate and post graduate courses, is another institution that can foster creative activities and workers.

The vision of L'Aquila as a creative city is also warranted by the presence of the renowned music institutions such as *Conservatorio di Musica Alfredo Casella* (music conservatory), *Società aquilana dei concerti "B. Barattelli"* and others, and the theatrical tradition of the city.<sup>7</sup> It suffices to mention the *Teatro Stabile di L'Aquila* and the *Teatro Zeta* as two organisations producing cultural goods and exporting them nationally and internationally.

The teaming up of universities and other cultural institutions can also serve the rolling out of programmes of public exhibitions, to demonstrate and display innovations arising out of all of heritage, cultural and environmental actions undertaken in L'Aquila.

## L'Aquila as an open and inclusive city

### *New modes of governance need to be adopted to facilitate an open and inclusive agenda in L'Aquila*

This report strongly suggests building local development strategies on the vision stemming from community engagement. While community engagement is particularly important in post-disaster regions (see Chapter 3), cities around the world are seeking solutions to make the policy-making process more accountable and increase civic participation in decision making. Therefore, the agenda for an open and inclusive city of L'Aquila could be adapted also in other urban areas in Abruzzo to define a long-term development strategy.

In order for L'Aquila to become an open and inclusive city many individuals and institutions, and particularly the private sector and civil society organisations, will have to become newly engaged in the development process in order to complement the work of the existing institutions and leaders. New modes of governance will therefore need to be devised and adopted in order to facilitate the understanding of community needs, aspirations and capacity.

In the three years after the earthquake, civic participation in L'Aquila was very weak. While this can be common in post-disaster regions (see Chapter 3), in L'Aquila the situation was worsened by the lack of formal channels via which civil society could put forward proposals, which increased social fragmentation; the prolonged "extraordinary" governance of the reconstruction in addition has created a general sense of distrust in the recovery choices and perception of absence of democracy.

During the recent months, also with the involvement of the OECD-University of Groningen team the re-visioning of L'Aquila through civic participation has started (see results in Chapter 3). In 2012 the central government, through the Minister for Territorial Cohesion, has supported many actions to improve the transparency and communication of choices regarding the reconstruction and engaged the community to dialogue with the different institutions responsible for the recovery. Now L'Aquila should aim at becoming

an open and inclusive city by making public deliberation a regular component of its development strategy towards 2030.

***Public monitoring of social progress can help to make democratic deliberation a regular component of local policy making.***

A possible way to make deliberation a regular component of the development strategy, information and knowledge should be provided to orient policy making in L'Aquila. In similar post-disaster situations, such as New Orleans in the United States after Hurricane Katrina in 2005, the use of timely, accessible and relevant data has prompted policy actions and motivated citizens after the initial emergency phase. The establishment of information platforms that link different stakeholders and measure key outcomes of the regional redevelopment strategy has proven to be a relevant knowledge tool to allow citizens to understand whether a better course is being designed and implemented (Box 6.6). Participatory systems for monitoring societal progress are also essential to permit policy learning and to facilitate policy innovation. To be an effective tool for decision making, however, such systems should exist beyond the recovery period and become an institutional infrastructure of civic participation (Wilson, 2009).

**Box 6.6. Increased civic capacity to build resilience:  
The New Orleans Index (United States)**

The Greater New Orleans Community Data Center (GNOCDC), a local, independent, non-profit research organisation, served as a critical resource for monitoring the quality and pace of rebuilding after the 2005 Hurricane Katrina. GNOCDC, in partnership with Brookings, used fact-based analysis to help citizens, leaders, and opinion makers assess the progress, challenges, and impacts of the recovery effort through the regular publication of The Katrina Index (originally developed by the Brookings Institution, and later named The New Orleans Index). The Index tracked key indicators of social and economic recovery of the region using the most reliable data sets. The indicators in The Index were chosen based on input from local residents, and when published the limitations of each data set were clearly spelled out in plain language to ensure transparency. The accompanying analysis was impartial presenting both good and bad news, and the effort was entirely privately funded to ensure that findings were not influenced by government officials responsible for the rebuilding. The data and analysis was disseminated not only via the Internet but democratised through broadcast media for maximum reach. Finally, GNOCDC and Brookings directly engaged key citizen leaders and policy makers in evaluating the data and its implications.

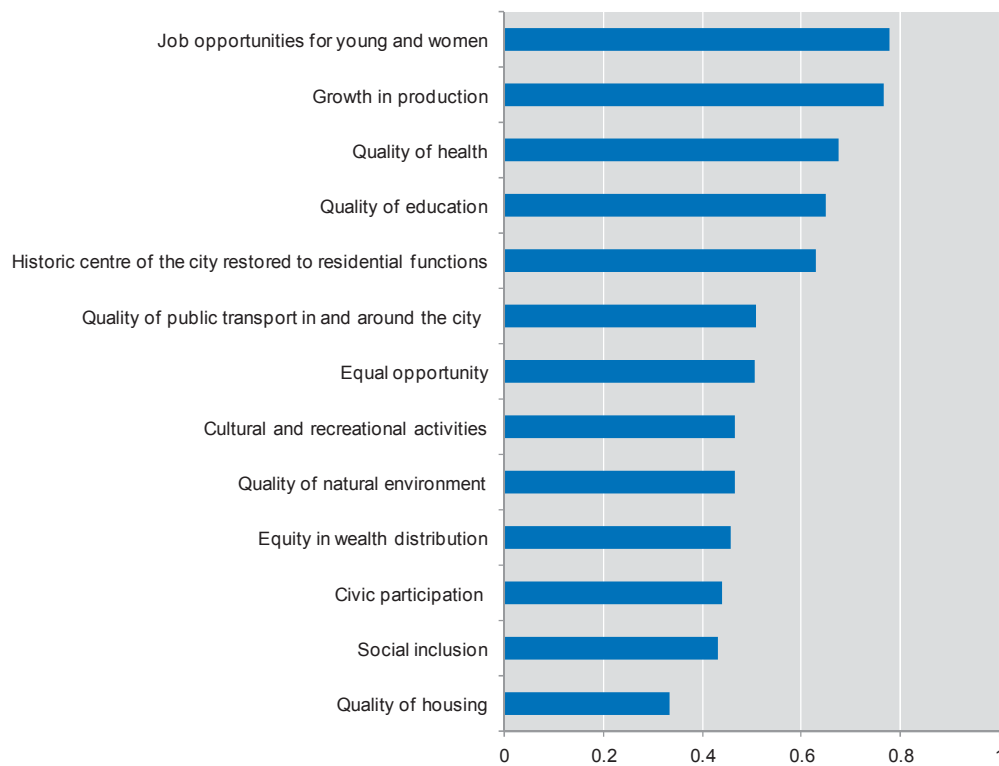
The Index's value as an objective, regularly-updated, one-stop-shop of recovery indicators made it the go-to-resource for tracking rebuilding. Federal agencies, staff of the Louisiana Recovery Authority, non-profit groups at the local, state, and national levels, media, and citizens across the region all relied on The New Orleans Index in assessing progress to date and determining next steps for furthering recovery. It was downloaded more than 200 000 times and received over 2 000 media mentions. The New Orleans Index occupied a crucial space in the information landscape, providing reliable and timely information to answer crucial questions.

*Source:* Greater New Orleans Community Data Center, [www.gnocdc.org/](http://www.gnocdc.org/).

A regional information platform should include explicit indicators to monitor progress towards agreed results of a more prosperous, inclusive and sustainable region. Many local authorities in OECD and non-OECD countries have set out initiatives designed to improve the economy and quality of life of their communities, by measuring the outcomes of policies expressed in terms of people's well-being (OECD, 2012b). The OECD-hosted Global Project on Measuring the Progress of Society has acted as catalyst for the international debate on developing better measures of well-being as a means to enhance the design and the consistency of policies that improve people's lives. A shift towards a more result-oriented approach by making use of outcome indicators to measure the impact of policies is also foreseen in the EU Regulations for the 2014-2020 European Cohesion Policy (Barca and McCain, 2011). In Italy, such a shift has been already introduced in the Action Plan for Cohesion (*Piano di Azione Coesione*) that revises the current regional programmes to accelerate the expenditure of EU Cohesion Policy 2007-2013 funds ([www.coesioneterritoriale.gov.it/fondi/piano-di-azione-coesione/](http://www.coesioneterritoriale.gov.it/fondi/piano-di-azione-coesione/)). The Action Plan for Cohesion could provide a preliminary indication of the key outcomes to be monitored in Abruzzo. Another possible indication of domains important to citizens of L'Aquila has come from the respondents to the OECD-University of Groningen Community Survey who have chosen the economic domains (job and productivity) followed by the quality of health and education as the most important themes to monitor for the redevelopment of L'Aquila (Figure 6.3).

Figure 6.3. **Domains of most importance to guide development policies for L'Aquila**

% of responses "very important" to each domain



Source: OECD-University of Groningen Community Survey (June 2012).



### ***L'Aquila could develop a well-being index to monitor progress and recovery achievements***

Existing initiatives in Abruzzo, such as the observatory on the territorial transformation of the earthquake area (*Osservatorio sulle trasformazioni territoriali nelle aree colpite dal sisma*)<sup>8</sup> which already collects and combines statistical information from many sources at different territorial levels, could become the repository for a public monitoring of key outcomes to support decision making in Abruzzo. Through geographic information systems, these indicators could be visualised at the different geographic scales of interest and evaluation of the results could accompany the release and public discussion of the values taken by the indicators.

The use of modern project evaluation techniques combined with the use of results or outcome indicators allow for the tracking and communication of societal progress. Publicity and public engagement underpins the building up of trust between the citizens and all public actors. Publicity and transparency also helps to establish realistic expectations on the part of the community regarding the timelines for development. In the case of new infrastructure systems, there are rarely any quick-fixes, so the establishment of realistic expectations regarding the likely timetables over which the benefits of new infrastructure innovations will become evident is very important.

## **Conclusions and main recommendations**

One of the key insights of all smart city or knowledge city-type agendas is that solving the governance challenges raised by the deployment of new smart technologies is often a more difficult challenge than solving the technical problems of such systems. The challenges associated with the deployment of smart technologies tend to be primarily institutional and behavioural challenges and require new forms of communication, co-ordination and co-operation. Consequently, a major benefit of initiating and driving the smart city agenda or a regional innovation strategy is that it fosters governance innovation because successful smart city or regional innovation programmes combine technology-led innovation with institutional innovation across the private, public and civil society sectors. Governance innovation goes hand-in-hand with technology-driven innovation, and identifying novel governance solutions which are appropriate and suitable for the optimal deployment of the technologies, which respond effectively to the local citizens' needs and demands, and are appropriate for the local territorial context, is the central smart city challenge and opportunity.

The recent experience in L'Aquila already confirms this, in that discussions are now underway in a variety of local and regional institutional contexts and settings regarding exactly these issues. Citizens, decision makers and policy makers are actively discussing and exploring different development roles and options. The formulation process of this report, which lasted around 18 months, was itself part of this deliberation process, as a result of the choice of the OECD-University of Groningen team to promote, and to become involved in the process of building a vision for L'Aquila as an open city. As a result of this approach some of the proposals launched by the team were intensely discussed in the local public debate, some were reformulated, in some cases they were disregarded, while in other cases they found support from the local community.

Although it was perceived with some suspicion at the beginning, the proposal of L'Aquila as a smart city has found growing interest in the local community. This is also as a consequence of the fact that to turn L'Aquila into a smart city was also a project

supported by other important Italian institutions, such as ENEA. A further practical step forward was recently taken by the Mayor of L'Aquila who appointed in April 2012 a Municipal Counsellor for Smart City. Moreover, two projects from the Abruzzo region were awarded in the national call for Smart Cities and Communities by the Ministry of Education, University and Research. Similarly, building on the strong tradition of the city in terms of production of knowledge goods and cultural goods the OECD-University of Groningen team suggested at an early stage to consider the possibility for L'Aquila to submit its candidacy as the 2019 European Capital of Culture. This idea had also been suggested by various other interested parties. Finally, the Minister for Territorial Cohesion adopted the proposal of building an open data portal on the implementation of regional policy investments over 2007-2013 to motivate democratic monitoring of results and increase transparency and accountability of public administrations. The *OpenCoesione* Portal has already recorded 40 000 page views over few months. The initiative was acknowledged by the members of the European Parliament as an EU best practice, as it allows all and any citizens to have access to user-friendly information through simple research fields, interactive maps for selection of interventions implementation sites (regions, provinces, municipalities), and intuitive classifications of interventions.<sup>9</sup> The experience of many regions across the OECD and beyond suggests that in the end, as with all deliberative processes, as well as the intellectual research inputs, the value of this report is also as much about the direct involvement in the public debate during the preparation of the report itself. An informed public debate changes the preferences and values of participants and makes it possible for the local community to converge towards policy options and start implementing them long before an overall vision has been developed. The OECD has long emphasised the critical importance of institutional engagement, monitoring of implementation progress, and community participation as being essential elements of a modern regional development policy paradigm, and the specific insights arising from this particular case hold many lessons for other OECD regions facing severe economic and structural challenges.

The main recommendations for the design of a development strategy for L'Aquila are:

- turn L'Aquila into a knowledge-driven city, by raising the share of residential students, focusing on research excellence, and strengthening the links among research and cultural centres and local firms;
- enhance the city's attractiveness by promoting key innovative services for energy efficiency, sustainable mobility, delivery of health services and information sharing;
- use the reconstruction of the historical centre of L'Aquila to foster cultural life and commercial offering to creative investors and entrepreneurs (art, design, media, marketing, advanced engineering solutions, restoration, etc.); and
- develop a participative well-being index to monitor progress of society and recovery achievements.

## Notes

1. See for example the aspects for the simplification of procedures for reconstruction (*Ordinanza* by the Italian prime minister on 23 March 2012), the measures to move out of the emergency phase in the governance of reconstruction (*Emendamenti* by the Minister for Territorial Cohesion on 10 July 2012) and the agreement between central, regional and local governments to set up an office for reconstruction within the Municipality of L'Aquila and an officer for the reconstruction of the other municipalities affected by the earthquake, foreseeing 300 employed with expertises ranging from regulatory, architectural, planning, ICT, etc. (*Intesa* on 9 August 2012, [www.coesioneterritoriale.gov.it/progetti/ricostruzioneaquila/](http://www.coesioneterritoriale.gov.it/progetti/ricostruzioneaquila/)).
2. See [www.comune.laquila.gov.it/pagina196\\_il-piano-strategico.html](http://www.comune.laquila.gov.it/pagina196_il-piano-strategico.html).
3. The improvement of the sustainable mobility in the functional urban area was also one of the five main development objectives identified by the participants at the World Café meeting (Box 3.2).
4. In this case it is the area comprised in the territorial health agency of L'Aquila (*Azienda Sanitaria Locale Avezzano-Sulmona-L'Aquila*).
5. Evidence suggests that in monetary terms, up to 40% of the inter-regional residential patterns of high skill workers are due to quality-of-life and amenity issues while 60% is wage-related (Shapiro, 2006).
6. The city of L'Aquila has prepared its submission to the 2019 European Capital of Culture, [www.comune.laquila.gov.it/pagina369\\_laquila-capitale-europea-della-cultura.html](http://www.comune.laquila.gov.it/pagina369_laquila-capitale-europea-della-cultura.html).
7. A new “temporary” auditorium was recently designed by the Renzo Piano Building Workshop and inaugurated with a concert directed by Claudio Abbado.
8. Established by CRESA – Regional Centre for Socio-Economic Analysis – in partnership with the University of L'Aquila and other local institutions.
9. For details see [www.opencoesione.gov.it](http://www.opencoesione.gov.it).

## *Bibliography*

- Abreu, M., A. Faggian, R. Comunian and P. McCann (2012), “Life is Short and Art is Long: The Persistent Wage Gap between Bohemian and non-Bohemian Graduates”, *Annals of Regional Science*, Vol. 49.
- Alexandri, E. and P. Jones (2008), “Temperature Decreases in an Urban Canyon Due to Green Walls and Green Roofs in Diverse Climates”, *Building and Environment*, Vol. 43, No. 4.
- Alexy, E.M. (2000), “Computers and Caregiving: Reaching Out and Redesigning Interventions for Homebound Older Adults and Caregivers”, *Holistic Nursing Practice*, Vol. 14, No. 4.
- Baker, P.M.A., J.C. Bricout, N.W. Moon, B. Coughlan and J. Pater (2012), “Communities of Participation: A Comparison of Disability and Aging Identified Groups on Facebook and LinkedIn”, *Telematics and Informatics*, Vol. 30.
- Barbier, E.B. (2011), *Scarcity and Frontiers: How Economies have Developed Through Natural Resource Exploitation*, Cambridge University Press, New York.
- Barbier, E.B. (2012), “Scarcity, Frontiers and Development”, *The Geographical Journal*, Vol. 178, No. 2.
- Barca, F. and P. McCain (2011), Outcome Indicators and Targets: Towards a Performance Oriented EU Cohesion Policy, *EU Directorate for Regional Policy*.
- Barrett, F.A. (2009), “Connecting Older Adults to Quality Health Information on the Internet: A Selective Annotated Bibliography”, *Reference Services Review*, Vol. 37, No. 4.
- Bickmore, T.W., L. Caruso, K. Clough-Gorr and T. Heeren (2005), “It’s Just Like You Talk to a Friend’ Relational Agents for Older Adults”, *Interacting with Computers*, Vol. 17.
- Blazun, H., K. Saranto and S. Rissanen (2012), “Impact of Computer Training Courses on Reduction of Loneliness of Older People in Finland and Slovenia”, *Computers in Human Behavior*, Vol. 28.
- Blit-Cohen, E. and H. Litwen (2004), Elder Participation in Cyberspace: A Qualitative Analysis of Israeli Retirees, *Journal of Aging Studies*, Vol. 18.
- Butera, F. (2009), “Towards the Renewable Built Environment”, in P. Droege (ed.), *Urban Energy Transition: From Fossil Fuels to Renewable Power*, Elsevier, Amsterdam.
- Carpenter, B.D. and S. Buday (2007), “Computer Use Among Older Adults in a Naturally Occurring Retirement Community”, *Computers in Human Behavior*, Vol. 23.

- Carter, D. (2009), “E-Government: Turning the Digital Divide into a Digital Divident in Manchester (UK)”, in H.S. Geyer, *International Handbook of Urban Policy: Volume 2: Issues in the Developed World*, Edward Elgar, Cheltenham.
- Chi-hung, Ng (2007), “Motivation Among Older Adults in Learning Computing Technologies: A Grounded Model”, *Educational Gerontology*, Vol. 34, No. 1.
- Chong, W.T., M.S. Naghavi, S.C. Poh, T.M.I. Mahlia and K.C. Pan (2012), “Techno-economic Analysis of a Wind-Solar Hybrid Renewable Energy System with Rainwater Collection Feature for Urban High-rise Application”, *Applied Energy*, Vol. 88.
- Chung, J.-E., N. Park, H. Wang, J. Fulk and M. McLaughlin (2010), “Age Differences in Perceptions of Online Community Participation Among Non-users: An Extension of the Technology Acceptance Model”, *Computers in Human Behavior*, Vol. 26.
- Comunian, C., A. Faggian and Q.C. Li (2010), “Unrewarded Careers in the Creative Class: The Strange Case of Bohemian Graduates”, *Papers in Regional Science*, Vol. 89, No. 2.
- Comunian, R. and A. Faggian (2011), “Higher Education and the Creative City”, in D.E. Andersson, A. Andersson and C. Mellander (eds.), *Handbook of Creative Cities*, Edward Elgar, Cheltenham.
- Cooke, P. (2008), “Culture, Clusters, Districts and Quarters: Some Reflections on the Scale Question”, in P. Cooke and L. Lazzeretti (eds.), *Creative Cities, Cultural Clusters and Local Economic Development*, Edward Elgar, Cheltenham.
- Cresci, M.K. and P.A. Jarosz (2010), “Bridging the Digital Divide for Urban Seniors: Community Partnership”, *Geriatric Nursing*, Vol. 31, No. 6.
- Currid, E. (2007), *The Warhol Economy*, Princeton University Press, Princeton.
- Dale, A. and J. Onyx (2005), *Social Capital and Sustainable Community Development*, UBC Press, Vancouver.
- Dalziel, P. and C. Saunders (2012), “Regional Development Before and After an Earthquake: The Canterbury New Zealand Experience”, *Australasian Journal of Regional Studies*, Vol. 18, No. 1.
- Department for Cohesion Policy, Ministry of Economic Development (2012), *Targeting Objectives of Public Service Provision*, [www.dps.tesoro.it/obiettivi\\_servizio/eng/ml.asp](http://www.dps.tesoro.it/obiettivi_servizio/eng/ml.asp).
- Dussault, J.M., L. Gosselin and T. Galstian (2012), “Integration of Smart Windows into Building Design for Reduction of Yearly Overall Energy Consumption and Peak Loads”, *Solar Energy*, in press.
- European Commission (2011), *Connecting Universities to Regional Growth: A Practical Guide*, S<sup>3</sup> Smart Specialisation Platform, IPTS Joint Research Centre, Seville.
- European Commission, DG Energy, [http://ec.europa.eu/energy/technology/initiatives/smart\\_cities\\_en.htm](http://ec.europa.eu/energy/technology/initiatives/smart_cities_en.htm).
- Faggian, A. and P. McCann (2009), “Human Capital, Graduate Migration and Innovation in British Regions”, *Cambridge Journal of Economics*, Vol. 33.

- Faggian, A., P. McCann and S. Sheppard (2007), “Some Evidence that Women are More Mobile than Men: Gender Differences in UK Graduate Migration Behavior”, *Journal of Regional Science*, Vol. 47, No. 3.
- Farmer, J., C. Hill and S.-A. Munoz (eds.) (2012), *Community Co-Production*, Edward Elgar, Cheltenham.
- Florida, R. (2002), *The Rise of the Creative Class*, Basic Books, New York.
- Gabe, T.M. (2011), “The Value of Creativity”, in D.E. Andersson, A. Andersson and C. Mellander (eds.) (2011), *Handbook of Creative Cities*, Edward Elgar, Cheltenham.
- Greater New Orleans Community Data Center (2012), [www.gnocdc.org/](http://www.gnocdc.org/).
- Greening, L., D.L. Greene and C. Difiglio (2000), “Energy Efficiency and Consumption”, *Energy Policy*, Vol. 28.
- Hart, T.A., B.S. Chaparro and C.G. Halcomb (2008), “Evaluating Websites for Older Adults: Adherence to ‘Senior-friendly’ Guidelines and End-user Performance”, *Behaviour & Information Technology*, Vol. 27, No. 3.
- Juznic, P., M. Blazic, T. Mercun, B. Plestenjak and D. Majcenovic (2006), “Who Says That Old Dogs Cannot Learn New Tricks?: A Survey of Internet/Web Usage Among Seniors”, *New Library World*, Vol. 107, No. 7.
- Kresl, P.-K. and D. Ietri (2010), *The Aging Population and the Competitiveness of Cities: Benefits to the Urban Economy*, Edward Elgar, Cheltenham.
- Kresl, P.K. (2012), “The Future of Europe’s Smaller Cities and Towns”, in P.K. Kresl and D. Ietri, *European Cities and Global Competitiveness*, Edward Elgar, Cheltenham.
- Laganà, L. (2008), “Enhancing the Attitudes and Self-Efficacy of Older Adults Toward Computers and the Internet: Results of a Pilot Study”, *Educational Gerontology*, Vol. 34, No. 9.
- Laurich, R. (2002), “The Platinum Web: Sites Dedicated to Senior Citizens on the Internet”, *Collection Building*, Vol. 21, No. 4.
- Lee, B., Y. Chen and L. Hewitt (2011), “Age Differences in Constraints Encountered by Seniors in their Use of Computers and the Internet”, *Computers in Human Behavior*, Vol. 27.
- Leonardi, P.M. and S.R. Barley (2010), “What's Under Construction Here? Social Action, Materiality, and Power in Constructivist Studies of Technology and Organizing”, *The Academy of Management Annals*, Vol. 4, No. 1.
- Lund, P. (2012), “Large-scale Urban Renewable Electricity Schemes – Integration and Interfacing Aspects”, *Energy Conversion and Management*, Vol. 63.
- Madlener, R. and M. Bachhiesl (2007), “Socio-economic Drivers of Large Urban Biomass Cogeneration: Sustainable Energy Supply for Austria's Capital Vienna”, *Energy Policy*, Vol. 35, No. 2.
- Mann, W.C., P. Belchior, M.R. Tomita and B.J. Kemp (2005), “Computer Use by Middle-aged and Older Adults with Disabilities”, *Technology and Disability*, Vol. 17.

- Mayor of Santander (2012), keynote presentation at the Smart City exhibition, [www.smartcityexhibition.it/#/questions](http://www.smartcityexhibition.it/#/questions).
- McCann, P. (2007), “Sketching Out a Model of Innovation, Face-to-Face Interaction and Economic Geography”, *Spatial Economic Analysis*, Vol. 2, No. 2.
- McMellon, C.A. and L.G. Schiffman (2000), “Cybersenior Mobility: Why Some Older Consumers May Be Adopting the Internet”, *Advances in Consumer Research*, Vol. 27.
- Melenhorst, A.S., W.A. Rogers and D.G. Bouwhuis (2006), “Older Adults’ Motivated Choice for Technological Innovation: Evidence for Benefit-Driven Selectivity”, *Psychology and Aging*, Vol. 21, No. 1.
- Minister for Territorial Cohesion (Ministro per la Coesione Territoriale) (2012a), “La ricostruzione dei Comuni del Territorio Aquilano – Relazione”, 16 March, [www.coesioneterritoriale.gov.it/wp-content/uploads/2012/06/relazione\\_definitiva\\_cratere\\_aquilano.pdf](http://www.coesioneterritoriale.gov.it/wp-content/uploads/2012/06/relazione_definitiva_cratere_aquilano.pdf).
- Minister for Territorial Cohesion (2012b), “L’Aquila 2030: una strategia di sviluppo economico: Uno strumento per pensare, un ausilio ai processi decisionali”, Rome, September, [www.coesioneterritoriale.gov.it/progetti/ricostruzionelaquila/](http://www.coesioneterritoriale.gov.it/progetti/ricostruzionelaquila/).
- Minister for Territorial Cohesion (2012c), *Piano Azione Coesione*, [www.coesioneterritoriale.gov.it/fondi/piano-di-azione-coesione](http://www.coesioneterritoriale.gov.it/fondi/piano-di-azione-coesione).
- Ministero dell’Istruzione, Ricerca e Università (2012), “Bando Smart Cities”, [www.istruzione.it/web/ricerca/smart-cities-and-communities-and-social-innovation](http://www.istruzione.it/web/ricerca/smart-cities-and-communities-and-social-innovation).
- Ministry of Economic Development, Department for Cohesion Policy (2012), *Targeting Objectives of Public Service Provision*, [www.dps.tesoro.it/obiettivi\\_servizio/eng/ml.asp](http://www.dps.tesoro.it/obiettivi_servizio/eng/ml.asp).
- Morell, R.W., C.B. Mayhorn and J. Bennet (2000), “A Survey of World Wide Web Use in Middle-Aged and Older Adults”, *Human Factors: The Journal of the Human Factors and Ergonomics Society*, Vol. 42.
- Morris, A., J. Goodman and H. Brading (2007), “Internet Use and Non-use: Views of Older Users”, *Universal Access in the Information Society*, Vol. 6.
- Nahm, E.-S., B. Resnick and J. Gaines (2004), “Testing the Reliability and Validity of Computer-mediated Social Support Measures Among Older Adults: A Pilot Study”, *CIN: Computers, Informatics, Nursing*, Vol. 22, No. 4.
- Niemelä-Nyrhinen, J. (2007), “Baby Boom Consumers and Technology: Shooting Down Stereotypes”, *Journal of Consumer Marketing*, Vol. 24, No. 5.
- Ng, G-H. (2007), “Motivation Among Older Adults in Learning Computing Technologies: A Grounded Model”, *Educational Gerontology*, Vol. 34, No. 1.
- OECD (2007), *Higher Education and Regions: Globally Competitive, Locally Engaged*, OECD Publishing, Paris, doi: [10.1787/9789264034150-en](https://doi.org/10.1787/9789264034150-en).
- OECD (2009), “Spreading the Eagle’s Wings so it May Fly: Re-launching the Economy of L’Aquila Region after the Earthquake”, [www.oecd.org/gov/regionaldevelopment/43307733.pdf](http://www.oecd.org/gov/regionaldevelopment/43307733.pdf).
- OECD (2012a), *Linking Renewable Energy to Rural Development*, OECD Green Growth Studies, OECD Publishing, doi: [10.1787/9789264180444-en](https://doi.org/10.1787/9789264180444-en).

- OECD (2012b), proceedings of the workshop on “Measuring Well-being to Enhance Regional and Local Policies”, 11 June 2012, [www.oecd.org/gov/regional/wpti](http://www.oecd.org/gov/regional/wpti).
- OECD (2012c), “Measuring Well-Being and Fostering the Progress of Societies”, [www.oecd.org/progress](http://www.oecd.org/progress).
- OECD-University of Groningen (June 2012), community survey, L'Aquila.
- Olfert, M. and M. Partridge (2011), “Creating the Cultural Community: Ethnic Diversity versus Agglomeration”, *Spatial Economic Analysis*, Vol. 6, No. 1, Taylor and Francis Journals.
- Opalinski, L. (2001), “Older Adults and the Digital Divide: Assessing Results of a Web-Based Survey”, *Journal of Technology in Human Services*, Vol. 18, No. 3-4.
- Ottel , M., K. Perini, A.L.A. Fraaij, E.M. Haas and R. Raiteri (2011), “Comparative Life Cycle Analysis for Green Façades and Living Wall Systems”, *Energy and Buildings*, Vol. 43, No. 12.
- Plyer, A. and E. Ortiz (2011), “Building Data Capacity to Foster Resilient Communities”, in A. Liu et al. (eds.), *Resilience and Opportunity: Lessons from the US Gulf Coast after Katrina and Rita*, Brookings Institution, [www.brookings.edu/press/Books/2011/resilienceandopportunity.aspx](http://www.brookings.edu/press/Books/2011/resilienceandopportunity.aspx).
- Rantz, M.J., K.D. Marek, M. Aud, H.W. Tyrer, M. Skubic, G. Demiris and A. Hussam (2005), “A Technology and Nursing Collaboration to Help Older Adults Age in Place”, *Nursing Outlook*, Vol. 53, No. 1.
- Ruth, M. (2009), “The Nature of the Beast and the Beast in Nature: Broadening the Perspective of Technology”, *The Bulletin of Science, Technology and Society*, Vol. 29, No. 5.
- Rutter, P. and J. Keirstaed (2012), “A Brief History and the Possible Future of Urban Energy Systems”, *Energy Policy*, in press.
- Saunders, E.J. (2004), “Maximizing Computer Use Among the Elderly in Rural Senior Centers”, *Educational Gerontology*, Vol. 30, No. 7.
- Sayago, S., and J. Blat (2010), “Telling the Story of Older People E-mailing: An Ethnographical Study”, *International Journal of Human-Computer Studies*, Vol. 68.
- Selwyn, N., S. Gorard, J. Furlong and L. Madden (2003), “Older Adults’ Use of Information and Communications Technology in Everyday Life”, *Ageing & Society*, Vol. 23.
- Shapira, N., A. Barak and I. Gal (2007), “Promoting Older Adults’ Well-being through Internet Training and Use”, *Ageing & Mental Health*, Vol. 11, No. 5.
- Social Enterprise London (2006), *Social Enterprises in London: A Review of Annual Business Survey (LABS) Evidence*, Greater London Authority, London.
- Stolarick, K. and R. Florida (2006), “Creativity, Connections and Innovation: A Study of Linkages in the Montréal Region”, *Environment and Planning A*, Vol. 38, No. 10.
- Storper, M. and T. Kemeny (2012), “The Sources of Urban Development: Wages, Housing, and Amenity Gaps Across American Cities”, *Journal of Regional Science*, Vol. 52, No. 1.



- Strong, M.L., L. Guillot and J. Badeau (2012), “Senior CHAT: A Model for Health Literacy Instruction”, *New Library World*, Vol. 113, No. 5.
- Sum, S., R.M. Mathews, I. Hughes and A. Campbell (2008), “Internet Use and Loneliness in Older Adults”, *Cyberpsychology & Behavior*, Vol. 11, No. 2.
- Tatnall, A. and J. Lepa (2003), “The Internet, E-commerce and Older People: An Actor-Network Approach to Researching Reasons for Adoption and Use”, *Logistics Information Management*, Vol. 16, No. 1.
- Thayer, S.A. and S. Ray (2006), “Online Communication Preferences across Age, Gender and Duration of Internet Use”, *Cyberpsychology & Behavior*, Vol. 9, No. 4.
- Turner, P., S. Turner and G. van de Walle (2007), “How Older People Account for their Experiences with Interactive Technology”, *Behaviour & Information Technology*, Vol. 26, No. 4.
- United Nations (2007), *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*, United Nations, New York and Geneva.
- United Nations (2008a), *Creative Economy Report 2008: The Challenge of Assessing the Creative Economy: Towards Informed Policy-making*, United Nations, New York and Geneva.
- United Nations (2008b), *Disaster Preparedness for Effective Response: Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework*, United Nations, New York and Geneva.
- Van Geenhuizen, M. and P. Nijkamp (2012), *Creative Knowledge Cities: Myths, Vision and Realities*, Edward Elgar, Cheltenham.
- Vuori, S. and M. Holmlund-Rytkönen (2005), “55+ People as Internet Users”, *Marketing Intelligence & Planning*, Vol. 23, No. 1.
- White, J. and A. Weatherall (2000), “A Grounded Theory Analysis of Older Adults and Information Technology”, *Educational Gerontology*, Vol. 26, No. 4.
- Wiginton, L.K., H.T. Nguyen and J.M. Pearce (2010), “quantifying Rooftop Solar Photovoltaic Potential for Regional Renewable Energy Policy”, *Computers, Environment and Urban Systems*, Vol. 34, No. 4.
- Wilson, P. (2009), “Deliberative Planning for Disaster Recovery: Re-membering New Orleans”, *Journal of Public Deliberation*, Vol. 5, No. 1.
- Xie, M. (2008), “Multimodal Computer-Mediated Communication and Social Support among Older Chinese Internet Users”, *Journal of Computer-Mediated Communication*, Vol. 13.

## *Annex 6.A1*

### **Smart environmental and energy systems**

Historically, the development of urban areas was closely tied to the successful implementation of the “line” infrastructures that supplied citizens and businesses with water, energy, information and other goods and services (Rutter and Keirstaed, 2012). The expansion of line systems such as: water supply and sewer lines to and from cities; electricity transmission and distribution systems; transport routes that connected urban areas with their hinterlands; communication lines ranging from telegraphs to phones and fiber-optic cables for data transfer; are all well-known examples of such line developments. In efforts to economise on service provision, the “lines” were typically connected to centralised sources of materials, energy and services, such as large-scale fossil fuel-based or nuclear power-based generation facilities, industrial centres, warehouse and logistics centres, for the provision of goods, water treatment facilities, data centres, and the like.

The result often was a highly efficient, but also a rather fragile system, where disruptions of service provision either at the source or anywhere along the line rippled through to affect the entire urban system that depended on adequate and reliable supplies. Within all logistics and retailing sectors, the trends towards “just-in-time” delivery systems that minimise inventories and storage volumes at both key nodal points along the lines and also at the receiving end, have further exacerbated the existing vulnerabilities to shocks and surprises in the system (Ruth, 2009).

Recent developments in technology, business strategy and institutional behaviour are increasingly advocating moving away from these types of centralised and line-based systems of provision of goods and services. Improvements in decentralised energy systems – from rooftop passive and active solar systems to small-scale wind turbines and biomass-based gas and power generation – all reduce the need to rely on centralised power generation and distribution (see, for example, Lund, 2012 and Chong et al., 2012). Further developments in storage technology, be it in the form of better batteries or cold storage technologies, for example, will further assist this trend towards decentralised generation. Green roof technology will not only reduce heating and cooling techniques, but will also provide valuable water capture and filtration services. When combined with cisterns – in principle an ancient method to capture and retain water locally – or with the establishment of wetlands and other types of ecosystems, natural processes can be used to help decouple local water treatment and supply from centralised sources (Butera, 2009).

Many other such examples can be found that improve the performance of a city or region, particularly when it has been reliant on centralised supplies that are susceptible to shocks, be they in the form of environmental stressors, such as extreme weather events, economic disruptions that affect the provision of goods and services, or catastrophic events such as earthquakes, landslides, and the like.

The impacts of the 2009 earthquake in and around L'Aquila suggest that a shift towards the local and decentralised provision of essential services such as energy, information services, water supplies, would be a major step forward in ensuring the long-run resilience of the region in the face of future events. Moreover, such a shift would offer enormous possibilities for locally driven innovations in core infrastructures and technologies in areas which will become increasingly pressing for almost all of the world's cities.

Most modern cities find it hard to switch from centralised supplies of water, energy, communication and other goods and services to the establishment of more resilient and viable decentralised infrastructure systems. Impediments come from the fact that many of the traditional infrastructures have incumbent advantages – from low marginal and average costs of service provision to well-organised proponents with strong financial and professional interests aimed at maintaining the *status quo*. In many ways, the conditions for the implementation and operation of those traditional systems are well known and well understood, and the professionals operating them have been trained within the paradigms that led to their growth and proliferation. However, switching from, or supplementing, centralised service provision and line developments often requires running them alongside decentralised systems. In times of scarce financial resources, such redundancy is often perceived as being too costly, which thus further entrenches the existing line infrastructure ways of doing business and inhibits change.

In places where entirely new urban areas are being developed, such as in the developing world, and where existing systems have fundamentally failed, such as after the destruction of a power plant or a sewerage facility, unique opportunities then exist for a transition to technologies and practices that are still hard to implement elsewhere. The reason for this is that the major costs of implementing these new systems and technologies are largely the up-front costs associated with the redesigning and rebuilding buildings, the excavating and digging of trenches appropriate for hosting underground high capacity fibre-optic cabling and modern ducting and fluid piping materials,<sup>1</sup> and the institutional and organisation changes in local governance in order to deploy and deliver these technologies.

In many ways, however, L'Aquila and the larger Abruzzo region now find themselves at precisely such a bifurcation point where fundamental decisions have to be made about the very nature and modes of service provision to the community over the coming decades. The city and region can either aim to recreate the kinds of infrastructure systems it has built and used over the last 50 years, or they can take full advantage of the technological improvements that have occurred since then, choose to deploy these new systems in novel and locally appropriate ways, foster the institutional innovations needed to ensure the deployments, and by doing so lead the way in critical technologies that many other places around the globe still find it too challenging to identify and define.

Pursuing the “rebuild-as-was” strategy may well find the least social resistance because of the perceived greater speed with which this can be achieved, and also because many of the actors who know how to do this are well established and motivated to regain their existing business, and as a result have considerable influence in community decisions. However, this strategy is also one where the financial benefits, when all goes well, accrue to a relatively small set of actors – such as utility companies and their shareholders for example – while the costs when something goes wrong, are borne by the public – such as in the form of inconvenience, lost revenues from service interruptions, or sometimes even loss of life. In contrast, those decision makers who are set on a “define-

the-future” strategy tend to be: comparatively less organised; tend to draw on technologies that may not yet have been proven at large scales of implementation; often lack access to capital; and also require a social and political environment in which risk-taking is tolerated, if not rewarded. The social obstacles to the deployment of new technologies and systems are therefore significant, but the societal gains from these systems are significant. When their innovation activities lead to a breakthrough, they, and the larger society and economy do benefit.

Since the various elements of the rebuild-as-was strategy are fairly well understood, no further attention needs to be given to them here. Instead, some of the challenges and potential pay-offs associated with a define-the-future strategy are discussed – from the level of individual houses, households and businesses to the broader social, economic and intellectual fabric of the region. For simplicity, the innovation and implementation challenges arising here can be grouped under the three headings of: technology issues, behavioural issues, and systems issues.

### ***Technology issues***

*i)* Reliable and adequate supplies of energy are key to ensuring a high quality of life and many business activities. An array of new materials combined with economies of scale in production, have significantly increased the cost-effectiveness of active and passive solar heating systems, to the point that they are already competitive with traditional energy sources. Roof-top mounted photovoltaic cells can now deliver electricity either into a traditional grid, or can be used locally to provide heating and cooling, running machines and computers, or pressurise gases, chill refrigerants and convert biomass into gas for storage (Wiginton et al., 2010).

Advancements in furnace technology also enable the versatile use of biomass such as wood, woodchips, clippings, manure and others for the conversion into electricity, heat and steam (Madlener and Bachhiesl, 2007). Small-scale wind turbines, including roof-mounted systems, can also supplement the energy technology portfolio. Combined heat and power operations, especially when off-heat from power generation is used in local district heating systems, and small-scale sterling engines deployed at the neighbourhood level, all further help to diversify the local energy supply system. The scaling up of local wind, solar and biomass energy systems (underpinned by the resources available in the rural hinterland) could, for example, be allied with the development of new local bus systems linking L'Aquila with its outlying villages, whereby the buses are powered by locally generated and sustainably produced energy. Thus, the diversification of end users of electricity from renewable generation enables the region to charge, for example, batteries for transportation during times when supply of power is larger than demand would otherwise be.

Moreover, the deployment of these types of systems helps to expand the use of local resources and generates skilled local employment because the design, deployment and ongoing management and maintenance of these systems relies heavily on the local skills acquired by learning-by-implementing and learning-by-doing. Therefore, both in terms of the actual technologies and also the deepening and diversifying of the local skills base, the deployment of these types of systems reduces the vulnerability of the region to exogenous shocks because these types of systems are more readily replaced and brought back online than traditional centralised systems which are primarily reliant on extensive line developments.

Green walls and green roofs further can reduce the heating and cooling needs of buildings, thus raising the overall energy efficiency of the system, and help cut down on emissions (Alexandri and Jones, 2008; Ottelé et al., 2011). The clever use of natural system features in buildings and the larger built environment also provides new aesthetic values and habitats for insects and birds, for example.

*ii)* Similar to the energy sector, the water supply and treatment systems have only been centralised in the last century, and prior to that have traditionally relied on the extraction, purification, storage and retention of water in the local environment. Cisterns, rain gardens and ponds are some examples of decentralised water system controls. When combined with high-efficiency end-use technologies – from drip irrigation to the use of advanced no-flow toilets and low-flow showers – the regional water demands can often be met by regional supplies.

*iii)* Communication technology, in combination with sensors and controls can help fine-tune the use of energy and water to optimally meet instantaneous demands. Monitoring the system performance over time and space can then provide important information to make adaptive management decisions as needed. The development of these technologies – and their interface with the needs and abilities of the end use community – offers additional local innovation and entrepreneurial opportunities.

*iv)* New materials, sensors and system elements will enable smart walls that help control indoor air quality and temperatures, smart windows that optimise the use and distribution of daylight, and much more. The result can be the creation of modern work and living spaces that respond to environmental conditions as well as to user needs, rather than spaces that attempt to change the environment and require users to constantly make active decisions and system interventions – from adjusting shades and ventilating spaces to re-setting thermostats etc. (see, for example, Dussault et al., in press).

### ***Behavioural issues***

One challenge often associated with using advanced technologies for the urban environment lies in the fact that the resulting efficiency gains can lead to social behaviour that counteracts those gains (Greening et al., 2000). With cost savings in energy and water, for example, the associated financial savings may be used to build larger homes, drive more cars, or otherwise expand the environmental footprint of the urban and regional population. However, historically people in L'Aquila and the Abruzzo region have valued compact housing and living arrangements within a historical urban layout of streets and piazzas. Therefore, in the light of the existing cultural and historical traditions regarding housing and urban form, there are now excellent opportunities for research, investment and design decisions aimed at integrating these modern infrastructure and service technologies with the urban fabric.

This can be achieved in manner that is consistent with the cherished local practices and cultural norms, while at the same time doing so in ways that foster resilience and stimulate innovation and employment in new skills-sets and technologies. Business opportunities for small and medium-sized enterprises will be generated to provide specialised materials, equipment, and know-how. As such, rather than being seen as competing with historical practices, new technological advances and architectural innovations can be used in ways to support those practices, and to ensure their viability in the local economy the long run.

Various forms of specific institutional innovations – such as for example changes in tax law or changes in permitting processes – may be required to foster the types of urban innovations which ensure that the innovation benefits are reinvested locally in new technologies and practices that promote sustainability. The logic of any institutional or governance innovations is that they must occur to so as provide the proper incentives for households and businesses to take the risks associated with private innovations in the implementation of smart practices. Public innovations and private innovations must be aligned and stimulated via partnership arrangements whereby public interventions are designed to share both the risks and rewards of the implementation of the new technologies.

Securing and sustaining successes requires the development of strong linkages of innovative activities in one sector with the other activities across the rest of the local economy, and also the fostering of substantial local knowledge spill-overs to other parts of the economy (Barbier, 2011, 2012). The successful local embedding of the new technologies and practices comes when the local and regional economy increasingly becomes oriented around those innovations by providing essential services in their support, be they variously in the form of: the educating and training of the workforce; the establishing of hubs in supply chains; the developing of new incentive systems and institutional arrangements; or the providing of the awareness and marketing of smart approaches in the region and beyond. Within the local and regional economy, both new and growing roles in the embedding of these new technologies and activities can be found for the local universities, the local trade unions, the local business organisations and the local government.

### *Systems issues*

A realistic smart city approach will most likely require that the process of transformation and engagement needs to commence and develop momentum even where existing constraints in the social, economic and environmental conditions do not yet fully support the needs and aspirations of the local population. However, what is important here is to establish progress and to communicate the progress, holding on to desirable practices that have been established. This will also require a seamless blending of technologies with behaviour, which in turn calls for an active role of institutions such as the local university or the group of regional universities, as they are ideal institutions to help bridge the gaps between the engineering and behavioural sciences and professions.

University-industry partnerships between a local university (or a network of regional universities) and the local private-sector or other public-sector actors can be used to help with the scaling up, the monitoring of, and the evaluation of, innovations in the local region. Working in tandem with other organisations, and in particular from the civil society or “third” sector actors, such monitoring and evaluation roles can help to provide independent verification progress. These types of partnerships can also help to combine technology research with social science research in order to address emerging social and institutional challenges, and to provide practical learning opportunities for the students in real-world settings.

As well as undertaking roles such as the establishing of, the monitoring of, and the evaluating of projects, policy actions and interventions, universities working in partnership with civil society actors can also act as “boundary spanners” by educating students in both the engineering and social science arenas and facilitating dissemination. Combining these types of research provides universities with an ideal opportunity for

creating a local test-bed and living laboratory aimed at fostering local knowledge generation and innovation. Building knowledge and communication across boundaries, organisations, professions, fields of expertise, and roles of governance, are all core competences of universities, and all of these skills are essential for both achieving and communicating step-by-step successes in technology implantation processes.

Since the tendency to simply re-build infrastructures in the old mould (the rebuild-as-was approach) is strong, there also need for the establishment of some sort of focal point for innovation which can also act as a clearing-house or knowledge-hub. Once again, universities are ideal institutions to either take responsibility for, or to be partners with other actors in undertaking, such roles. Such a focal point will become the repository of knowledge on all aspects of the development process including all: successes and failures; new products and processes; new services and systems; new designs and blueprints. The existence of such a repository allows the recording of the actual experiences of actors and investors in a transparent manner. This helps to foster both knowledge and trust across all sections of society and also allows potential newcomers to become better organised in their attempts to compete with incumbents in the realm of infrastructure development and implementation. This is important, because the competition for, and dissemination of, ideas, is one of the drivers of innovation and societal progress.

The clearing house or knowledge hub should systematically gather and publicise information and data on all of the experiences of the actors engaging in the design, deployment and delivery of the new technologies and systems. The use of GIS and remote sensing techniques should be maximised and adapted so that evidence of progress on a range of different energy, environmental and social fronts can be communicated visually to the community. Moreover, the publicity and transparency should also cover all issues relating to the public infrastructure developments, including data on public funding, the development of supply chains, the training of specialised labour, the performance of marketing initiatives, and communication with policy makers.

The use of modern project evaluation techniques combined with the use of results or outcome indicators, all allow for the tracking and communication of societal progress. Publicity and public engagement underpins the building up of trust between the citizens and all public actors. Publicity and transparency also helps to establish realistic expectations on the part of the community regarding the timelines for development. In the case of new infrastructure systems, there are rarely any quick-fixes, so the establishment of realistic expectations regarding the likely timetables over which the benefits of new infrastructure innovations will become evident is very important.

Given these discussions, it becomes clear that unique opportunities now exist for L'Aquila and the Abruzzo region as a whole to develop smart energy, water, communication and other infrastructure systems, that enable their citizens to hold on to the historically-rooted and cherished character of their built and natural environment, while at the same time meeting the needs of current and future generations. Moreover, this can be done in ways which generate unique and growing local business advantages. This will require a range of innovative activities across sectors, including but not limited to:

- A closer alignment of the engineering and social sciences research.
- Improved collaboration between the local universities and the private sector in order to incubate new businesses and scale up technologies.

- Innovations in government and financial institutions to create an investment-friendly environment that encourages innovation.
- The branding of the region as an innovator of smart development strategies, and an effective outreach communicating all local activities to other cities and regions both nationally and internationally. In particular, the linking up and partnering of L'Aquila and Abruzzo with other cities and regions already embracing smart development concepts is important, as is the possible partnering with regions facing severe difficulties in implementing such systems and where the experiences of L'Aquila can provide powerful lessons.

L'Aquila could aim to be one of the first carbon neutral cities in the world. The aim would be to achieve, as far as possible, the reliance on locally produced and sustainably produced energy, and using systems implemented by the local community which are explicitly designed to build on the local assets and resources, in ways which also foster and provide for the local community and the further building up of local assets and resources.

### Note

1. Including “smart pipes” whose electronic sensors immediately notify construction workers of the location of the pipes and cabling in order to avoid systems damage.



## *Bibliography*

- Alexandri, E. and P. Jones (2008), “Temperature Decreases in an Urban Canyon Due to Green Walls and Green Roofs in Diverse Climates”, *Building and Environment*, Vol. 43, No. 4.
- Barbier, E.B. (2011), *Scarcity and Frontiers: How Economies have Developed Through Natural Resource Exploitation*, Cambridge University Press, New York.
- Barbier, E.B. (2012), “Scarcity, Frontiers and Development”, *The Geographical Journal*, Vol. 178, No. 2.
- Butera, F. (2009), “Towards the Renewable Built Environment”, in P. Droege (ed.), *Urban Energy Transition: From Fossil Fuels to Renewable Power*, Elsevier, Amsterdam.
- Chong, W.T., M.S. Naghavi, S.C. Poh, T.M.I. Mahlia and K.C. Pan (2012), “Techno-economic Analysis of a Wind–Solar Hybrid Renewable Energy System with Rainwater Collection Feature for Urban High-rise Application”, *Applied Energy*, Vol. 88.
- Dussault, J.M., L. Gosselin and T. Galstian (2012), “Integration of Smart Windows into Building Design for Reduction of Yearly Overall Energy Consumption and Peak Loads”, *Solar Energy*, in press.
- Greening, L., D.L. Greene and C. Difiglio (2000), “Energy Efficiency and Consumption”, *Energy Policy*, Vol. 28.
- Lund, P. (2012), “Large-scale Urban Renewable Electricity Schemes – Integration and Interfacing Aspects”, *Energy Conversion and Management*, Vol. 63.
- Madlener, R. and M. Bachhiesl (2007), “Socio-economic Drivers of Large Urban Biomass Cogeneration: Sustainable Energy Supply for Austria's Capital Vienna”, *Energy Policy*, Vol. 35, No. 2.
- Ottel , M., K. Perini, A.L.A. Fraaij, E.M. Haas and R. Raiteri (2011), “Comparative Life Cycle Analysis for Green Faades and Living Wall Systems”, *Energy and Buildings*, Vol. 43, No. 12.
- Ruth, M. (2009), “The Nature of the Beast and the Beast in Nature: Broadening the Perspective of Technology”, *The Bulletin of Science, Technology and Society*, Vol. 29, No. 5.
- Rutter, P. and J. Keirstaed (2012), “A Brief History and the Possible Future of Urban Energy Systems”, *Energy Policy*, in press.
- Wiginton, L.K., H.T. Nguyen and J.M. Pearce (2010), “quantifying Rooftop Solar Photovoltaic Potential for Regional Renewable Energy Policy”, *Computers, Environment and Urban Systems*, Vol. 34, No. 4.

## *Annex 6.A2*

### **Interactive systems for ageing and social inclusion**

The demographic challenges facing a slowly declining region such as Abruzzo were already significant prior to the 2009 earthquake, but the effect of the quake is clearly very significant on demographic issues. It is imperative that Abruzzo, and L'Aquila in particular, respond to these challenges, and a key element of the L'Aquila smart city agenda can be a very targeted and novel response to these issues.

Responding to this challenge is not only imperative for fostering social inclusion in the vicinity of L'Aquila, but also L'Aquila and its surrounding villages are ideally suited to respond to this challenge. The fact that not only the city centre of L'Aquila was devastated, but also many of the older buildings, in particular in the heart of many of the outlying villages, means that building systems to help foster greater interpersonal and social communication on the part of the older age-group residents of the outlying villages is just as important an ingredient for fostering social inclusion as similar systems in central L'Aquila.

New technologies are being developed in many parts of the world which are aimed at improving the quality of life of older citizens. These technologies, which comprise interactive communication systems combined with domestic sensor systems can be deployed to respond to the challenges of mobility, heating and cooling, health care provision, social care and informal family support systems, amongst others. These types of technologies are typically based on combinations of tablet-based access points, sensor technologies, interactive Internet-based systems, interpersonal facilitator roles, and electronic systems-management and co-ordination roles. As a group, these types of technologies can be considered as “smart care” systems. These interactive and sensor-based systems can be combined with new decentralised and local network-based energy systems in order to improve the efficiency of domestic energy use, as discussed above, and also such systems can be developed to facilitate both domestic mobility and also health care provision at the level of the individual household. For households facing the challenges of ageing, disability and limited mobility, sensor-based systems can offer new opportunities not only for better utilising redesigned living spaces, but also for increasing the support possibilities available to formal and informal caregivers.

One way of doing this is by piloting new interactive electronic systems for social engagement which are designed, implemented and facilitated specifically for the benefit of older age groups and for connecting L'Aquila with the outlying villages. In order to build up connectivity, to reduce isolation, and to foster interaction between L'Aquila city and its hinterland, such pilot systems would best be implemented at the scale of the city of L'Aquila and its surrounding villages.

Many of these smart-care technologies are both already widely available and also are not particularly expensive to install and implement or manage. Instead, the challenges associated with these implementing these technologies tend to be social challenges. Finding ways to implement these technologies and systems in ways that gain acceptance on the part of the older age users is the most difficult challenge. The difficulties lie primarily not just in ensuring that the tablet-based interactive systems are user-friendly for older age groups but also that the older citizens develop a strong sense of engagement and ownership of these technologies. Developing participation, engagement and a sense of ownership of these on the part of the community, and particularly the older age cohorts of the community, is often a major challenge.

In a similar vein to the creative activities part of a L'Aquila smart city agenda, the “living laboratories” principle also provides an opportunity in L'Aquila and its surrounding localities to develop a test-bed for enhancing local social inclusion by implementing experimental systems for the deployment of new technologies in the arena of social care and social communication services.

The impact of the 2009 earthquake was particularly severe on the older buildings in many of the outlying villages in the hinterland of L'Aquila as well as on the city centre of L'Aquila. Many of these outlying villages still contain their occupants, but these are places which have lost much of their earlier vitality and sense of belonging and identity. The use of modern information and communications technologies is widespread amongst young people, who are largely accustomed to regularly using social media sites, search engines and similar systems for communication, information and entertainment. On the other hand, the use of such systems for older people is much less widespread. This is known as the “digital divide” (Carter, 2009) and overcoming this societal divide is essential for active ageing and social inclusion. This is because over time it will become increasingly important to ensure that all residents are able to access online all of those services, technologies and applications that they need for their own well-being (Carter, 2009). Moreover, for older people it is not only a matter of gaining electronic access to services. It is also a way to foster active ageing, to encourage communication, to reduce isolation and loneliness, and to help facilitate the reintegration of older groups in society in and around L'Aquila.

Following the territorial and local systems approach adopted in this report, in technical terms there is therefore now an opportunity for L'Aquila and its surrounding villages to develop an integrated and interactive tablet and web-based communication system aimed specifically at fostering active ageing and enabling the communication and integration of older age groups.

The objectives of developing these systems are threefold:

- first, these systems are aimed at fostering active ageing by exploring ways in which older age groups can be increasingly reintegrated into the social and public life of the community;
- second, these systems can facilitate the social re-connection, re-integration and rejuvenation of the outlying villages with L'Aquila city itself; and
- third, these systems can also facilitate the deployment of new sensor-based systems for interactive health-care monitoring and management, and for domestic energy conservation and management.

These types of interactive active-ageing systems can be developed by providing tablets and interactive facilities either in mobile centres, or in semi-permanent centres, with specialist assistants and facilitators on hand all of the time while the centres are open. The idea is that the creation of informal social environments for meetings and discussions on the part of the elderly, which also offer comfortable surroundings along with food and refreshments, can in addition act as a focal point for fostering the types of interactive learning and communication which is highly beneficial for older age groups. The systems can be managed and run centrally in L'Aquila but provided and run at the local level of the outlying villages, as well as in L'Aquila city centre itself. The critical element is to make the provision of and learning about these interactive electronic services – e-services and e-learning- as attractive and enjoyable to older people as possible, and therefore to make these social innovations as long-lasting as possible, in order to foster active ageing and social inclusion.

Different groups use computers and Internet systems differently both in terms of the extent of the usage and also the ways in which they use them (Hanson, 2010). These differences are sometimes known as the “digital divide” (Hubregtse, 2005; Opalinski, 2008) and bridging the digital divide between older and younger age groups is important in order to allow older age groups to access the improved health and well-being opportunities – e-health – associated with computer and Internet usage (Morris et al., 2007; Cresci et al., 2010).

The use of new technologies is always to some extent socially constructed in the sense that the ways in which technology is used depends on the interactions between individuals, groups, and the possibilities and constraints offered by the new technology. In the case of older people, issues of (self) perception, interpretation, appropriation, enactment and alignment are all essential features of their ability and willingness to adopt and adapt to new technologies. However, the digital divide within the older age groups who do and do not access the Internet-based services and facilities is particularly marked in southern Europe and is related to the existing socio-economic inequalities (Peacock and Künemund, 2007).

Therefore, the scale of the societal challenge associated with responding to these issues should not be underestimated. Computer and Internet usage is related with age, health, education (Juznic et al., 2006), marital status and ethnicity (Selwyn et al., 2003; Heart and Kalderon, 2011) with older, lower income, lower-educated and poorer health groups systematically displaying lower levels of Internet usage. Within the older age cohorts, age itself has a differentiating effect beyond marital, educational and occupational status (Peacock and Künemund, 2007) and is also related to health and health needs. While poor health reduces the uptake of computers by older groups, at the same time many older adults in poor health and who potentially can benefit the most from health-related computer literacy do not perceive that computers and ICTs usage can indeed improve their health or quality of life (Heart and Kalderon, 2011).

However, there are two reasons why a city such as L'Aquila and its surrounding villages need to face this challenge. On the one hand, on-line systems have been found to help build social capital (Blit-Cohen and Litwin, 2004) and to reduce loneliness amongst older age groups (Blazun et al., 2012), and this is even the case in very old age groups. Using new technologies to foster social inclusion represents a potentially positive societal objective. On the other hand, as demographic trends progress, in all countries increasing levels of health-related and care services will need to be transferred to on-line systems (Juznic et al., 2006). There is therefore an urgent need to up-skill the older members of

the community to ensure that they have the knowledge and access to the services available.

The systems deployed need to have websites and also tablet-based systems which are suitable for the older age group users who often have very different access requirements, different physical and sensory levels, and different fine-motor skills levels (Hart et al., 2008; Juznic et al., 2006). However, the provision of new tablet-based interactive on-line services is not simply a matter of installing hardware and software technologies or even of instructing people how to use them. Rather the success of actions to provide these types of systems must explicitly and sensitively take account of the different literacy and adaptability of different age cohorts to modern technologies.

In the case of information and communications technologies, the age 50-60 cohort generally display good interest in and access to computers and Internet accessibility (Niemela-Nyrhinen, 2007). But older age groups use computers and Internet systems much less than younger age groups and this is due to a variety of social, economic and personal reasons (Hough and Kobylanski, 2009). Indeed, even within older age groups there are major differences in the use of computer and information technologies (Lee et al., 2011). As people get older the challenges increase. There are differences within older age groups in terms of usage and willingness to access new technologies, with the oldest groups over 75 showing the least interest (Morrell et al., 2000). For the age group 65-75 interpersonal factors related to the interest of their own cohort appear to be more important in determining their participation, whereas for old age groups over 75 individual factors become more important. In particular, ease of use becomes critical (Pan et al., 2010).

While younger age groups have more extensive social networks and more extensively use social networking sites, older age groups have a much more diverse age range for their social networks relationships (Pfeil et al., 2009). Where older age groups do use computers, their usage tends to fall along one of two dimensions (Carpenter and Buday, 2007), namely a solitary-social dimension (which is a response to loneliness and isolation) and an obligatory-discretionary dimension (which is a response to enforced necessity to access certain services such as banking). Women tend to use Internet more for communicating with friends and family than men do (Thayer and Ray, 2006), and this also appears to be the case for older people. Yet, while on the one hand significant opportunities for learning and for connecting with family and friends are important for fostering computer-Internet use amongst old people, on the other hand perceptions of life-satisfaction and personal control are also very important elements in determining use (Opalinski, 2008). This is the very much the reason why fostering the use of these types of interactive-Internet-computer systems for increased social communication, integration and access to services in L'Aquila and its surroundings, can help the older age groups (and particularly those who are in the outlying villages or who have been displaced by the earthquake) take greater control of their own daily lives.

The support systems and people involved in fostering Internet and computer access amongst older people must be culturally sensitive to their needs and social contexts (Ng, 2008). Therefore, the training and coaching of older people needs to take account of these differences between older age groups (Lee et al., 2011). In particular, the public provision of interactive Internet communication facilities requires appropriate and continuing face-to-face coaching to be on hand for older people, and this is very important for encouraging and fostering access amongst these groups (Lee et al., 2011). Computer and Internet manuals are often very difficult to understand by older users, and

are typically written by much younger people with little awareness of the needs of older people. This often is even the case for sites and facilities which are marketed as easy-to-use and user-friendly (Vuori et al., 2005).

Moreover, for older users, the cognitive difficulties associated with adopting new technologies go well beyond simple the ability to read from the screen, and the need for designed interfaces specifically adapted for older people is very important (Sayago and Blat, 2010). Cognition challenges tend to be time-invariant and unrelated to ICT experience. The result is that the strategies which older people adopt to overcome these challenges focus on feelings of inclusion, participation (Sayago et al., 2011). Issues such as identify, anxiety and alienation are all important in understanding the emotions of older people who are trying to adapt to new technologies (Turner et al., 2007).

The training of support staff to help older age groups adopt and adapt to new technologies in a very sensitive manner is essential. The role of social facilitators helping to sensitively and gently aid the adoption of the technologies is critical (Hill et al., 2008) and monitoring and evaluation of these projects using project-specific indicators is also crucial for evaluating the effectiveness of the programmes (Iagana, 2008). Consultation with potential older participants regarding their needs, fears and aspirations is very important and it is found that the relative isolation of rural users means that they often display different rather needs to urban users (Saunders, 2004).

Increased computer and Internet usage appears to enhance the well-being and empowerment of older people by increasing their interpersonal interactions and their sense of control and independence (Shapira et al., 2007; White and Weatherall, 2012). In particular, the increased use of the Internet to access friends and family is associated with lower levels of loneliness for older people (Sum et al., 2008). However, the learning process is only successful on the part of seniors if it is genuinely participatory and interactive in nature and tailored to their needs, experiences, and understanding. It is not primarily a technological challenge *per se*, but rather a communication challenge, and this requires that facilitators and trainers display expertise in participatory learning modes.

Evidence suggests that the linking of library services' provision to Internet usage is one of the most successful ways of introducing new technologies to older people (Laurich, 2002; Juznic et al., 2006). In several countries, library based interactive information services have also forged new partnerships of collaboration between service provides and allowed older people to build their own new networks of communication and engagement. All of these innovations help to motivate older people to improve their own health (Strong et al., 2012). Voice-chat-room interfaces appear to be the best for companionship amongst older people whereas the online forum seems to be the best context for information acquisition amongst older generations (Xie, 2008). However, for older people, the perceived usefulness of the media appears to be a more important predictor of usage rather than the ease of usage (Chung et al., 2010). Evidence also suggests that older people are more focused on the benefits of new technologies rather than both the costs and benefits whereas for existing technologies they are focused on both costs and benefits (Melenhorst et al., 2006).

These findings all suggest that perceptions regarding the potential usefulness of new technological systems are very important in motivating access. The types of systems which can potentially be piloted in L'Aquila include systems for fostering social interaction between people and between places, systems designed to improve domestic mobility and care for households facing the challenges of ageing and disabilities, and systems aimed at improving the communication and delivery of public services. The

success of the deployment of such technologies depends largely on the ability to foster the use and engagement of these systems by all groups, and particularly by the older age cohorts who have most to gain from their deployment. However, fostering the engagement with these new technologies and systems on the part of older people in particular, primarily requires the use of a participatory approach, rather than a technology or institutional approach to their deployment. This itself is an important challenge to be responded to.

### ***A possible L'Aquila programme of the piloting and testing of community engagement and interactive networked e-learning systems***

In L'Aquila and its surrounding villages there are therefore various important objectives to aim for and to communicate in order for the implementation of such systems to be successful. First, in the L'Aquila case, the piloting, experimentation, and implementation of these types of systems can be aimed at improving well-being and health by fostering social communication, disseminating information, improving knowledge and access to health services, and by increasing social capital and reducing loneliness. All of these findings imply that if such interactive electronic systems combined with the provision of comprehensive information regarding health benefits and health services, then there are real opportunities for establishing programmes aimed at facilitating electronic communication amongst the residents of L'Aquila and its surrounding villages.

Second, it is essential to communicate the benefits from these initiatives to the seniors. This cannot be done by simply providing information. It is something that has to be developed from the ground upwards by experience. Consequently, combining the provision of these services with programmes of participatory coaching and facilitation which are specifically tailored to the needs of seniors is essential. Moreover, such systems are likely to be most successful if they are delivered in a decentralised system of local community centres in the various outlying villages as well as in central L'Aquila, in which library services, health checks, information and entertainment services, are all combined with the places for meeting.

In each village, such centres could be either semi-permanent or temporary mobile centres, depending on the possibilities locally available. Most importantly, however, the success of these types of technology-based initiatives depends on the ability of the systems to provide new places for meeting, interaction and communication, and to foster communication within localities and between localities. In the case of L'Aquila and its surrounding, it is especially important to facilitate communication both within each of the outlying villages and also between the various outlying villages, as well as between the outlying villages and L'Aquila itself.

However, as well as older age groups, the provision of these types of social network and social media sites, now also offer enormous possibilities for interaction and communication on the part of groups of users such as people with disabilities or the informal family caregivers for those who are ageing or disabled (Baker et al., 2012), neither of which are groups typically perceived as being major users of such sites. There is evidence that amongst people with disabilities that older aged people use ICTs more than middle-aged users (Mann et al., 2005). Older people with disabilities are increasingly using Internet facilities to access resources and services that they are unable to reach physically (McMellon et al., 2000).

Interventions based on offering networked computer resources (combined in many cases with customised domestic sensor systems) to facilitate the health care, social services and mental health support provided by informal and family caregivers of people with physical, mental or emotional disabilities or other such homebound adults, have also been found to be very successful in various programmes (Alexy, 2000; Barrett, 2009). In particular, the ability to access valuable information and other people sharing similar experiences can build confidence on the part of both sufferers and caregivers, while the upgrading of computer skills is beneficial for the caregivers, and particular those who were formerly in nursing or related professions. In some very remote cases where regular face-to-face facilitation is difficult, even computer-simulated intermediaries have been found to be successful in promoting on-line learning engagement on the part of older adults as long as the systems are perceived to be enjoyable on the part of the users (Bickmore et al., 2005).

In many countries such systems are being piloted via collaboration between universities, health care providers and technology intermediaries. These collaborations can be specifically designed to offer new forms of e-health care service provision to older people (Rantz et al., 2005). The local university presence in L'Aquila could therefore provide opportunities in terms of the technical support and technical management requirements for tailoring these systems to the local context. Indeed, there are many examples whereby the formation of community-university partnerships has aided the implementation and adoption of these systems. This is particularly so where pilot programmes emphasise the interactive feedback processes between the systems-providers, intermediaries and systems-users (Rantz et al., 2006). While there are a range of different active-ageing programmes evident in Italian cities, some of which can be linked to “university of the third age” initiatives, very few are actually related in any way to universities or research institutes (Kresl and Ietri, 2010). The current situation consequently provides L'Aquila with the opportunity to develop leadership in this domain, a leadership which is underpinned by research-driven knowledge base.

Ongoing face-to-face interaction between the elderly users, the facilitators engaging in participatory modes of learning (Iagana, 2008) and the technical support specialists is all essential, because the attitudes and experiences of the users are central to the success or otherwise of these types of programmes. This interactive approach to programme development, which is based on the concept of innovation-translation (Tatnall and Lepa, 2003), has already informed a great deal of policy design in Japan. Because of its ageing population, Japan has focused on developing special infrastructure, device interfaces, services and applications which are designed to be easily accessible and usable by older age groups to help them access e-health services and a range of other public support systems (Obi et al., 2012).

As explained before, the outcomes of the implementation of these new technology systems are primarily determined by social aspects of community acceptance, appropriateness, usefulness, and enjoyment. Here, as with all living laboratories types of experimental approaches, the use of measures and indicators is essential for the piloting and testing of interactive and electronic programmes aimed at seniors for older people (Nahm et al., 2004).



### *Institutions for active ageing and social integration programme delivery*

One issue which has not yet been discussed is the question of costs and seed-funding for pilot projects, and there are three issues here which need to be considered. First, as with all policy interventions, projects and programmes, funding issues require discussion between different levels of governance and a wide range of potential stakeholders across private, civil society and public sectors. However, in the particular case of tablet-based interactive systems, the actual technologies involved and the costs of running and managing the technologies tend to be very low indeed.

Second, if the interactive systems are also set up so that they can increasingly act as platforms for information provision on the part of many civic, civil society, private-sector or public sector actors covering all aspects of the social, cultural and economic challenges facing not only seniors both those approaching retirement, then it is perfectly possible for these systems to become commercially viable and self-sustaining. Indeed, experience from the United Kingdom<sup>1</sup> shows that interactive knowledge systems for seniors can become commercially perfectly viable.

Third, these types of actions can also offer possibilities for local community social enterprises. In the context of regions facing severe challenges of promoting resilience, such as many rural regions, remote regions, or regions facing disasters, the promotion of local community social enterprises is itself an important objective (Farmer et al., 2012). Social enterprises are organised specifically to undertake trading activities which provide social benefits, and these types of organisations operate at the interface between public, private and civil society (Farmer et al., 2012). Social enterprises can provide goods or services by providing local communities and individuals with the means to improve their local neighbourhoods, to enhance talents and skills, to foster social integration, and to enhance active citizenship (Social Enterprise London, 2006).

In the case of low-population regions or low-density primarily rural regions, the costs of public service provision tend to be much higher than in densely populated regions. This partly because of critical mass and economies of scale, and also because of increased high level specialisation. On the other hand, the high levels of bonding social capital which are often evident in small towns and rural communities may provide the ideal background context for social enterprises to find viable opportunities for action (Dale and Onyx, 2005).

Indeed, there are some excellent examples of these types of initiatives even in very challenging rural regions. These include the O4O “Older people for Older People” programme which operates across five different sparsely populated rural regions in five different northern European countries, all of which are facing population ageing and population decline. These regions all exhibit outflows of younger people at the same time as they receive in-flows of retirees, some of whom are in the medium and higher income groups. The programme is aimed directly at building social enterprises on the part of older people in the delivery of services to other older people (Farmer et al., 2012). The community social enterprise programmes are designed to foster self-sustaining and financially viable social enterprises, which co-produce services with other public stakeholders, by building on local social capital, and by combining professional project managers and facilitators with local community volunteering.

In order to achieve their goals, the core functions which community social enterprises undertake are threefold (Farmer et al., 2012):

- employ and dispatch community catalysts to make social enterprises happen in different places;
- conduct context-appropriate and adaptive business-planning and training for community social activities; and
- undertake some of the bureaucratic activities otherwise undertaken by the public sector.

In order to catalyse and sustain successful community social enterprises there are several socially entrepreneurial elements required (Farmer et al., 2012):

- the coming together of groups of citizens to identify social needs;
- the promotion and dissemination of leadership skills; and
- the building of legitimacy at different levels.

As already discussed in terms of the central elements of any smart city agenda, participation is also an essential element of the ability of community social enterprises to successfully identify social needs. The process of needs-identification should also proceed with both formal and informal data gathering exercises designed to map and match social needs with gaps in public service provision (Farmer et al., 2012). Local knowledge needs to be combined with wider and higher-level expertise because part of the explicit role of social enterprises is to bring communities together, rather than assuming that it will happen spontaneously or automatically (Farmer et al., 2012). This combination of local and wider expertise is a form of multi-level governance.

In terms of building and disseminating leadership, leadership is a skill which comes from experience, and also requires project managers and facilitators to be trained in diffusing leadership and responsibilities. As well-being essential in community social enterprise facilitation, these types of network-building and capability-building roles are also essential in the regional innovation strategy discussed in this report, along with the other elements of the smart city agenda. The building, dissemination and diffusion of leadership capabilities are essential in order to foster a real sense of local ownership and to promote other aspects of local social innovation (Farmer et al., 2012).

The galvanising of local community actors in social enterprise activities via both participation and leadership-dissemination together helps to build legitimacy at different levels. Community social enterprises are aimed at driving service co-production, by working in partnership with both public and private authorities in ways that allow new solutions to be found which are based on bottom-up local engagement and designed to build strong local support (Farmer et al., 2012). This requires flexibility and openness on the part of other (and particularly higher level) governance authorities in order to facilitate both multi-level governance and social innovation which is also commercially viable. Experience from many cases suggests that successful service co-production derives from participation based on the desire of community members to foster social activities (Farmer et al., 2012). At a basic level, simply the enjoyment of social activities appears to be crucial for encouraging more ambitious service-delivery options, and once again, this reiterates the importance of employing participatory approaches to technology implementation.

In the context of these types of active-ageing and social-inclusion actions, from a wider regional and policy perspective localised pilot interventions and experiments can be very successful because interactive approaches allow for the testing of what aspects of the technology-implementation programmes work really do work or do not work with older people in the local context, and to better facilitate the trialing of other options. As already mentioned, the results of these types of programmes do appear to be sensitive to the local cultural context, so piloting, trialing, experimenting and testing is essential at the local scale before programmes are rolled out on a wider regional scale.

If such programmes can be made to work in the case of L'Aquila and its surrounding villages – and there is no reason why this should not be the case – then L'Aquila can be the test case which allows Abruzzo to become a European leader in the deployment of electronic-interactive technologies for enhancing the active ageing and social inclusion of seniors.

As such, the implementation of interactive and participatory electronic programmes for active-ageing – as with the deployment of new network-based energy and environmental systems and also new initiatives for fostering local creativity – should all be integrated into an overall L'Aquila portfolio of experimental policy interventions. This portfolio of policy experiments, pilots and trials, must be combined with research and based on ongoing monitoring and evaluation. The overall research programmes must be aimed at identifying and implementing novel solutions for community engagement, economic dynamism, and environmental sustainability, which are appropriate for the local context in the light of the 2009 earthquake. L'Aquila should aim to develop systems which can be demonstrated to be so robust that they can be adapted and rolled out in other communities and localities facing severe challenges associated with regional resilience, and in particular in regions facing natural disasters.

## Note

1. See for example [www.laterlife.com](http://www.laterlife.com).

## *Bibliography*

- Alexy, E.M. (2000), “Computers and Caregiving: Reaching Out and Redesigning Interventions for Homebound Older Adults and Caregivers”, *Holistic Nursing Practice*, Vol. 14, No. 4.
- Baker, P.M.A., J.C. Bricout, N.W. Moon, B. Coughlan and J. Pater (2012), “Communities of Participation: A Comparison of Disability and Aging Identified Groups on Facebook and LinkedIn”, *Telematics and Informatics*, Vol. 30.
- Barrett, F.A. (2009), “Connecting Older Adults to Quality Health Information on the Internet: A Selective Annotated Bibliography”, *Reference Services Review*, Vol. 37, No. 4.
- Bickmore, T.W., L. Caruso, K. Clough-Gorr and T. Heeren (2005), “It’s Just Like You Talk to a Friend’ Relational Agents for Older Adults”, *Interacting with Computers*, Vol. 17.
- Blazun, H., K. Saranto and S. Rissanen (2012), “Impact of Computer Training Courses on Reduction of Loneliness of Older People in Finland and Slovenia”, *Computers in Human Behavior*, Vol. 28.
- Blit-Cohen, E. and H. Litwen (2004), Elder Participation in Cyberspace: A Qualitative Analysis of Israeli Retirees, *Journal of Aging Studies*, Vol. 18.
- Carpenter, B.D. and S. Buday (2007), “Computer Use Among Older Adults in a Naturally Occurring Retirement Community”, *Computers in Human Behavior*, Vol. 23.
- Carter, D. (2009), “E-Government: Turning the Digital Divide into a Digital Divident in Manchester (UK)”, in H.S. Geyer, *International Handbook of Urban Policy: Volume 2: Issues in the Developed World*, Edward Elgar, Cheltenham.
- Chung, J.-E., N. Park, H. Wang, J. Fulk and M. McLaughlin (2010), “Age Differences in Perceptions of Online Community Participation Among Non-users: An Extension of the Technology Acceptance Model”, *Computers in Human Behavior*, Vol. 26.
- Cresci, M.K. and P.A. Jarosz (2010), “Bridging the Digital Divide for Urban Seniors: Community Partnership”, *Geriatric Nursing*, Vol. 31, No. 6.
- Dale, A. and J. Onyx (2005), *Social Capital and Sustainable Community Development*, UBC Press, Vancouver.
- Farmer, J., C. Hill and S.-A. Munoz (eds.) (2012), *Community Co-Production*, Edward Elgar, Cheltenham.
- Hanson, V.L. (2010), “Influencing Technology Adoption by Older Adults”, *Interacting with Computers*, Vol. 22.

- Hart, T.A., B.S. Chaparro and C.G. Halcomb (2008), "Evaluating Websites for Older Adults: Adherence to 'Senior-friendly' Guidelines and End-user Performance", *Behaviour & Information Technology*, Vol. 27, No. 3.
- Heart, T. and E. Kalderon (2011), "Older Adults: Are They Ready to Adopt Health-Related ICT?", *International Journal of Medical Informatics*, doi: 10.1016/j.ijmedinf.2011.03.002.
- Hill, R., P. Benyon-Davies and M.D. Williams (2008), "Older People and Internet Engagement: Acknowledging Social Moderators of Internet Adoption, Access and Use", *Information Technology and People*, Vol. 21, No. 3.
- Hough, M. and A. Kobylanski (2009), "Increasing Elder Consumer Interactions with Information Technology", *Journal of Consumer Marketing*, Vol. 26, No. 1.
- Hubregtse, S. (2005), "The Digital Divide within the European Union", *New Library World*, Vol. 106, No. 3.
- Juznic, P., M. Blazic, T. Mercun, B. Plestenjak and D. Majcenovic (2006), "Who Says That Old Dogs Cannot Learn New Tricks?: A Survey of Internet/Web Usage Among Seniors", *New Library World*, Vol. 107, No. 7.
- Kresl, P.-K. and D. Ietri (2010), *The Aging Population and the Competitiveness of Cities: Benefits to the Urban Economy*, Edward Elgar, Cheltenham.
- Lagana, L. (2008), "Enhancing the Attitudes and Self-Efficacy of Older adults Towards Computers and the Internet: Results of a Pilot Study", *Educational Gerontology*, Vol. 34, No. 9.
- Laurich, R. (2002), "The Platinum Web: Sites Dedicated to Senior Citizens on the Internet", *Collection Building*, Vol. 21, No. 4.
- Lee, B., Y. Chen and L. Hewitt (2011), "Age Differences in Constraints Encountered by Seniors in their Use of Computers and the Internet", *Computers in Human Behavior*, Vol. 27.
- Mann, W.C., P. Belchior, M.R. Tomita and B.J. Kemp (2005), "Computer Use by Middle-aged and Older Adults with Disabilities", *Technology and Disability*, Vol. 17.
- McMellon, C.A. and L.G. Schiffman (2000), "Cybersenior Mobility: Why Some Older Consumers May Be Adopting the Internet", *Advances in Consumer Research*, Vol. 27.
- Melenhorst, A.S., W.A. Rogers and D.G. Bouwhuis (2006), "Older Adults' Motivated Choice for Technological Innovation: Evidence for Benefit-Driven Selectivity", *Psychology and Aging*, Vol. 21, No. 1.
- Morell, R.W., C.B. Mayhorn and J. Bennet (2000), "A Survey of World Wide Web Use in Middle-Aged and Older Adults", *Human Factors: The Journal of the Human Factors and Ergonomics Society*, Vol. 42.
- Morris, A., J. Goodman and H. Brading (2007), "Internet Use and Non-use: Views of Older Users", *Universal Access in the Information Society*, Vol. 6.
- Nahm, E.-S., B. Resnick and J. Gaines (2004), "Testing the Reliability and Validity of Computer-mediated Social Support Measures Among Older Adults: A Pilot Study", *CIN: Computers, Informatics, Nursing*, Vol. 22, No. 4.

- Niemelä-Nyrhinen, J. (2007), “Baby Boom Consumers and Technology: Shooting Down Stereotypes”, *Journal of Consumer Marketing*, Vol. 24, No. 5.
- Ng, C-H. (2007), “Motivation Among Older Adults in Learning Computing Technologies: A Grounded Model”, *Educational Gerontology*, Vol. 34, No. 1.
- Obi, T., D. Ishmatova and N. Iwasaki (2012), “Promoting ICT Innovations for the Ageing Population in Japan”, *International Journal of Medical Informatics*, doi: 10.1016/j.ijmedinf.2012.05.004.
- Opalinski, L. (2001), “Older Adults and the Digital Divide: Assessing Results of a Web-Based Survey”, *Journal of Technology in Human Services*, Vol. 18, No. 3-4.
- Pan, S. and M. Jordan-Marsh (2010), “Internet Use Intention and Adoption among Chinese Older Adults: From the Expanded Technology Acceptance Model Perspective”, *Computers in Human Behaviour*, Vol. 26.
- Peacock, S.E. and H. Künemund (2007), “Senior Citizens and Internet Technology: Reasons and Correlates of Access versus Non-Access in a European Comparative Perspective”, *European Journal of Ageing*, Vol. 4.
- Pfeil, U., P. Zaphiris and S. Wilson (2009), “Older Adults’ Perceptions and Experiences of Online Social Support”, *Interacting with Computers*, Vol. 21.
- Rantz, M.J., K.D. Dorman Marek, M. Aud, H.W. Tyrer, M. Skubic, G. Demiris and A. Hussam (2005), “A Technology and Nursing Collaboration to Help Older Adults Age in Place”, *Nursing Outlook*, Vol. 53, No. 1.
- Saunders, E.J. (2004), “Maximizing Computer Use Among the Elderly in Rural Senior Centers”, *Educational Gerontology*, Vol. 30, No. 7.
- Sayago, S., and J. Blat (2011), “Telling the Story of Older People E-mailing: An Ethnographical Study”, *International Journal of Human-Computer Studies*, Vol. 68.
- Selwyn, N., S. Gorard, J. Furlong and L. Madden (2003), “Older Adults’ Use of Information and Communications Technology in Everyday Life”, *Ageing & Society*, Vol. 23.
- Shapira, N., A. Barak and I. Gal (2007), “Promoting Older Adults’ Well-being through Internet Training and Use”, *Ageing & Mental Health*, Vol. 11, No. 5.
- Social Enterprise London (2006), *Social Enterprises in London: A Review of Annual Business Survey (LABS) Evidence*, Greater London Authority, London.
- Strong, M.L., L. Guillot and J. Badeau (2012), “Senior CHAT: A Model for Health Literacy Instruction”, *New Library World*, Vol. 113, No. 5.
- Sum, S., R.M. Mathews, I. Hughes and A. Campbell (2008), “Internet Use and Loneliness in Older Adults”, *Cyberpsychology & Behavior*, Vol. 11, No. 2.
- Tatnall, A. and J. Lepa (2003), “The Internet, E-commerce and Older People: An Actor-Network Approach to Researching Reasons for Adoption and Use”, *Logistics Information Management*, Vol. 16, No. 1.
- Thayer, S.A. and S. Ray (2006), “Online Communication Preferences across Age, Gender and Duration of Internet Use”, *Cyberpsychology & Behavior*, Vol. 9, No. 4.

- Turner, P., S. Turner and G. van de Walle (2007), “How Older People Account for their Experiences with Interactive Technology”, *Behaviour & Information Technology*, Vol. 26, No. 4.
- Vuori, S. and M. Holmlund-Rytkönen (2005), “55+ People as Internet Users”, *Marketing Intelligence & Planning*, Vol. 23, No. 1.
- White, J. and A. Weatherall (2000), “A Grounded Theory Analysis of Older Adults and Information Technology”, *Educational Gerontology*, Vol. 26, No. 4.
- Xie, M. (2008), “Multimodal Computer-Mediated Communication and Social Support among Older Chinese Internet Users”, *Journal of Computer-Mediated Communication*, Vol. 13.

## *Annex 6.A3*

### **Smart city networks, fora and research programmes**

There are now a range of international networks, associations, programmes and competitions for promoting smart city agendas whereby localities interact, share ideas and information and experiences on new initiatives, and foster best-practices via engagement with peer cities and regions. These smart city programmes and agendas include:

- European Initiative on Smart Cities  
*<http://setis.ec.europa.eu/about-setis/technology-roadmap/european-initiative-on-smart-cities>*
- European Smart Cities Network  
*<http://smart-cities.eu/>*
- Smart City Ranking of European Medium-Sized Cities  
*[www.smart-cities.eu/download/smart\\_cities\\_final\\_report.pdf](http://www.smart-cities.eu/download/smart_cities_final_report.pdf)*
- UNESCO Creative Cities Network  
*[www.unesco.org/new/en/culture/themes/creativity/creative-industries/creative-cities-network](http://www.unesco.org/new/en/culture/themes/creativity/creative-industries/creative-cities-network)*
- INTERREG programme on smart cities  
*[www.smartcities.info/](http://www.smartcities.info/)*
- Smart city conference network  
*[www.smartcities2012.org/](http://www.smartcities2012.org/)*  
*[www.meetingminds2012.org/](http://www.meetingminds2012.org/)*
- MIT smart cities research group  
*<http://cities.media.mit.edu/>*
- Smart city research networks  
*[www.urenio.org/](http://www.urenio.org/)*  
*<http://meshcities.com/>*
- IBM Smarter Cities Program  
*[www.ibm.com/smarterplanet/us/en/smarter\\_cities/overview/index.html](http://www.ibm.com/smarterplanet/us/en/smarter_cities/overview/index.html)*



- IBM Smarter Cities Challenge  
*<http://smartercitieschallenge.org/>*
- World Smart City Rankings  
*[www.fastcoexist.com/1679127/the-top-10-smart-cities-on-the-planet](http://www.fastcoexist.com/1679127/the-top-10-smart-cities-on-the-planet)*
- Smart Cities Industry Summit  
*<http://smartcitiesindustrysummit.com/>*

### **Smart technology, e-mobility and e-health research networks, fora and programmes**

- Net!Works: The European Technology Platform for Communications Networks and Services  
*[www.networks-etp.eu/home.html](http://www.networks-etp.eu/home.html)*
- eSafety Forum  
*[http://ec.europa.eu/information\\_society/activities/esafety/forum/index\\_en.htm](http://ec.europa.eu/information_society/activities/esafety/forum/index_en.htm)*
- The Internet of Things Initiative  
*[www.iot-i.eu/public](http://www.iot-i.eu/public)*
- IEEE EMBC series of conferences.  
*[www.embs.org](http://www.embs.org)*
- The Ambient Assisted Living Programme and Forum (AAL)  
*[www.aal-europe.eu/](http://www.aal-europe.eu/)*

### **Smart transport networks, fora and research programmes**

- EU Mobility and Transport Forum  
*[http://ec.europa.eu/transport/strategies/2009\\_future\\_of\\_transport\\_en.htm](http://ec.europa.eu/transport/strategies/2009_future_of_transport_en.htm)*
- ENT Era Net Transport  
*[www.transport-era.net/](http://www.transport-era.net/)*
- Carbon Aware Travel Choice Programme  
*[www.eu-forum.org/catch/](http://www.eu-forum.org/catch/)*
- Eurosfaire - Keeping Europe's Cities on the Move: EU Funded Research to Ensure Urban Mobility  
*[www.eurosfaire.prd.fr/7pc/documents/1303199785\\_keeping\\_europe\\_s\\_cities\\_on\\_the\\_move.pdf](http://www.eurosfaire.prd.fr/7pc/documents/1303199785_keeping_europe_s_cities_on_the_move.pdf)*
- Siemens: Green Light for Sustainable Urban Development  
*[www.siemens.com/entry/cc/en/urbanization.htm](http://www.siemens.com/entry/cc/en/urbanization.htm)*
- European Transport Forum  
*<http://europeantransportforum.eu/>*

### **Other related ICT systems fora and research networks**

- ECIS European Conference on Information Systems  
*<https://sites.google.com/site/ecis2013nl/>*
- ICIS International Conference on Information Systems  
*<http://icis2012.aisnet.org/>*.
- AIS Association for Information Systems  
*<http://start.aisnet.org/>*



## Chapter 7

### Lessons for policy making in post-disaster regions

This report identifies specific policy recommendations and concrete options for Abruzzo to increase its resilience to future shocks. It also draws from the experiences in other OECD regions, either where natural disasters have caused the rethinking of the development model, or where long-term decline has forced such a rethink. These shared experiences can then provide valuable lessons on the types of policy and governance options for rebuilding a stronger, more resilient and more prosperous region over the long term.

The issues raised in this report can help governments to rethink regional development strategies in advance, either in the case of regions which are always vulnerable to natural disasters or in the case of regions facing long-term decline. Finally, this report should also be of interest to decision makers, opinion leaders and community residents who want to identify options and instruments for implementing change in their own localities.

From the analysis of the Abruzzo case, eight guiding recommendations for building resilient regions after a natural disaster can be drawn. These lessons provide a starting point and a guiding framework to monitor experiences and good practices for policy making after a natural disaster.

The content of this report and the eight guiding recommendations address neither the crucial aspects of pre-disaster planning nor the immediate aftermath of a disaster. The focus of this report is instead on the design and implementation of a longer-term development strategy to build resilience in a post-disaster region. As it is argued in the report the resilience of a regional system strongly depends on the quality of the public and private policy responses to natural or social shocks.

The eight recommendations for building resilient regions after a natural disaster are the following:

1. **Make sure that short-term decisions do not constrain long-term options.** Short-term reconstruction decisions will impact the options available for long-term sustainable development. Therefore, a long-term strategic vision should be designed shortly after the disaster. Reconstruction must become the opportunity to rethink and implement a development strategy based on local potential. Recovery efforts need to be integrated into a coherent strategy of economic and social development focused on the long-term economic potential and job creation of the areas which have been affected.
2. **Identify the economic base and the social and economic drivers specific to the region to increase its resilience.** The shock induced by the natural disaster can become an opportunity to break historic paths for regions which were struggling before the disaster. Since recovery may be a long process, it is essential to identify

the actions offering the greatest potential for having a rapid impact on the economy and society as the region attempts to recover from the natural disaster. Also, sequencing priorities will help to provide a feasible timeline for recovery and give early success signals to create endorsement and ownership.

3. **Develop an integrated strategy for redevelopment after a natural disaster by strengthening the dialogue among stakeholders to raise the profile of needed reforms and quality of decisions.** Accompany the process of decision making by identifying conditions for the implementation of the strategy and the actors involved. Co-operation among public-private actors and different levels of government is crucial, as bearing the social cost of a natural disaster goes beyond the financial and organisational capacity of the affected region.
4. **Strategic choices have to be locally led.** While the required resources, whether financial, organisational, or of capacity, cannot be entirely devolved to local institutions, the strategic choices for the development of the region and the policy instruments to implement it must be locally led. Civil society and the private sector are important parts of such a place-based solution.
5. **Use the occasion of a crisis to introduce reforms or standards for the country.** Because national resources and capacity play a role in defining the development strategy for a post-disaster region, out of the crisis caused by the natural disaster, standards beneficial for the entire country in case of future shocks should be drawn.
6. **Foster public participation to help decision making.** Natural disasters undermine not only the physical capital but also the social and cultural fabric of a region. Therefore, the regional development strategy should understand and reflect the community's vision. Many past experiences have shown that when communities are allowed and supported to embark on a participatory process, they can provide inputs to complex strategic decision making and thus facilitate a lasting recovery.
7. **Make public deliberation a regular component of the regional development strategy.** Identify spaces for community deliberation, both physical and online, organise institutional meetings to discuss progress, so as to ensure that the opinions expressed have an effective influence on the decision-making process. International experience suggests that measuring the key outcomes of a region's strategy is critical for monitoring progress, increasing accountability and motivating citizens and policy action.
8. **Build trust, increase accountability of policy making and improve capacity of administrations.** Improve accessibility, quality and disclosure of information on reconstruction expenditures, criteria and timelines as a start. Then invest in resources – skills and funds – to provide information systems for gathering and sharing key outcomes of the regional strategy. Targets of accountability, transparency, and dialogue with private stakeholders and civic society as well as multi-sectoral planning, can improve the capacity of administrations. Policy evaluation has a decisive role in offering insights on conditions, causalities and bottlenecks for the implementation of policies and in suggesting ideas for how to revise objectives, re-allocate resources and identify the tools to deliver results.

## **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

# Policy Making after Disasters

## HELPING REGIONS BECOME RESILIENT

### The Case of Post-Earthquake Abruzzo

#### Contents

Executive summary

Assessment and recommendations

Chapter 1. Regional trends and development challenges in Abruzzo

Chapter 2. A renewed governance system to improve regional policy in Abruzzo

Chapter 3. Open policy making to build a resilient Abruzzo

Chapter 4. Regional innovation strategy

Chapter 5. Improving the use of the cultural heritage and natural environment

Chapter 6. An agenda for L'Aquila towards 2030

Chapter 7. Lessons for policy making in post-disaster regions

Consult this publication on line at <http://dx.doi.org/10.1787/9789264189577-en>.

This work is published on the OECD iLibrary, which gathers all OECD books, periodicals and statistical databases. Visit [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org) for more information.