

## INPUT PAPER

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### **IMPLEMENTATION OF THE “RESILIENCE OF COMMUNITIES” POLICY IN LAND USE PLANNING ON THE PROVINCIAL TERRITORY OF POTENZA**

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# 1. Introduction

Italian territory is largely characterized by all the major natural risks whose potential impacts on the community are very serious in case of disasters. For this reason, effective Disaster Risk Reduction (DRR) policies and actions are necessary at all institutional levels in order to meet the basic need of public and private safety of population (HFA, 2005).

In the last twenty years much work has been done especially at national scale to combat disasters from an operative point of view namely working on the construction and implementation of an operational national system that is now considered one of the most efficient all over the world.

Mostly starting from the early 2000es, also thanks to the occurrence of particularly serious and devastating disasters<sup>1</sup> that raised public awareness and political attention on risk-reductions themes<sup>2</sup>, the institutional behavior on DRR has started to radically improving at all levels. Different national financial measures are now provided for the “active” (or “structural”) risk-prevention, even if they are not exhaustive due to the scarcity of financial resources compared to the actual needs for interventions. They essentially contemplate some particular buildings and infrastructures<sup>3</sup> vulnerability assessment and reduction with respect to the major natural hazards (earthquake, hydraulic, landslides, climate change, etc). Recently, also the provision of a national financial fund for boosting the earthquake retrofitting and strengthening of private buildings (mainly house buildings) has been also introduced.

On the other side, in recent days a lot of extreme events (strong rain precipitations generating floods and rivers overflows) are experimenting and it is coming out that the system is still not really prepared both in contrasting and in facing them through ordinary resources and actions. The serious flood disasters occurred during the last years in Liguria, Sicily, Basilicata, Campania, Puglia and recently in Sardinia and Lazio (with an unbearable numbers of victims and losses) are an example of what is occurring.

These extreme precipitation events joined to the suffering of slow processes of drought and desertification (CRA-INEA, 2007) are evidence of an ongoing climate change process against which all the territory (cities and communities) need to be more and differently prepared (IPCC, 2013). These latest events are increasingly revealing that, despite having a good capacity of response in case of disasters (despite some differences among the institutional levels - from the national to the locals - or territories), some urgent and significant measures still need to be adopted to prevent their effects or to reduce their impacts, sometimes leading to real big disasters in terms of number of people and assets injured. The situation is getting more and more serious if the effects of climate variability and, more in general, of climate change, which are leading the territories to experiment very hard critical phenomena that aggravate the overall safety requirements and the local economy, are considered.

These disasters are revealing another important problem: the memory of historical extreme

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<sup>1</sup> Such as, for example, the 2002 Molise Earthquake which had as a major consequence a primary school collapse causing the death of 27 children and one teacher.

<sup>2</sup> Especially with regards to the public buildings and infrastructures.

<sup>3</sup> Those considered as strategic for their particular importance: schools, hospitals, etc.

events seems to be lost. Of particular relevance, the urban expansions in historically flood prone areas of the last decades, the indiscriminate soil sealing and consumption, all factors that contribute to increase the level of risks over the territory. What it is coming out is that, despite some huge investments and financial provision for reducing essentially the vulnerability of the built environment, the history of the urban planning (i.e. the political action over the local land-use governance) is revealing not adequate to afford natural disasters and climate change injuries. In this respect, the territorial and urban plans should be urgently drastically revised and updated with particular respect to climate change, providing adequate measures for the correct land use starting from the soil consumption reduction.

Fortunately, these last and always more recurrent events are increasing the public awareness about disasters effects which is increasingly resulting in a strong pushing of the *political will* to new and more efficient actions versus DRR policies. The experience on these latest and new disasters are increasingly leading the population to demand for urgent and more consistent intervention on the territorial government and management<sup>4</sup> and the political will is taking seriously into consideration new behaviors to be assumed by the local action.

In this general context, framed in a national and regional levels, the Province of Potenza is providing its institutional strong contribution in DRR and climate change contrast over the territory of its competence.

### **1.1 The Province of Potenza and the institutional framework**

Before going through the contents of the essay, it is worth giving a brief description of the Italian institutional apparatus at local scale and, in particular, the role of the Province in local land use planning and territorial safety. The description gives also a contribution of what has been done up to now as regards territorial policies and actions.



Image 1 : Area of study. The Basilicata region and the Province of Potenza

The Province of Potenza (Basilicata Region - Italy) is a local Authority of provincial

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<sup>4</sup> Also by accepting reductions in the land use consumption and by requiring more consistent investment in land maintenance.

(subregional) level whose policy/institutional action is performed also by the interaction with the local Municipalities. It has a geographical extension of about 6,500 km<sup>2</sup>, a population of about 400,000 inhabitants and an average population density of 60 inhabitants/km<sup>2</sup> (ISTAT, 2001). It counts 100 Municipalities among its territorial and government competences.

The Province of Potenza has many territorial competencies. Territorial planning and civil protection are the most significant as regards the territorial policies. Among them various activities are performed with regards to the local communities, municipalities and other institutional levels.

The Italian Civil Protection System (i.e. the institutional apparatus starting from local to national scale to prevent and combat disasters) foresees that at very local scale Municipalities have to act first because of the particular closeness to the citizens and the communities. On the other hand, in case of most severe disasters, the institutional levels of larger scale (the Province, the Prefecture, the Region and the State) have to contribute in a sort of subsidiary action, providing the necessary support to the affected cities, populations and communities.

So, the Province plays an important role both as regards the territorial governance and safety being its action oriented in providing a fundamental institutional support to the local actors<sup>5</sup> for the correct use of the territory.

## **1.2 Brief description of the major risks affecting the local territory and their characterization for civil protection and spatial planning activities**

Similarly to the rest of Italy, the Province of Potenza is mostly characterized by all the major natural and anthropic risks whose potential impacts on the community are very serious in case of disasters: seismic risk; hydrogeological risk; hydraulic risk; risk related with dams collapse; technological risks; forest fires; risk due to the presence of underground cavities; coastal erosion; climate change; desertification and land degradation; major-accident hazard; soil sealing; etc.

Since 2004 the Province of Potenza implemented a Provincial Civil Protection System working in particular with Municipalities, Volunteers and all local, regional and national actors of the civil protection system. At this regard, the provincial Civil Protection Office also produced two planning documents<sup>6</sup> (Province of Potenza, 2004) synthesizing the provincial "system".

Among the other instruments and tools for Disasters Risk Management (DRM), the realization of a Geographic Information System (GIS) allows the collection and updating of information about the different variables on the territory, by integrating and putting them in relation to each other. The data implementation of the territorial monitoring activities and of the elements exposed to risks has been performed during the years. These are mainly finalized to the Civil Protection actions aiming at giving a feature of the territorial risks, by integrating the static (buildings, handworks, etc.) and dynamic (calamitous phenomena and their space-time evolution) territorial information.

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<sup>5</sup> Including communities, Municipalities and other stakeholders.

<sup>6</sup> The Provincial Risk Assessment/Mitigation Plan and the Emergency Management Plan.

Any detailed information has been gathered and catalogued on different layers for characterizing the natural and anthropic territory and its main risks and hazards<sup>7</sup> (Attolico et al, 2009, 2010), (Province of Potenza, 2004).

As examples of Risk Assessment performed, some maps can be showed for particular risks. For a comprehensive description of all the Risk Assessment and Evaluation activities, references are made to the official documents and works listed in bibliography.

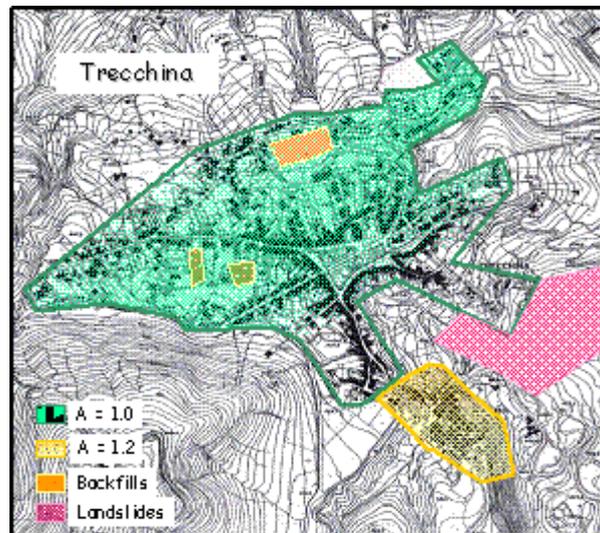


Image 2 : Trecchina Municipality : seismic amplification due to soil characteristics

The map shows, for one Municipality of the Province of Potenza, the seismic amplification due to soil characteristics and other particular geological aspects that could represent hazard for the built environment.

The amplification factor is mainly used for design purposes of new structures, but it could be also used for elaborating more realistic earthquake's *event* and *damage scenarios* taking into account the particular characteristics of the soil.

In case of disasters, the information about the presence of landslides and other geological hazards can provide important elements for urban planning and disaster management activities.

Another kind of hazard is connected with the hydraulic risk characterizing the river system.

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<sup>7</sup> In order to represent the effects of the ongoing or predicted calamity and its space-time evolutions, dedicated calculation algorithms have been also implemented. With the use of territorial information they can simulate event and damage scenarios.

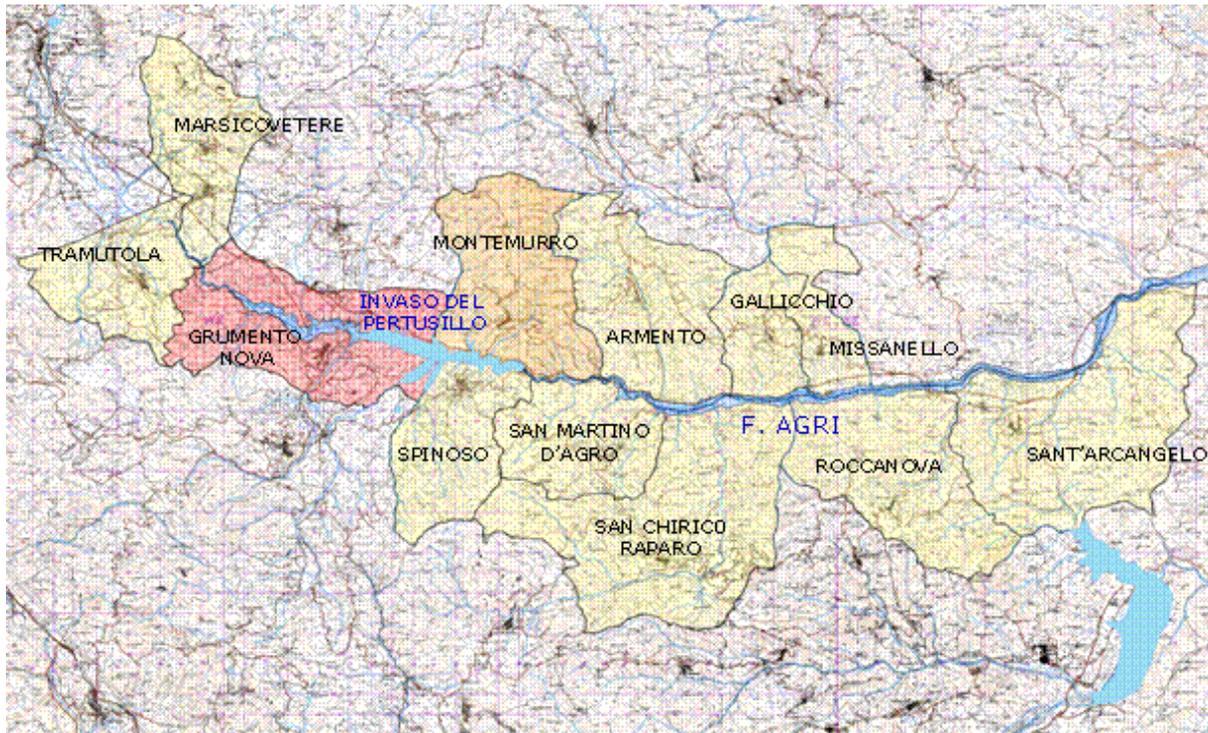


Image 3 : The Agri river risk index related to population in the potential flood hazard: yellow is the lowest risk, red is the highest risk related to the described hazard

The Image 3 shows an example of evaluation of the flooding hazard with different return times; the risk index connected to the presence of population in the potential flood hazard has been estimated for the Agri river<sup>8</sup>.

Vulnerability and Exposure are strictly linked to people, assets and other urban/territorial sensitive elements that are exposed to hazards. It is possible to distinguish the socio-economic vulnerability, depending on population distribution, socioeconomic status, gender, race/ethnicity, age, nature of economy etc, and the physical vulnerability, which varies across a city and depends on the existing building/infrastructure stock and site conditions. The overall vulnerability and exposure depend on the extent of physical damage caused by the hazard and the distribution of population (and of the other sensitive assets) where and when the hazard takes place.

Let's consider, for example, the vulnerability of the built environment to earthquake hazard. In order to characterize the exposure of people and assets to earthquake hazard it must be considered how much safe are the houses and the built environment against the occurrence of an earthquake and up to which threshold (in terms, for example, of magnitude) those buildings can assure their safety requirements.

To characterize these elements, particular surveys must be performed to draw the distribution of the population into different building stocks' vulnerability classes. The surveys can be performed by using different methods, depending on the available data at local scale: analytical surveys, provided for each single building, and speed screening surveys, providing a probabilistic characterization of the built environment based on typological and/or

<sup>8</sup> Agri river is one of the most important river of the Basilicata region that runs mostly in the provincial territory of Potenza.

construction features to the different risks.

For example, let's take into account the residential buildings exposed to seismic risk. The characterization of the residential buildings in four different vulnerability classes has been performed by using both methods and has been implemented in the GIS. The analytic survey performed at municipal level can show the vulnerability of each building to seismic risk.

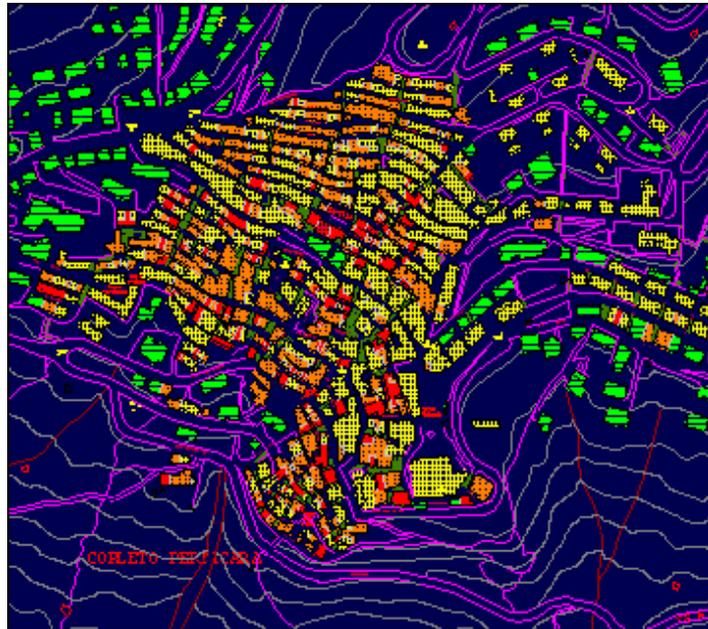


Image 4 : Corleto Perticara Municipality : distribution of seismic vulnerability of residential buildings

The Image 4 shows, for one Municipality of the provincial territory, the distribution of residential buildings in four different vulnerability classes: from green (the less vulnerable) to yellow, orange and red (the most vulnerable).

In some other cases, a more speed screening survey has been performed to evaluate the vulnerability of the urban structure: the probabilistic characterization of residential sub-compartments which can be considered "homogeneous" from the technical and typological construction point of view. A GIS map of this kind of information is described in the following image.

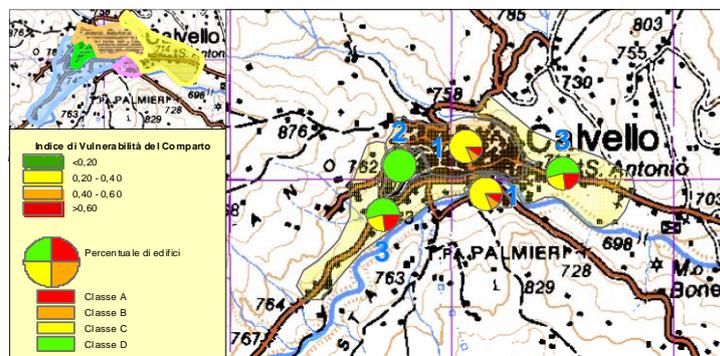


Image 5 : Speed evaluation of building seismic vulnerability

This method, less accurate than the analytical one, has been used for a first speed

evaluation of the vulnerability of the city both for urban planning and disaster management activities.

Maps showing the distribution of the population living in the different vulnerability classes and damage scenarios to different earthquake events can be consequently produced by using the GIS.

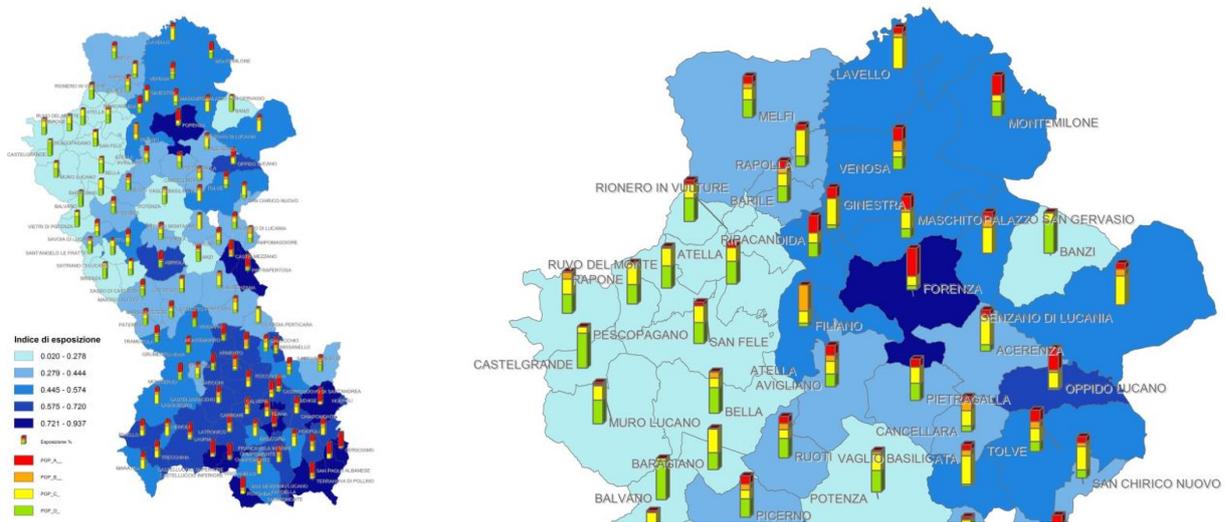


Image 6 : Buildings seismic vulnerability and exposure of population

The Image 6 shows, for each municipality, the distribution of the population in each buildings' vulnerability class: green is the lowest vulnerability, red is the highest. The map also shows the distribution of the municipalities where people are most vulnerable (dark blue) and where they are less vulnerable (light blue), by the characterization of a specific index, which relates the exposure of the population to the vulnerability class of the houses.

Similar surveys have been performed and are in progress also to evaluate the vulnerability of built environment and the exposure of population with reference to seismic and other risks: schools, churches, infrastructures, other kind of buildings and facilities, and implemented on GIS.

Infrastructures and lifelines vulnerability is important also in the assessment of the response of the disaster management structure to contrast the effects of a calamity: the disaster management organization, the handling of the rescue machine to and from the affected areas, the availability of structures and areas for the operation activities, etc.

At the same time, the assessment of the social vulnerability can provide information on who and where people are more exposed to the risks, who could need particular assistance both during a disaster and in prevention activities.

In order to have a comprehensive knowledge of the risks at local level, it is also important to typify all the social, economic, urban and territorial elements in order to better quantify the most probable effects of a disaster in terms of population and built environment involved and injured.

With a comprehensive knowledge of the vulnerability over the territory and of the exposed

elements (population and assets), it is possible to built different *scenarios* characterizing the overall territorial and urban risk (examples in: Attolico et al, 2007, 2005; Province of Potenza, 2004).

More accurate surveys are then necessary especially for programming interventions and investments for reducing the urban vulnerability to seismic risk and for increasing the resilience of the communities.

By analyzing the collected data some considerations can be made also on the state-of-the-art of the territorial safety. For example, by analyzing the data collected about the exposure of the population with regards to residential buildings and the vulnerability of houses to seismic risk, it can be concluded that in the Province of Potenza general seismic vulnerability is quite high, even if some substantial differences exist between the cities. Nevertheless, by analyzing the data, some improvements have been recorded during the years, due essentially to the strong depopulation occurred – and still occurring – in the oldest parts of the towns (where most of the high vulnerability buildings are localized) in favor of the newest edifications.

Damage scenario analysis point out that the reoccurrence of historical earthquakes (for example, the M=6,6 1980 Irpinia earthquake or the M=6,8 1857 Basilicata Earthquake) at present would produce very severe effects anyway.

## **2. Disaster Risk Management and Reduction actions**

Before dealing with the approach followed by the Province of Potenza in disaster management, it is worthy providing a brief description of the current Italian civil protection regulation and of the approach that Italy gave to face the territorial and community safety.

The current national civil protection law<sup>9</sup> states that fundamental actions to be performed as civil protection activities and risk management are the followings: prevision, prevention, rescue and recovery (post-emergency).

Before 1992 Italy had a different approach, based more on rescue operations after emergency. The occurrence of two big disasters that had very big consequences in terms of damage to people and assets<sup>10</sup> and exposed big lack in the search and rescue operations (whose main competences relied on the army) raised the awareness that a new approach had to be implemented to contrast disasters' consequences.

So, after more than ten years of preparation since the 1980 Irpinia Earthquake, in 1992 Italy had the first new civil protection law that stated, for the first time, that the territorial safety can be reached by a mixing of different actions to be performed mainly in "peacetime" (prevision, prevention and preparedness), rather than when disaster occurs (rescue and recovery). The central message given by this "new concept" was that the fundamental

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<sup>9</sup> The first national civil protection law is L.225/1992. It provides a new approach in civil protection activities that basically changed the former setting based just on rescue operations. Currently the reference national law is L.100/2012 that represents an update of the L.225/1992.

<sup>10</sup> The 1976 Magnitude 6,4 Friuli Earthquake and the 1980 Magnitude 6,6 Irpinia Earthquake.

actions for emergency management (both in terms of mitigation of the potential effects and in terms of recovery) are to be performed in “peacetime”, i.e. in “ordinary”.

As regards the disaster management, the current national civil protection law apparatus foresees different emergency management levels starting from municipal scale, depending on the severity of the disaster. In details, the operation of the System is based on the subsidiarity principle, according to which the nearest institution to the citizens acts first, while higher institutional levels – Province, Prefecture, Regional Council, Central Government – intervene if the lower levels are incapable of coping with the event with their own means.

So, in this framework, all the “actors”<sup>11</sup> play a fundamental role and act as a “unicum” to guarantee the territorial security. The ordinary roles and competencies of all national and local apparatus (both institutional and civil) also concur in emergency management to assure the best recovery actions in case of disasters.

In this context, the approach of the Italian system in disaster management could be considered as pro-active also as regards the resilience implementation: activities are planned and conducted before the disaster impact with the aim to effectively minimize the adverse consequences of the calamities.

For describing the actions done by the Province of Potenza in this context, it is worthy to expressly refer to the ten *essentials* used in Making Cities Resilient UNISDR Campaign<sup>12</sup> and try to provide some brief examples of the different activities in which the province has been involved as part of the local institutional system. For a more detailed analysis, reference is made to the bibliography.

### **Essential 1 – Risk reducing organization and coordination in place**

The Province organised a Provincial Civil Protection System (Province of Potenza, 2004) whose aim is to provide an organisational structure – both internal and inter-institutional – for the risk reduction activities in ordinary and in emergency. The organization also foresees a coordination action in order to provide collaboration and methodological support to the 100 Municipalities for the definition of the local civil protection systems and in drafting their municipal civil protection plans.

This coordination role is also played by the implementation of a *network*, a virtual tool interconnecting all the main actors and stakeholders of the provincial system, whose work is still in progress. It aims to fasten the exchanges of information, to provide skilled support and to represent a communication tool for involving communities in risk assessment analysis and, generally, in territorial planning.

### **Essential 2 – Budget assigned**

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<sup>11</sup> Governments at all levels, institutions, national and regional technical services, operative structures, scientific community, technical-economical-productive stakeholders, civil society, etc.

<sup>12</sup> The Province of Potenza joined the “Making Cities Resilient” UNISDR Campaign in 2013 thanks also to the great effort made by the Provincial Councilor for “Civil Protection and Energy Policy” Mr Francesco Pietrantuono, who strongly worked for integrating the related actions in the overall territorial target policies of 2009-2014 Provincial Government’s mandate, and who was also recently appointed Councilor of the Regional Council of Basilicata. As a policy action on its territory, it included the adhesion to the campaign and its objectives also in its territorial planning activities. The province intends to promote “resilient” policies on its territory by supporting and encouraging the Municipalities to join it so providing them with institutional support in achieving its objectives.

Budget is regularly assured for internal risk management activities, even if the amount depends on the availability of dedicated resources. As this regards, it should be considered that the Province does not have a specific competence in providing budget for disaster risk reductions out of its institutional competencies, but it has been strongly involved in finding solutions and outside resources also to facilitate these activities.

### **Essential 3 – Risk assessment prepared**

The Province implemented a Geographic Information System (GIS)<sup>13</sup> aimed at providing an instrument allowing the information collection and updating about the different territorial components. It is used for territorial planning and, consequently, for the risk assessment and management. The tool will soon provide the use of WEB (among the territorial network) in order to make the information available for being shared and integrated on-line for territorial planning and civil protection purposes by other administrations, citizens, skilled people and other people/institutions that have specific competences. For risk assessment purposes, the GIS is used for drawing *scenarios* of the most characterizing risks affecting the territory. (Attolico et al, 2005, 2009, 2010, 2011, 2012). Simplified physical models have been implemented in order to draw expeditious real-time *scenarios* in case of emergency.

### **Essential 4 – Investment in risk reducing infrastructure**

In the last years, several million Euros have been invested for active prevention interventions to protect and safeguard the provincial viability and infrastructure system. Nevertheless, the situation is still critical because of the high hydrogeological instability affecting the regional territory. The Province has been also involved in cooperation activities with the scientific research institutions for the assessment of the vulnerability of the provincial road network to territorial risks (Province of Potenza, University of Basilicata, CNR-IMAA, 2013).

### **Essential 5 – Safe schools and health facilities**

The Province is involved in the implementation of a specific project called “Safe Ecological Schools” that provides about 70 million Euros invested in seismic and energy efficiency retrofitting of high schools buildings. The interventions also include the installation of RES plants in total/partial substitution of the old ones using conventional energy sources, so contributing to contrast climate change.

### **Essential 6 – Risk-compliant building regulation and land use applied**

The Province has recently approved its provincial “Structural Master Plan” (Territorial Coordination Plan, TCP, 2013), which identifies strategies for the development of the territory and communities and provides important planning actions for the implementation of local communities resilience through the coordination of the urban plans. It represents the natural evolvement of the provincial actions in improving the communities resilience over the territory.

The outlines of the policies are analysed in the forthcoming paragraphs.

### **Essential 7 – Education programmes and training in place**

The Province has been involved in the implementation of various information campaigns,

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<sup>13</sup> Using open-source products.

training activities directed to municipalities, schools, volunteers, civil society and to the other stakeholders in order to widespread the knowledge of risks and what to do in emergency.

It carried out various simulations on the field and international co-operation projects with the aim of strengthen the whole provincial system and benefit of the experience gained in other contexts.

It took part also in several national emergencies providing technical and organizational support.

### **Essential 8 – Ecosystems and natural buffers protected**

The Province is involved in important territorial maintenance interventions. For example, the execution of specific regional projects of vegetation maintenance on the regional river and forest heritage having objectives of structural and functional requalification of the ecological network and flood risk mitigation. These interventions provide the functional recovery of hydraulic works for flood risk mitigation and the restoration of bridges and culverts functionality, which in many cases dangerously obstructed by vegetation.

### **Essential 9 – Early warning systems installed**

The Province realized the importance of monitoring networks for risk assessment that allow real-time monitoring for civil protection use and for study investigation of the territory.

In particular, the Seismic Risk Assessment Network (RAPP) commenced starting from 1996 and now counts 15 updated accelerometric stations interconnected to the Provincial Operational Room through a GPRS connection (Attolico et al, 2009). It provides real-time records and elaboration of the seismic activity and has been recently integrated into the National seismic instrumental network<sup>14</sup>.

The Seismic Risk Assessment Network integrates other early warning systems (especially for hydraulic and hydrogeologic risk assessment) held and installed by the Basilicata Region and other regional/national institutions.

### **Essential 10 – Needs-based (survivors) reconstruction**

The Province is currently involved in the development of plans and programs - shared with the Region, the Prefecture, Municipalities and other components of the civil protection system - for planning the actions to put in place after any disaster so giving priority to the survivors needs.

### **Final remarks.**

Despite the various activities for increasing the resilience over the territory, carried out by the national and regional institutional framework in which, obviously, the Province acts on its part, some improvement is needed:

- *availability of specific resources for disaster prevention and management*: it has been estimated that about 50 billion euros need to secure the whole Italian territory to hydrogeological risk while hundreds billion euros need for seismic risk mitigation. These

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<sup>14</sup> In 2013 an agreement has been signed between the Province of Potenza, the Basilicata Region, the Province of Matera and the National Civil Protection Department aimed at sharing experiences and activities in seismic risk assessment and management.

are important resources amounts that cannot be allocated with ordinary budgeting actions. Scaling down the estimations to the regional level, the situation remains of improbable solution. New approaches have to be found to tackle this problems;

- *major involvement of the population and of the civil society*: Currently, the most involved component of the community are the volunteers which represent a strong and important resource for disaster management. In the future, specific actions for involving the wider community in the territorial planning and in the decision-making processes will be carried out. The communities are the most vulnerable entities over the territory and the first step in territorial management should start from them;
- *full awareness*: even if important activities and programs are carried out at different levels (mostly national, regional and provincial), politicians, decision-makers and other champions at the Municipality level often do not think about the risk management as an important “resource” for the development of the territory but rather as a constraint for the local action. The problem is more felt also because the effects of a correct risk management activity come in long terms, so they do not challenge themselves with such important issues.

Although the first question seems of difficult immediate solution, as briefly announced in Essential 6, the Province of Potenza intended to provide its institutional contribution by investing in putting the risk management in strict contact with the territorial planning activity and transforming it in a real “structural” action. By playing this important and stronger institutional action towards the local resilience implementation, it aims to provide also a strong contribution to the calibration and optimization of the resources needed for territorial safety purposes.

### **3. Disaster Risk Reduction policies and the implementation of the “resilience of communities” in land use planning**

The recent evolution of Province of Potenza’s action regards the inclusion of DRR and Climate Change resilient policies in the territorial and urban planning as important tools for the correct governance of the territory. The implementation process foresees different channels of action: an *institutional* one, based on the role the Province has in coordinating the planning activities at urban level in the regional context, and a *supportive* and *cooperative* one, based on the carrying on of an “educational” or “accompanying” process addressed essentially to policy makers, municipalities, communities and citizens towards the implementation of correct land use policies as regards the territorial safety in particular.

#### **3.1 Preliminary considerations at the basis of the proposal**

For implementing resilience in territorial policies, it’s fundamental to drive the process starting by transferring important innovation to the key stakeholders (essentially: policy makers, municipalities, communities and citizens) which involves also educating them on the specific actions that can be performed to contribute to DRR and to mitigation/adaptation of the climate change in local context.

This could be achieved, for example, by highlighting the specific advantages and opportunities (from economic, social, cultural, environmental, etc points of view) that could be obtained by the local communities. So, the motivational lever is that DRR and climate change adaptation and mitigation can play a specific key-role in the local communities economic and social future development: the adoption of a “new way of living” in urban/territorial context, a precise idea of local development related to the reorganization of private and public expenditure and the possibility to use external resources (for example, the compensations for high environmental impact interventions), as well as the national/EU financial measures or private investments. In this vision, the local context can play a fundamental role in this *change* of direction.

The proposal is referred to the application of new living models based on a better land use and government that combine territorial (sustainable) development and safety. The proposal is based on a process of reduction of the system’s vulnerability and of the exposure of the population and goods to the territorial risks including climate change by the concomitance of different structural and non-structural actions to be applied at local/urban/community/citizen levels: resilient and sustainable urban planning, renovation and performance enhancement of the built environment, better use and protection of natural resources including land. The proposal arises from the premise that the future development of the territory is not possible without extensive programs of territorial governance interventions, such as the energy efficiency implementation, the production of energy from renewable sources, the implementation of sustainable and resilient territorial policies. As regards this point, European and national regulations draw a picture that allows this change of behavior not be postponed any longer.

Therefore, while at European and national level new opportunities and financial resources in this direction are increasingly provided, local communities must be prepared to catch these opportunities. The public sector and the local authorities are a good example of testing these actions starting from the public stocks (schools, public housing, hospitals, etc). They could act also as a sort of facilitators for the communities and for the private sector with a skilled institutional support. In this way, new forms of economic and entrepreneurial development could arise over the local territory, which can result in an overall (cultural, professional, economic, environmental) growth of the community.

The listed above considerations are at the basis of the new concept of territorial planning and land-use policy that the Province of Potenza is going to implement in the next years at local level, through the drafting of the Provincial Master Plan (also defined as Territorial Coordination Plan: **TCP**) (Province of Potenza, 2013)<sup>15</sup>. A new concept of local territorial planning is being introduced which takes into account DRR and the inclusion of the resilience against territorial risks, including climate change, in urban planning action.

The Province is particularly supportive of this policy choice because it is an occasion to start

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<sup>15</sup> The provincial territorial planning competences are regulated by the Basilicata Regional Law LR n.23/1999. The redaction of the Provincial Master Plan (Territorial Coordination Plan: TCP) was one of the most important targets of the political and administration mandate of the 2009-2014 Provincial Government headed by the President Mr Piero Lacorazza (recently appointed President of the Regional Council of Basilicata) whose commitment on territorial policy has been of great remark. The plan is uploaded on the webportal : <http://psp.provincia.potenza.it/> for a wider consultation and participation.

dealing with mitigation/adaptation in a “structural way” at a wider scale having significantly effects also at urban scale. The overall effectiveness of the action lies in the consequences it will have if the plan will be properly and progressively executed: it will produce significant impact for mitigation and adaptation all over the territory by introducing directives/recommendations and other provisions to be applied in urban planning activities.

As regards the financing mechanism, dealing with a planning process, the costs are mostly indirect and cannot bear just on public resources anymore. The expectations are that the private sector could provide important resources for investments to be implemented over the territory. Also the development of new technologies and skills on the territory could improve the economic sustainability of policy’s implementation process itself and generate economic, social and professional growth. In fact, integrating the DRR and the climate change action (resilience) into the local development/urban plans results in major co-benefits that could be assured by such an action. In this worldwide situation characterized by a particular identity crisis in the economic and social fields, the implementation of DRR and climate change adaptation plans and actions could give the possibility to the local community to gain specific co-benefits that could increase the overall competitiveness of the territory itself. This means, more specifically, a positive vision for the future generations in different fields of interest as listed below:

#### Co-Benefits for the Economy:

- job creation, new technologies, market uptake, new possibilities for future generations in being economically emancipated;
- operating costs reduction, so more money for investments;
- disaster recovery costs reduction, so more money for investments;
- increase and more qualified skills of economic operators and professionals, so increased competition opportunities;
- increase for more efficient technologies and actions demand;
- increase for land preservation intervention demand.

#### Co-Benefits for the Society:

- opportunities for new careers and development of skills, new possibilities for future generations in being socially emancipated;
- increased awareness of energy sustainable use, of better respect of the territory and of other resources;
- a greener and safer city, community, territory.

#### Co-Benefits for Cultural development:

- opportunities for local communities to compete in a global context, acting as part of a global system, new possibilities for future generations in being culturally emancipated;

- sharing expertise and skills for being a local actor in building sustainable and resilient community: search of external financial resources, private investments, etc.
- development of the scientific research supporting the applied technology;
- networking and global competing in DRR and climate change actions.

Last but not the least, Co-Benefits for the Environment:

- disasters and calamities effects on the environment and society reduction;
- greenhouse gases reduction by improving the efficiency in the energy use and increasing the use of renewables;
- pollution reduction and environment and life quality improvement;

The plan foresees that who pays most of the “costs” could receive most of the “benefits” in terms of investments. Of course this should be sustained also by a favorable regional and national regulatory apparatus, and this is what it is expected to experience in the next future.

As regards the feasibility of the policy proposal, the cities have the capacity to implement the policy if also some cultural changes and attitude towards the risk mitigation/adaptation policies and climate change will occur at all levels: institutional as well as community.

In the forthcoming implementation process, specific indicators will be defined so to measure the results of the new policy action and find out possible criticalities and solutions.

### **3.2 Assessment of the state of art of the municipal planning framework**

The picture coming out from the analysis of the urban planning instruments<sup>16</sup> highlights that:

- the traditional processes of urban planning have resulted, generally, in complex and time-consuming process, discouraging local planning activities;
- in many municipalities planning tools are obsolete and often inadequate to govern the proper land-use, compatibly with the characteristics of the territory and area and with the new treats coming from modernization and other pressures;
- the current urban planning deals with the major population centers and not with all the municipal territory, with the result that most of the region is subject to legislation for the agricultural areas highly generic not considering environmental and natural resources, monuments and archaeological sites in the area; this circumstance also explains the important phenomenon of the spread of settlements that is not closely linked to productive use of agricultural land;
- as a general rule, all planning instruments postpone the implementation of general

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<sup>16</sup> The assessment of the state of art of the municipal planning framework in TCP has been developed by the provincial planning working group with the scientific support of Prof. Piergiuseppe Pontrandolfi of the University of Basilicata Region – DAPIT Dept.

predictions to subsequent detailed planning instruments and this results to have a low functionality degree. This situation, which has often resulted in the non-preparation of implementation plans by the municipality or private actors, favored a disorderly urbanization in new expansion areas of urban centers and, often, resulted in the abnormal growth of the edification for residential use in periurban and suburban areas.

As a result, problematic situations emerged frequently within the provincial territory, in particular concerning:

- a widespread tendency of the residents to abandon the historic areas of the settlements towards more recent areas of expansion or scattered rural settlement, mainly due to the difficult accessibility to built-up areas of more ancient formation and the lack of primary services, as well as to a generalized typological-functional inadequacy of the buildings;
- a significant deficiency and a widespread degradation of primary urbanization as regards the settlements of more recent construction;
- a poor functional and spatial quality of settlements of more recent formation;
- a poor quality of the settlements specifically intended for production activities that, in some cases, represent strong environmental impact elements, especially when formed by single building artefacts located outside the areas intended for productive uses;
- abandonment of areas intended for use in agricultural production, with consequent degradation of building structures, road infrastructure and land maintenance;
- a significant trend towards the development of scattered rural settlements having the necessity to adapt and change the current use of existing buildings, not realized for these new purposes.

The urbanization process leads to higher soil-consumption and to major change of its natural characteristics: the negative effects of soil-sealing primarily due to asphalt and edification are evident. Besides the reduction of land potentially suitable for other purposes (eg for agricultural, natural, etc. scopes) and the alteration of the natural ecosystems, there are other substantial impacts that reverberate on the physical environment and generate extreme disaster consequences: changes in the process of water percolation in the subsoil, which is essential for the groundwater supply, increasing of the surface runoff, increasing of water loads flowing through the hydrographical network, consequent and derived effects on natural environment system.

So, land-use and soil-consumption are referred to all those uses in urban purposes (residential, manufacturing, commercial, etc.) derived from human activities which will lead to a reduction of both quantitative and qualitative availability.

A high soil consumption can also affect other parts of the territory to be preserved by the hydro-geological risks (flood-prone river areas, slopes at risk, etc.) or to be protected for environmental purposes (pollution vulnerable areas, valuable ecosystems, etc).

The Soil Consumption Index is an indicator that the total municipal urbanized hectares

towards the total municipal area. Its quantification as regards the Province of Potenza territory is represented in the Image 8 below.

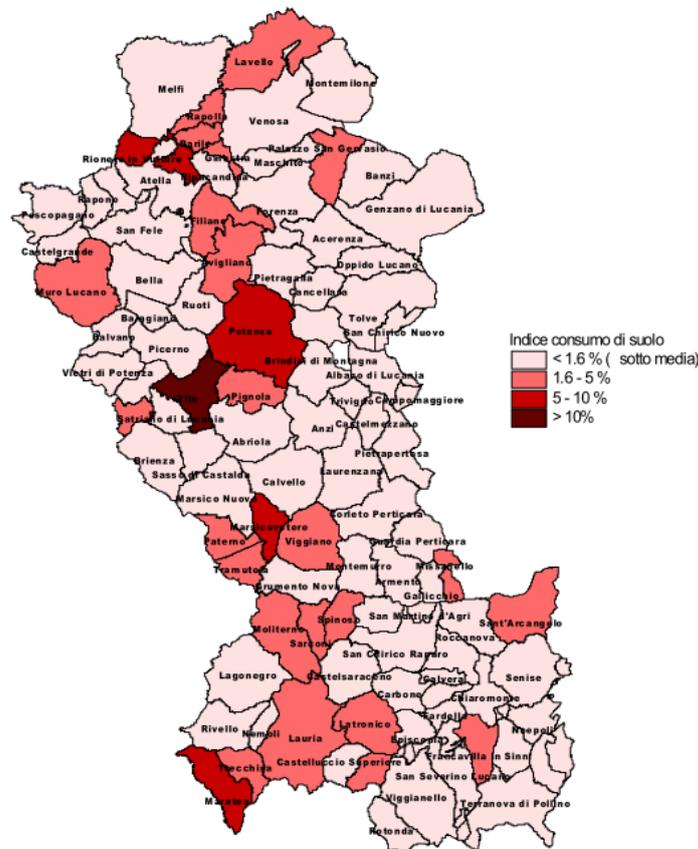


Image 7 : Soil Consumption Index (TCP Province of Potenza, 2013)

The indicator provides information on the quantity of soil that is detracted from its natural vocation by the implemented and planned urbanization.

### 3.3 Disaster Risk Reduction and resilience of community policies in TCP

The analysis of the state-of-the-art of the local territorial planning and of the data collected and updated over the years allowed the creation of an information database of the hazard and the vulnerability of the territory related to provincial Natural and Environmental, Infrastructural and Settlement systems, detailed by type of risk to be taken into account for the definition of the TCP policies.

As mentioned before, the Province of Potenza has recently (2013) approved the TCP drawing the local governmental proposals for the development of the provincial territory and, in particular, providing guidelines and support to the local actors (including Communities, private sector and Municipalities) for the correct use of the territory.

As described in advance, the Province of Potenza has got the territorial coordination competences over 100 Municipalities and is mostly characterized by all the mayor natural risks whose potential impacts on the community are very serious in case of disasters. For this reason, important sections of the TCP are dedicated to the risk assessment/management

and to DRR, including climate change, as important actions to be performed in the land use plans also at urban level.

TPC includes specific sections about the risks on which the international institutional community is drawing more interest in recent times: soil sealing and consumption, climate change and soils degradation and desertification. In these sections policies and actions for their mitigation are proposed and discussed.

In view of the HFA and anticipating themes that may be developed in the HFA2, the Province of Potenza wishes to consolidate an approach of support and cooperation with local communities and, in particular, with the municipalities, in order to achieve the required objectives of territorial resilience. Thanks to the approved Tool, the Province is going to encourage and to facilitate actions of partnerships with community leaders and local social institutions. Particular attention will be paid to the maximization of the key issues of common interest, such as the analysis of territorial risks, the planning of the local action, the correct information for the local decision-making, the technical methodological support in the planning activities of territorial safety field, the supply of information materials about best practices and experiences also at international level that can be implemented at local scale, the facilitation and establishment of partnerships for the joint development of specific experiences of local planning.

An innovative aspect developed in the TCP is the implementation of the "resilience of communities" policy in territorial planning, by introducing risks-mitigation directives and recommendations (also providing technical, organizational and knowledge support) to be applied to the local and urban planning and strategic actions in order to involve the local actors, the private sector and the community itself in resilience's implementation processes. Local communities are innovative areas of experimentation for resilience promotion and development.

The partnership will be made stronger by drawing on past experiences implemented with the other actors of the local, national and EU system of civil protection, including the contributions of the private sector and of civil society. In particular, the relationship with the municipalities intensifies and involves actors of the Local System of Civil Protection and local communities to share actions and methods for increasing the territorial safety and the resilience of communities.

The introduction of the concept of resilience in the context of urban growth provides that the disaster risk reduction is not limited to the preparation and response to emergency, but it becomes a crucial factor for sustainable development. The development of local realities, through urban planning and strategy and their impact on the built and natural environments, including the insertion of the most vulnerable in urban planning should take into account and/or demonstrate the ability of the urban reality to absorb and to overcome the impacts of disasters, also those related to climate change that are occurring more frequently even in our country.

The reduction in "urban" risk also provides opportunities for capital investment through the improvement and expansion of infrastructure, the renovation of buildings to improve their energy efficiency and safety, urban renewal, regeneration of degraded urban areas. Local

governments are the level closest to the citizens and communities. They play the primary role in responding to crises and emergencies and provide essential services to their citizens, such as health services, education, transport/mobility and access to primary resources, that must be "resistant" to disasters.

The process of strategic and urban planning at municipal or supramunicipal level is intended to be as participatory as possible and to allow the Mayors and the stakeholders to consider the best way to integrate the principles set out in plans and activities for local development. As regards municipalities that have not yet approved urban plans (operative plans, implementation plans, planning rules, structural urban / inter-municipal strategic plans, etc.), these guidelines will be provided in preparatory acts, also to be drawn up awaiting the preparation of the abovementioned instruments. Municipalities that have already approved urban plans (operative plans, implementation plans, planning rules, structural urban / inter-municipal strategic plans, etc.), will be pushed to revise these tools, covering elements necessary for reduction of disaster risk. The strategic planning process will assist local authorities to identify and focus on priorities for reducing the risk of disaster and explore what resources (human, economic, technological, and natural) could be available locally and the possible needs in order to start the necessary actions for searching and allocating them.

During the planning process, the Province of Potenza boosts municipalities in assessing strengths and weaknesses and in considering all external factors that have to be addressed in order to achieve concrete and practical results in terms of integration of sustainable development with the requirements of "resilience".

Furthermore, the Province will proceed to constantly monitor the implementation status of the actions set, also performing periodic reports on the level of progress achieved in the implementation of local actions to reduce disaster risk, available even at institutional and sectorial higher-level. In this step, the Province will also provide any useful support ensuring that the process of resilience integration may be conducted uniformly throughout the provincial territory.

### **3.3.1 Specific actions**

In order to implement concretely the aforementioned key issues, as a part of its regulatory rules, the TCP contains guidelines and recommendations to be followed by the Municipalities in their urban planning activities.

In technical and administrative procedures of local planning instruments (including localization interventions), the proposer (essentially the municipality) is asked to perform specific risk assessment evaluations and resilient solutions, for example:

- to refer to higher-level tools of risks classification and assessment (rivers-basin plans, sectorial planning tools, etc.) highlighting the compliance with their requirements;
- to accompany land transformation interventions by multi-risk and opportunity assessments explaining the improvement of the overall situation, the fulfillment of the requirements and conditions to be observed and the overall convenience of the planning choices with respect to risk prevention and mitigation;

- to accompany the overall urban planning proposal by analysis or assessments showing how the proposal is resilient and describing the actions intended to perform for ensuring the resilience.

For risks, “active” mitigation at local level (namely the “structural” prevention), the Province will contribute - among the national/regional framework - in seeking to promote or facilitate programs of territorial extraordinary maintenance to be implemented by the local governments, through the identification of possible financial mechanisms and procedural facilitation, such as for example:

- the possibility of allocating portions of tax revenues (such as the costs for urbanization and construction) for risk mitigation interventions, according to the concept that the urbanization of the territory generates effects that must be evaluated and managed both in terms of programming and operational planning;
- drafting guidelines and policy documents to be used in planning tools, aimed at the assessment of negative externalities, relatively risks or their increase, related to land use transformation.
- promoting exchanges of experiences and good practices’ transfer by means of extensive cooperation partnerships;
- defining methodologies of 'territorial resilience accounting' which would take into account not only the homeland safety degree, but also the actions needed to overcome disasters effectively and promptly;
- exploring and setting up, in planning tools, measures encouraging private investment in urban areas or buildings affected by territorial risks.

The resilience process is accompanied by other territorial policy actions acting on the natural and built systems, as following described.

### **3.3.2 The ecosystems and natural buffers protection**

Measures and strategies for adaptation to climate change and environmental protection, implemented in TCP, come out by the application and deepening of studies on environmental quality already made by the Basilicata Region. With this regards, the TCP provides concrete actions for preservation and improvement of ecosystems and natural buffers, summarized in the Provincial Ecological Network (REP) project.

The REP is an important element allowing identification of an environmental system and consists of core areas, stepping stones and restoration areas (Image 9).

The identification of an interconnecting habitats network represents the first step of an environmental re-joining project that will be carried out in the forthcoming activities through territorial actors and stakeholders. In particular, the REP aims to ensure the high degree of naturalism that historically characterized the area, ensuring the preservation and the improvement of those greatest value areas, the ecological corridors efficiency and the territorial safety affected by disasters due to climate changes.

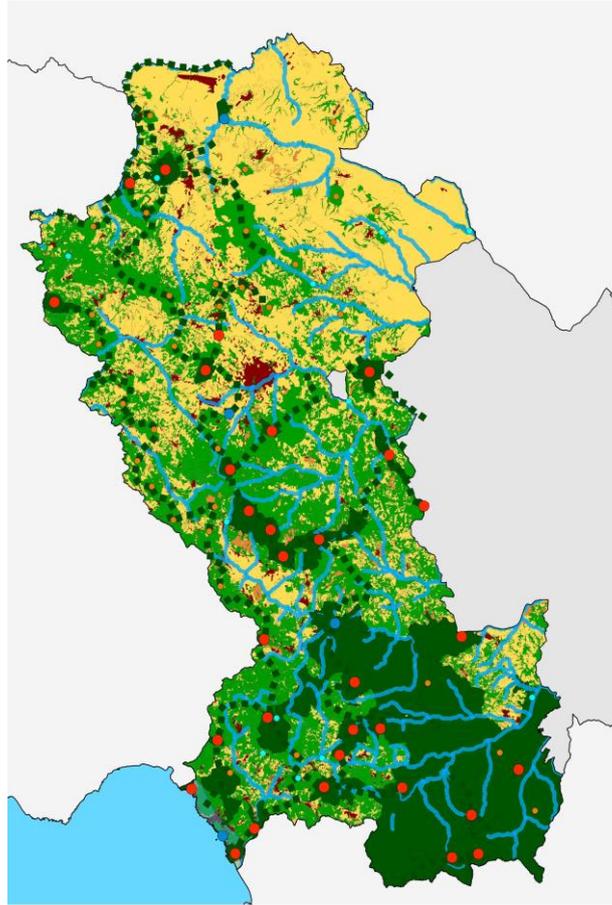


Image 8 : The Provincial Ecological Network (REP) (TCP, Province of Potenza, 2013)

The guidelines provided by the REP represent a critical step to be carried out by local actors through specific interventions to improve quality and overcome critical issues, also by increasing information.

Thanks this tool, the Province of Potenza primarily aims at guaranteeing habitats interconnection, improving identified ecological corridors, and territorial safety.

The analysis achieved on the area shows an effective spatial continuity of the ecological corridors, primarily located along mountains and hills ridges, with a small fragmentation at provincial level. This continuity is due to the region forest patrimony that over the last sixty years recorded a 178% increasing, indicating a favourable outcome to the carbon budgets<sup>17</sup>.

The key critical issues are related to most urbanized areas, where urban, agricultural and industrial development is concentrated. These areas are represented by territory from Potenza (center) to the Vulture-Alto Bradano (North) zones, territory most prone to desertification risk.

Mainly for these areas, guidelines for the implementation of *green-ways* along the historic trails are provided, with specific directives for municipalities in order to enhance the historic landscapes and introducing elements for the soil protection such as hedgerows and trees

<sup>17</sup> [http://www.retecologicabasilicata.it/ambiente/files/docs/DOCUMENT\\_FILE\\_100476.pdf](http://www.retecologicabasilicata.it/ambiente/files/docs/DOCUMENT_FILE_100476.pdf)

that can increase connectivity and combat soil erosion risks working as windbreaks and providing organic material to the soil.

This strategy allows repairing of environmental connections affected by intensive agriculture. In this regard Province's contribution is to identify priority actions aimed at environmental improvement related to the anthropogenic pressure degree.

Dynamic of pressures on areas with higher environmental value have been highlighted through the recognition of the buffer areas, identifying different actions based on the various pressures, for example protecting and managing the spontaneous revegetation of pastures and abandoned crops. On the other hand, mitigation or restraint actions have been suggested, where critical issues of high, medium or low level have been identified. The municipalities must consider these actions in their territorial plans.

### **3.3.3 Energy policies for combating climatic changes**

The TCP provides specific energy policy measures to combat climate changes and contributing to the achievement of the "20-20-20 Strategy"<sup>18</sup> objectives set by the EU and by the Italian government. The problem of climate change, that entered the agendas of the United Nations by the Rio Declaration on Environment and Development (UN Rio Declaration, 1992) is one of the first steps towards several protocols and agreements subscribed at the international level to monitor and take concrete activities to combat this phenomenon through two types of actions. The most important constitutes the greenhouse gas emissions reduction (mitigation action) while the second focuses on adaptation action to deal with the impacts (European Commission COM 147, 2009) by empowering countries in contributing to this problem. Think globally, act locally, this is the slogan, meaning the actual contribution of territorial planning at different spatial scales in order to assess and mitigate the climate change effects on the territory. The policy foresees a mix of different actions and are derived as an application at the provincial scale of the Regional directives and programming whose main contents are included in the Addressing Regional Environmental Energy Plan (PIEAR, Basilicata Region, 2010).

The PIEAR identifies the Provinces as fundamental actors of its implementation by giving them the task of:

- the preparation and adoption of intervention programs for the promotion of renewable energy sources and energy conservation;
- authorizing the installation and operation of energy production plants, the control on the facilities' energy performance;
- local administrative functions in controlling the energy savings provided by the Regional Plan.

In conducting such tasks, the Provinces have also to involve municipalities as regards the preparation and adoption of intervention programs for the promotion of renewable energy sources and energy conservation at the local level.

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<sup>18</sup> The strategy foresees : 20% reduction of CO2, 20% increase of Energy Efficiency, 20% increase of energy produced from renewable (RES) sources.

The Province of Potenza triggered a series of actions - still ongoing - including that of the control activities over thermal plants carried out through its Energy and Environmental Agency (APEA Ltd.)<sup>19</sup> over the municipal territories and expects that further developments are recorded.

In 2010 the Province of Potenza became supporting structure of the Covenant of Mayors providing the strategic guidance and technical assistance to signatory municipalities for the preparation and adoption of the Local Action Plans for Sustainable Energy (SEAP) at municipal level. By 2013 the municipalities of the province which joined were 33, 15 of which having SEAP approved by their respective Municipal Councils.

In addition, the Province of Potenza is implementing the Safe-Ecological Schools project (Essential 5), sharing with the Mayors and the parties responsible for the POIS (Integrated Services Offers Plans) the creation of a network of safe, barrier-free, with certified plants (photovoltaic, wind, geothermal and composting) school buildings, in line with European targets of the 20-20-20 Strategy.

Finally, the cost optimization policy adopted by the Province led to the adoption of the "Operational guidelines for containment and rationalization of heating costs" and the "Code of Conduct for a responsible use of the equipment's and energy resources of the Province" (2012).

As regards the territorial action, the Province of Potenza launched the so-called "Living Basilicata Model" (2012), a suitable tool thought to intercept the opportunities offered by the E.U. Programming 2014-2020. Leveraging on some subsidies (oil royalties, exchange or sale of the carbon securities auctions, renegotiation of the agreements between the municipalities and investors of large systems of energy production from RES, etc) the Province aims to implement an energy/financial policy model combining the potential of the territory in terms of RES (wind, sun, water, biomass, geothermal) and of the market (incentives for production of electricity from renewable energy, green/white certificates market of carbon credits) to generate investment in all productive sectors (energy is a cross-cutting to all SMEs) and benefits for citizenship (increase in the value of property more energy efficient, volume incentives / financial and reduction of local taxes for energy efficient properties).

The TCP provides special directives and recommendations directed to municipalities as regards the implementation of energy policies in urban planning. The policy action of the Province aims to perform the following objectives:

- to provide all the municipalities with SEAP and regulations containing specific incentive measures, such as the reduction of waste tax and services for energy-efficient buildings;
- to activate mechanisms to facilitate the energy efficiency restructuring of housing, also providing support to the construction sector, its suppliers and the professional world;
- to free financial resources of local authorities in the expenditure related to heritage and mobility, so that they can devote them to other activities.

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<sup>19</sup> The Energy section of the TPC has been developed by the provincial planning working group with the cooperation of the provincial Energy and Environmental Agency (APEA Ltd).

### **3.4 Replicability of the experience**

Although the Italian legislation on urban planning has been delegated to the Regional Authorities, the experience can be exported for implementation elsewhere. In fact, in close connection with the various regulation contexts in the fields of land use and urban planning, civil protection and risk prevention, it is always possible to include, in the provincial planning instruments, special sections about DRR and resilience providing the provincial government with a coordination action over the urban territorial policy-making.

The current competences held by all the Italian Provinces, that provide forms of consultation, consistency checks, for the approval of the municipal and supramunicipal planning instruments allow the introduction of the concept of resilience in the context of urban growth in order to provide that the disaster risk reduction is not limited to the preparation and response to emergency, but it becomes a crucial factor for sustainable development.

In the provincial planning tools is not only possible, but also necessary the implementation of the “resilience of communities” policies by introducing risks-mitigation directives and recommendations to be applied to the urban planning and strategic actions in order to involve the local actors, the private sector and the local community in the resilience’s implementation processes.

The necessary participative process to be carried out with Municipalities will then ensure the best implementation of the policies over the local communities.

## **4. Conclusions: new challenges for implementing resilience in urban planning policies**

According to the gained experience, the major challenges to be further developed in the forthcoming HFA2 are related to:

- Technical Analysis: Risk (Hazard, Vulnerability and Exposure) Assessments, the skills and the role of scientific research in supporting planning activity and innovations;
- Accessing finance for urban/territorial DRM and resilience;
- Political will and public support;
- Achieving resilience: the Local Resilience Action Plans (LRAP) as a combination of the above elements;
- Rise of community’s awareness.

They can be summarised as: the availability of resources and skills, the data availability in performing disaster risk assessment, to public support and political will, to future growth and, last but not the least, to the rise of awareness of communities.

*Challenges in terms of resources and skills*

In terms of financial resources, new challenges come from the private sector. Territorial governance policies should foresee "to attract" private investment for enhancing the safety. Other challenges could be the application of environmental compensation measures for high impact interventions or, alternatively, of tax reductions in case of no-impacting or resilient ones. Moreover, the rise of the risk awareness will result in the increase of the demand of more qualitative interventions on the territory with new investments by the business sector; similarly the increase of the applied scientific research's involvement in the experimentation of new techniques, the increase of skills and capacities and, generally, the possibility to create new jobs and opportunities. This could be a virtuous circle that could enhance the quality of life and resilience of cities and their communities.

#### *Challenges in terms of data availability*

In terms of data availability new challenges could be the collection, the organization and publication of all the existing information for public free consultation and use. The experience showed a disaggregation of the information and of the knowledge because of some restraint in data dissemination by the owners, even if they are public institutions. There is a lack of organization of databases, sometimes the existence of some information is not known. For this reason, in territorial planning activities, the Province is working on the collection and systematization of all the available data for territorial analysis and making them accessible by all the interested stakeholders. More incisive interventions are expected by the national/regional authorities.

#### *Challenges in terms of public support and political will*

The role of community in Risk Assessment should be more participatory. The increase of awareness of risks is possible also with the direct involvement of communities. Now a lot of simplified tools have been produced for providing the risk assessment activity to be understood and participated by all. The hazard mapping is important in this participatory process because is the simplest way to understand and disseminate information. The experience in performing some risk-awareness projects in the schools resulted as a sort of preferential path also for the involvement of the families. The best organizations for enhancing community engagement should be founded mainly on voluntary associations who play important role also in disaster management. The public must maintain the institutional role of improving - with specific actions performed day-by-day - the local civil protection system assuring the involvement of all the local actors and stakeholders. In this way all the actors of the local community will be fully involved and act together for increasing resilience.

#### *Challenges in terms of scenario building and future growth*

The experience showed good results in collecting information on vulnerability of building stocks (mostly residential and of main infrastructures) all over the territory by advantaging of the results of specific on-site surveys that surely give a more accurate picture of the situation. This collection has been performed with the contribution of various Institutions (National Civil Protection Departments, Region, University, Research Institutions, etc), during years of investigation and resulted in big investments in terms of both money and skilled human resources. The accurate characterization of the territory is a very complex and never-ending activity involving different components (built environment, population, social, economic, etc. elements) sometimes difficult to model and requiring investments of big quantity of resources. The major challenges for the future come from the main consideration

that for disaster management and, of course, urban planning purposes, the availability of data sometimes is more important than its accuracy. The scale of intervention of these planning activities allows to waive the accuracy and the punctual information for a more extensive but effective information that plays its full role of increasing the knowledge about territorial issues. For these reasons, an approach based on probabilistic scenarios could fit best for the territorial planning purposes. Now, it is possible to take advantage of the progresses of science and of technology that give the possibility to experiment new techniques in territorial data collection (remote sensing, aerial images, etc) that have reached a high level accessibility with low or even no costs. Also the possibility of using open source tools makes the risk assessment an activity that can be performed in the ordinary.

#### *Challenges in terms of rising communities' awareness*

More emphasis has to be put to another activity to be performed when working on resilience in urban planning policies: the socio-cultural aspect, i.e. the raise of awareness of the communities. Civil society is composed by a variety of communities: each of them will suffer injury from disaster and, for this reason, could reverberate on the others affecting the response (and the resilience) of the entire social system. In the Local Resilience Action Plan (LRAP) process we have to face all these different communities, each related to different groups of stakeholders which, for the above reasons, will have different grades of involvement in risk reduction. When talking about a LRAP, these communities should be aware of their role and involvement in DRR so they could become a proactive part in the process. Furthermore, fundamental is also the involvement of the population (divided into different social communities). Also population should be an active part of the process, not acting only as the final recipient of the LRAP implementation policies. Its involvement also in the elaboration phases could be strategic both for calibration and for the success of the LRAP.

The action should be accompanied also by a strong push from the communities in requesting more territorial/urban safety. One of the best ways to convince the policy makers to adopt some actions is to act from the bottom. The policy maker needs consensus from the citizens and, in this case, the citizens could be most effective in "convincing" the politics in adopting some tangible actions towards local risk reduction. So, it is worth working on increasing communities' awareness in risks and disasters so to let them act with a very incisive (let's say "popular") force versus their political representatives and decision makers asking for more tangible actions in this direction. In this way also financial resources' search and allocation for risk-reduction could be increased.

The worldwide experience tells that the main problem could be that investing in DRR is commonly not visible both in terms of time and of actions in an ordinary government mandate term (4-5 years). Paradoxically, the most effective investment on DRR the most invisible are its effects! When a disaster occurs, public opinion is more attracted by the failure of the absorption mechanism than from its success. So, always paradoxically, the investments seem to be more effective (because of their visibility) if they are provided for relief, recovery and reconstruction. In this case, a disaster could be a good occasion to demonstrate how efficient could be the national/local government. For example, a collapsed school is more "effective" than the rest of the territory do not suffer for appreciable losses; so, the strong support and timely recovery phases after a disaster could run the risk to be

are more “effective” than the pre-disasters preparedness activities. And, dealing with disasters, these problems are the cancer of a good policy action.

For this reason, the increase of communities’ risk awareness and related *political will* are fundamental for shifting the political attention from the post-disaster phase to the DRR and resilience implementation (it means, increase of public support, of more incisive urban planning policies and of search and allocation of financial investment in the pre-disaster actions).

Also, if the investments in disaster awareness increase, for example working on the new generations, could have a positive effect leading to future policy-makers being more aware than those of today. These considerations are at the basis also of the successful development of a Local Resilience Action Plan that, for its nature, has long-term vision. With this basis, the ordinary government mandates should act just as pieces of an unique well structured and drafted vision. And this is the hardest result to obtain, as it means for the political party the waiver of forms of “exclusive protagonism” - existing worldwide although with differences - for a less visible action.

In conclusion, a stronger emphasis on rising communities’ awareness is needed in order to have a greater success by involving special skills and forces to support this activity throughout the whole resilience implementation process.

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