

**SPREADING THE EAGLE'S WINGS SO IT MAY FLY:
RE-LAUNCHING THE ECONOMY OF L'AQUILA REGION AFTER THE EARTHQUAKE**

EXECUTIVE SUMMARY

1. The L'Aquila earthquake of April 6, 2009 killed almost 300 people, and destroyed a large part of the built environment, as well as essential infrastructure networks. Besides the need to provide the population hit by the earthquake with immediate care and lodging, the disaster poses important challenges related to the economic re-construction of the region affected. To spread its wings and fly towards a stronger economic future, the city must invest in its assets to create new growth opportunities, while ensuring effective and inclusive governance.
2. The following nine projects have been identified as leverages a) to redevelop and further valorise the University of L'Aquila, which is the city's economic basis, b) to renew the attractiveness of the historical centre, and c) to engage citizens in re-building the economy while ensuring the appropriate information and governance capacity for the economic re-construction of the region.

Projects for redeveloping the University of L'Aquila and promoting links with business

3. The University of L'Aquila needs to specialize in areas of excellence to re- attract students. Bridges must also be created between academic and industrial research.
 1. **The Nest of the Eagle's Future: the GRAN SASSO INSTITUTE for Research in Basic Sciences.** The Gran Sasso Institute (GSI), located at and benefiting from the Laboratori Nazionali del Gran Sasso in Assergi, will be a unique international and widely recognised research centre in Physics, Math and Chemistry, affiliated with the University of L'Aquila School of Sciences.
 2. **Graduate School in ICT for Inclusive and Networked Cities:** The School will ensure international-level research and academic opportunities while responding to local reconstruction and industry research priorities, in particular sustainable buildings, utilities networks, and the engagement of citizens and businesses.
 3. **Graduate School in Energy for Green Cities:** The School of Engineering will create a graduate school with a focus on sustainable energy that will provide expertise for the application of green building, green transport and renewable energy principles during the reconstruction of L'Aquila and will promote specialization in "regional green growth".
 4. **Joint laboratories to share knowledge among the University and local enterprises:** To increase regional knowledge-sharing, the University of L'Aquila and local small, medium and large enterprises will create laboratories jointly operated and staffed by academic and industrial researchers.

Projects for renewing the city through strategic restoration and innovative services

5. **The Nest of the Eagle's Heritage: an open laboratory for urban revitalization.** The Laboratory will collect, catalogue, restore, and reproduce traditional pieces from destroyed building. It will engage artisans skilled in local techniques, students, and foreign experts. The University of L'Aquila will link the laboratory to other high education institution as well as to firms engaged in technology for disaster recovery and prevention. The laboratory will be open to visitors to make the city's revitalisation an open process.
6. **The restoration and revitalization of an historical neighbourhood:** The restoration of one neighbourhood in the historical centre will serve as a model of integrated spatial planning and become a prototype for the subsequent projects. This intervention will bring together local knowledge and experiment with new techniques. Energy efficiency and environmental impact of traditional construction will also be addressed in this pilot project.
7. **Innovative services from the ground up:** Services delivered by below-ground infrastructure will be upgraded and extended, to improve the efficiency of provision, through a network of tunnels, whose construction has now been made economically feasible given the extent of rebuilding required due to the earthquake.
8. **Invest in better education:** Investments will improve students' competence in both primary and secondary education through a dedicated project run by the National Institute for Evaluation (INVALSI). At the same time, the reconstruction of damaged schools will optimize their geographic distribution and improve their quality.

Projects for effective multi-level governance, for communication and capacity building, and for engaging civil society

9. **A task force to coordinate the multi-level governance for re-development:** Drawing from the international experience, planning and project implementation would be entrusted to a task-force ("unità di missione"), responding to the Commissioner (the Region's President) and to the other local and central public authorities whose coordination is required by the decree 39/2009. The task force would be headed by a manager and would consist of a team composed partly by public administration's officials, partly by high-level technical experts selected with international procedures. This solution would provide the capacity, the political coordination, and the incentives for a speedy and effective decision-making process to take place. A "stakeholders committee" and an effective communication system would ensure citizens' and businesses' participation.

PROJECTS FOR A PROGRAMME: POLICY OPTIONS FOR RE-LAUNCHING THE ECONOMY OF L'AQUILA REGION AFTER THE EARTHQUAKE

INTRODUCTION

4. The L'Aquila earthquake of April 6, 2009 killed almost 300 people, and destroyed a large part of the built environment, as well as essential infrastructure networks. Besides the need to provide the population hit by the earthquake with immediate care and lodging, the disaster poses important challenges related to regional development.

5. The earthquake struck an economy facing severe demographic and structural policy challenges. In the last ten years economic growth in the Province of L'Aquila had slowed. Its per capita GDP is now around 80% of the national average and below the regional average. Before the disaster, the University of L'Aquila was a primary contributor to the area's economy, but its assets were underutilised. The University, which grew in the recent years to attract over 27,000 students, provided jobs, rental income and demand for local good and services. The earthquake damaged several buildings at the University of L'Aquila, and several students were killed when their student residence collapsed. Two weeks following the earthquake some of the university's academic activities resumed in tented areas, but many students have temporarily transferred to other universities in the region to complete their term. There is a real risk that many students, particularly the over 50% of the student population who come from outside L'Aquila province will not return to the University of L'Aquila for the 2009-10 academic year.

6. The city of L'Aquila, and primarily its historical centre, was also a key source of the area's economic growth. The historical centre hosted roughly half of all the city's retail establishments and professional services, and almost one-third of University students, generating a value-added output roughly equal to 30% of the city's total value-added output produced in the City of L'Aquila. The city's artistic and historical patrimony suffered great damage in the earthquake, with negative effects on the tourism sector, which had been expanding and had been considered a promising source of future growth. Professionals, who had increasingly established businesses and made their home in the historical centre, suffered a large share of the casualties during the earthquake and were forced temporarily to move their offices out of the centre. It is unclear whether they will return to rebuild.

7. The area's large companies and small to medium manufacturing enterprises also suffered heavy damage to infrastructure, equipment, and machinery. According to some estimates, the production capacity is now reduced to 60-70% and a further reduction in the internal demand is expected in the following months.

8. Before the earthquake, the University and the city had not fully realized their potential for generating economic growth. The student population grew by 60% from 2000-08, but the University had not played a key role in generating innovation and creating links with the private sector university. The historical centre relied mostly on student rents and consumption without diversifying its sources of revenue.

9. A change of vision is needed in the strategic choices for the redevelopment of the area. This vision should embrace both reconstruction choices to improve the quality of life of current and future generations and opportunities for innovation to enhance the city's attractiveness. In this context, re-launching the University, even if necessary, is not enough if not integrated into a broader longer-term strategy. A feasible vision is needed of what the L'Aquila region can be some years from now and what it can offer while the reconstruction takes place. The risk of residents and students not returning to L'Aquila, of rising social tensions and of the inability to preserve and strengthen pre-earthquake assets calls for an integrated growth strategy. This strategy relies on a vision of a multi-polar city where knowledge and innovation are the building blocks.

10. This integrated strategy needs to be accompanied by clear coordination and information-sharing among the multiple government agencies, as well as with the private sector, the University of L'Aquila, residents, students, and all other members of civil society. Three priorities for development emerge:

1. Redevelopment and valorisation of the role of the University of L'Aquila and promotion of links with business
2. Renewal of the city's attractiveness by strategic choices on restoration and promoting key innovative services
3. Effective multi-level governance of redevelopment through capacity building, information communication and engagement of civil society.

GUIDELINES AND PROJECT PROPOSALS

Projects for redeveloping the University of L'Aquila and promoting links with business

Problem

11. The future of L'Aquila economy depends on the future of the University. The University's most immediate priority is re-attracting students. This requires the University to provide physical facilities for classes, promote academic education and services that are competitive with the alternatives offered by other competing regional and national institutions, and assuring students of the availability of housing. The University must also improve its role as a source of regional development by using its linkages with local enterprises and research centres to create new sources of regional growth.

Guidelines

The University needs to specialize in areas of excellence to attract students for the 2009-10 academic year.

12. The University faces a potentially large reduction of its student population starting in the 2009-10 academic year. To attract students in search of high-quality education, it must signal capacity to specialize in some key areas of excellence. Three areas can serve as both immediate drivers of specialisation and tools to enhance the University's contribution to local reconstruction and regional development

1. Basic Sciences

2. Information and Communication Technology (ICT)

3. Sustainable Energy

Other areas of academic expertise, such as the Humanities or Architecture, may provide additional opportunities for the restoration and renewal of the city.

13. The three areas identified above can serve as the structure to start building a multi-campus University that offers student housing and social activities in addition to academic and research opportunities. To make this choice quickly feasible, a special status needs to be conferred on the Engineering and Science schools to allow them to seek approval for changes directly from the Ministry of Education.

Bridges must be created between academic and industrial research

14. University researchers and local entrepreneurs speak different professional languages. Small and medium enterprises in the region are not always capable to express a clear and solvable demand for innovation, while researchers rarely explore non-academic issues. Brokers are needed who can “span boundaries” between the University and local enterprises. This can be achieved by creating more opportunities for industrial leaders to teach in the University as “Professors of Practice”, by increasing and better framing the opportunities for internship, by promoting contracts for graduate students to work on joint research projects with local enterprises, and by developing technological centres and techno poles.

L’Aquila’s knowledge of management of natural disasters and restoration should become a reference for the future

15. New sources of development may come from combining local expertise and skills attracted to L’Aquila by the reconstruction. Restoration techniques, local building construction, engineering, and scientific strengths can be drawn on to produce knowledge devoted to the risk assessment, prevention, management and restoration of manmade and natural disasters.

Projects to respond to short-term and long-term needs

16. The University can create internationally-recognized areas of expertise and strengthening its knowledge sharing with local enterprises through four projects:

Project 1: The Nest of the Eagle’s Future: the GRAN SASSO INSTITUTE for Research in Basic Sciences

17. The Gran Sasso Institute (GSI) located at the Laboratori Nazionali del Gran Sasso in Assergi and affiliated with the University of L’Aquila School of Sciences will be a unique research centre in Physics, Math, Chemistry and Theoretical Computer Science. Modelled after the Aspen Institute in the United States, the GSI will provide research facilities, graduate seminars, conferences, and housing for students, teachers and visitors. The GSI will begin by running highly specialized educational programs for doctoral candidates and by hosting international conferences. Once laboratories, teaching space, and housing are constructed, the GSI will provide degree programs and teaching opportunities similar to that of the Ecole Normale Supérieure in France, in which professors at the height of their expertise are invited to teach and conduct research for approximately five years. PhD students and a limited number of undergraduate students will benefit from this program. The GSI will offer degrees through the University of L’Aquila, but will select students through a competitive process. The combination of internationally recognized research facilities and a natural environment that stimulates thought and academic discussion will attract students and professors from inside and outside Italy. .

Project 2: The Graduate School in ICT for Inclusive and Networked Cities

18. Before the earthquake, the University of L'Aquila and the Province had already begun to develop capacity for information and communication technology (ICT) research and manufacturing. The Schools of Science and Engineering will build on this strength by creating a graduate school for ICT studies. The graduate school will be designed to offer international-level research and academic opportunities while responding to local reconstruction and industry research priorities. The ICT graduate school will provide guidance and expertise to the city of L'Aquila on the reconstruction and improvement of communication infrastructure in the city. The school will also be working with industry partners to identify and fund PhD research programs and to draw "Professors of Practice" from industry. The University's Information Engineering Program and Information Science Program will grant the doctoral degrees and provide teaching and administration of the school. The initial offering for the 2009-10 academic year will be an interdisciplinary PhD program and post-doctoral research positions for 15-20 candidates. With the construction of teaching space, laboratories, and housing for students and visiting researchers this program can grow to host 100 PhD students and be a catalyst for ICT innovation for local enterprises. The school would also comprise a "Communication laboratory", linked to the "stakeholders committee" envisaged at point 35. The Communication laboratory would be responsible to develop a communication strategy based on territorial marketing that would take into account key regional socio-political characteristics. The laboratory would also focus on the development of institutional communication capacities within the public administration, providing the training to civil servants nationwide.

Project 3: The Graduate School in Energy for Green Cities

19. The School of Engineering is prepared to build on its international reputation for energy engineering by creating a graduate school for doctoral studies, with a focus on sustainable energy. This school will play a key role in providing expertise for the application of green building and green energy principles during the reconstruction of L'Aquila. The school will also strengthen existing relationships with local enterprises to help promote regional specialization in sustainable energy technologies. By drawing on existing expertise within the School of Engineering and within the School of Science, the Graduate School already has the faculty expertise needed to conduct innovative research and provide international-level training in sustainable energy technologies. It will be housed during the 2009-10 academic year with the Industrial Engineering Departments. With the subsequent construction of teaching space, research facilities, and housing for students, the graduate school will grow to attract international PhD students and researchers by also offering them the opportunity to apply their research and knowledge to the reconstruction of the city of L'Aquila.

Project 4: Joint laboratories to share knowledge among the University and local enterprises

20. To strengthen the regional capacity to innovate, the University of L'Aquila and local small, medium and large enterprises need to go farther than their past partnering. Laboratories jointly operated and staffed by academic and industrial researchers will provide a means for ongoing knowledge-sharing. The joint laboratories will differ from existing industrial research laboratories because they will provide a catalyst for the exploration of new technologies. Joint laboratories will involve multi-lateral agreements between the university and enterprises. Start-up funding will be needed for the construction of the laboratories. Industry partners and academic research grants will then jointly contribute to their ongoing funding. In some areas where the potential for adapting and developing innovations is already high (such as Synthetic aperture radar or Automatic dependent surveillance) business aids regulated by UE horizontal rules could be appropriately aimed at promoting immediate industrial effects.

Projects for renewing the city through strategic restoration and innovative services

Problem

21. The strategic choices of what, how and in which order to restore the built environment and the cultural heritage in L'Aquila represent an important part of the plan to re-launch the regional economy. The key objective is to rebuild L'Aquila in the same location, but with improvements. The reconstruction of L'Aquila should provide an opportunity for the development of new economic activities able to enhance the role of local entrepreneurs and professional services. The revitalisation of the city is a, however, a challenging objective. The city cannot be rebuilt in a few months; public goods and services, which depend on physical infrastructure, will not be available at pre-earthquake levels for a relatively long time. However, the success of the city's redevelopment strategy depends on its capacity to attract former and first-time residents as well as investment despite lacking of some elements of basic infrastructure in the coming years.

Guidelines

The resilience of the city must balance innovation and identity

22. The centre of L'Aquila must first become a safer place where the built environment is made resilient to future disasters. This is a key issue to bear in mind while revitalising the area, which will necessarily call for some significant changes. A seismic and geological map of the area as well as of the infrastructure and materials in place before the earthquake will guide decisions on where to intervene. Before starting reconstruction interventions, it is important to map such characteristics using available data and, when necessary, new techniques. Reconstruction interventions, however, should also consider the immaterial aspect of revitalization: the value of the memories of places, which are the sources people's attachment to them. Structural changes should be discussed with the population to make clear both reconstruction benefits as well as potential physical changes.

The city's restoration must mobilize and attract human capital

23. Second, knowledge and training are the key components for L'Aquila's revitalisation. Restoring the city will require the presence in the city of a large range of specific skills able to respond to the complexity of the project. Some of these skills are already available within the region. The University and the local labour market represent a primary source of human capital to be used in the interventions. Skilled labour can be also imported from other parts of Italy and abroad. International organizations could also be involved in exchange programs for both students and professionals and in the participation to actual restoration. Due to this mobilisation of internal and external competencies, the revitalisation of L'Aquila represents an opportunity to exchange knowledge and create specific training in the fields of spatial planning, renewal interventions, and restoration. This would create new economic opportunities in L'Aquila, which could become an international hub in these sectors.

The city needs to provide top-quality services

24. Finally, the quality of public goods and services is crucial to attract old and new residents. High-quality education for children, advanced telecommunication services, innovations for waste disposal can compensate for the difficulties that living in the area will create for several years. L'Aquila could become the place to experiment top-quality innovative services.

Short-term projects to catalyze growth

25. While these strategic decisions are being taken, some short-term actions can be implemented. Although all places and functions of the city are equally important, some of them are more than others likely to enhance the capacity of the area to re-gain (or even to enhance) its competitiveness in the short term. Surveys of the damages and opportunities for prompt utilisation of public administration, buildings should lead to a quick decision on where the main public functions will be located during the reconstruction. At the same time, some projects should be speedily implemented to mobilize expertise, serve as model for the following projects and catalyze growth.

A plan to integrate housing supply must be defined

26. If the city is deciding to rebuild where it was and to re-attract its residents as soon as possible, then a medium to long-term plan is urgently needed for the temporary houses that the Civil Protection plans to construct (Project C.A.S.E.). The risk exists of a mismatch between housing supply and demand: too few are in supply now, but too many housing units may be available later when residents return and rebuild the centre of L'Aquila. A clear vision of how these temporary houses can be used must take shape. In order to become attractive over the long-term and to avoid the risk to be detached from the social identity of the area, these new developments must be integrated with dedicated services.

Evaluation of the projects' implementation and results is needed

27. A permanent evaluation of the progress and implementation of projects during the revitalization of the area will help to learn by results and change subsequent choices. This evaluation should use ideas, technical assistance, previous experience brought by central and local administrations, University, professionals and civil society. Therefore, the Administration in charge of defining an action plan for the revitalization of the city should benefit from a coordinated centre for the evaluation.

Projects to respond to short-term and long-term needs

28. The renewal of the city and the promotion of key innovative services can be spurred through the following four projects:

Project 5: The Nest of the Eagle's Heritage: an open laboratory for urban revitalization

29. L'Aquila could consider the creation of an Open Laboratory to collect, catalogue, restore, and, where needed, reproduce traditional pieces from destroyed building. The laboratory should be opened to visitors. In this way, residents would take part in the process and transform the facility in the first public space (agora) of the post-earthquake period. The Laboratory thus could become also a place in which the city reinvents itself, accepting the changes wrought by the earthquake and considering memories as an intangible asset to be used in the evolution towards the city of the future. The laboratory would be also the place where training in the field of recovery and restoration could be provided. Specific training, involving locals and foreigners, could take place in collaboration with international experts and institutions. The University of L'Aquila should play a key role and bridge the laboratory to other high education institutions

Project 6: The restoration and revitalization of an historical neighbourhood

30. After mapping the safe parts of the city, the restoration of one neighbourhood in the historical centre could serve as a model of integrated spatial planning and become a prototype for the subsequent projects. In this intervention it would be possible to pool together local knowledge and experiment new techniques under the lead of the Laboratory for reconstruction discussed above, and in close collaboration with private owners. For instance, it would be possible to understand how to adapt traditional construction

technologies and materials in order to upgrade the buildings' seismic resilience. Energy efficiency and environmental impact of traditional construction would be another issues assessed through this pilot project. These reconstruction experiments in historical neighbourhoods could be funded through the recent agreement between the Cassa Depositi e Prestiti and a group of banks active in the Abruzzi region or through partnership with other regions.

Project 7: Innovative services from the ground up

31. Services delivered by below-ground infrastructure can be upgraded through a network of tunnels, whose construction has been made economically feasible by the earthquake. For example, car parking could be built below-ground, thus reducing traffic congestion in the centre. Water distribution and sewage systems could be upgraded and optimized by being placed underground in easily accessible tunnels. The city could also be provided with an advanced system of fibre optics. The management of public lighting, remote heating and differentiated waste could be done through trenchless techniques, with the advantage of reducing maintenance costs and preserving the historical landscape. This would have a positive effect on real estate values. The experiences of other cities that have already experimented with these techniques show that this project can be implemented in a relatively short time. However, especially for the historical centre of L'Aquila, a feasibility analysis must be conducted to assess the possibility and cost of excavating and installing the services below ground.

Project 8: Invest in better education

32. Primary and secondary education is a key public service that needs to be restored and up-graded to relaunch the area. The project should be twofold. First, children living in the area must be provided with better education, starting with reading and mathematics. In order to achieve this objective, INVALSI, the Italian institute of evaluation, would be asked to provide for 5-8 years the following services for all the schools in the area: a) evaluate the competence of students in each school; b) provide to the schools, through a task-force, the support for identifying the weaknesses and for devising and implementing change; c) monitor and evaluate the effects of the new action. To avoid losing pupils, local authorities, in co-ordination with the central government, could also provide families with education services through ICT (social-networking, tele-education, virtual class-rooms and so on). This could be based on the experiences developed in some countries in providing education to rural areas, such as Canada, Finland, and Sweden. Finally, the reconstruction of damaged schools should optimize their geographical distribution and integration with the territory: a concentration in fewer buildings would allow saving funds for improving the quality of the facilities. Families should be provided with specific services to facilitate their accessibility to schools and schools' quality.

Projects for effective multi-level governance, for communication and capacity building, and for engaging civil society

Problem

33. Multiple levels of government are contributing to the redevelopment of L'Aquila. According to the legislative decree 39/09 the state (through several Ministries), the Majors, the President of the Province and the President of the Region (in its role of Commissioner for economic and social redevelopment) shall all participate to reconstruction, accordingly with the respective responsibilities envisaged by the decree. Both medium-long term planning decisions and the adoption and implementation of projects such as those presented in this document require effective multi-level governance coordination, consultation with businesses and citizens, and decision-making. Drawing from the experience of Italian regional development, the risk exists that consultation becomes a mere formality and that decision-making is fuzzy and not timely due to failing to coordination and lack of adequate incentive to act. These risks would be

increased if the regional and local governments will fail in mobilising and pooling together human resources that are adequate to performance the complex administrative and technical tasks that are required for re-development.

Guidelines

Coordination and cooperation among levels of government must be ensured through strong structure

34. Co-ordination and cooperation among levels of government should be ensured even in ordinary circumstances. But drawing upon international experiences, it is crucial to define how the complex governance structure that derives from the extraordinary situation would work efficiently in implementing the proposed projects and adopting policies to foster engagement, information sharing, communication and capacity building for an effective socio-economic redevelopment strategy.

The decision-making and implementation processes must be transparent

35. All government tiers must be engaged to ensure the presence of adequate local capacity and to guarantee information access as well as an appropriate communication strategy. Transparency and monitoring of the decision-making and implementation processes, to increase both government's accountability and citizens' participation in the redevelopment strategy, are also priorities to be addressed. Public institutions entrusted with the task of redevelopment must ensure a continuous flow of usable information. But the need also exists for the civil society to build its own tools to acquire information and to promote an open and critical cultural debate on the reconstruction process.

Projects to respond to short-term and long-term needs

Project 9: A task force to coordinate the multilevel governance for redevelopment

36. The multilevel governance for redevelopment must be entrusted to a unitary task-force, responding to the Commissioner (the Region's President) and to the other local and central public authorities whose coordination is required by the decree 39/2009 for decisions to be taken.

37. The proposed task force (i.e., "unità di missione") would be headed by a manager and would consist of: a) an Executive Committee with decisional power composed by the representatives of the various levels of government; b) a team of administrators and technical experts (in all the fields of the redevelopment process) composed partly of public administration's officials (from all local and central governments involved) , partly of high-level technical experts selected with international procedures and employed on a full-time basis; c) a "Stakeholders Committee" representing the various partners from the civil society, with full access to information, opportunity to express and communicate dissent and formulate proposals, although with no decisional power. The "unità di missione" would have the general task to implement the strategy of reconstruction and economic re-launching and the specific sub-tasks missions in which the strategy would be articulated (e.g. education, urban planning, underground services, research and industry, communication, etc).

38. Disaster reconstruction is a very complex endeavour, requiring a huge array of skill sets and a thorough knowledge of an ever-increasing variety of techniques and equipment. ICT can play a relevant role to facilitate the work of the "unità di missione", as international experience in long-term disaster recovery process shows. ICT should ensure accurate and real-time access to a comprehensive set of information including data on resource allocation (i.e., who is doing what and where), policies and projects, the territorial situation before and after the earthquake. Citizens would thus be provided with the opportunity to monitor and understand the government's decisions, as the use of ICT would facilitate a

more effective tracing of financial resources and project results, and help align aid inflows with priority needs.

39. The “unità di missione” would provide the citizens with well-organized and systematic ways to actively engage in the policy making process and in the work of the “unità di missione” by expressing ideas, feedback and suggestions on specific needs, proposed policies, actions and projects part of the reconstruction strategy. ICT would also support an enhanced communication between the authorities and the citizens, as well as among the citizens themselves. The “unità di missione” should, however, take into account the different levels of IT (digital) literacy among the various groups affected, and envisage a long-term and multichannel communication strategy. Even though participatory tools could include the establishment of a cyber forum, the use of mobile technology, the use of web 2.0 technology, etc, information should also be accessible via a physical location (e.g., post office, school, university, etc.). The above mentioned Graduate School in ICT for Inclusive and Networked Cities could play a crucial role in ICT enhanced communication for re-development.