

## Brief for GSDR – 2016 Update

# Urban building resilience: The strategic role of universities for the fight against climate change

Nicola Martinelli<sup>1</sup>, Gabriella Calvano<sup>2</sup>, Giovanna Mangialardi<sup>3</sup>, Angelo Tursi<sup>4\*</sup>

### Introduction

Postponing the climate change challenge, particularly ones related to sustainable cities is no longer possible. This is evident both in the Sustainable Development Goals (Reference- UN) and in the outcome of the international summit COP21 Paris in November/December 2015. Both of these include global goals addressing issues of local sustainability and resilience and underline that there is a need to think in larger scales beyond individual buildings for urban research. This can provide holistic visions of urban territories of wide post-metropolitan area (PRIN 2010-2011) where it is required to integrate effective policies for environmental, economic and social sustainability.

### Climate Change: the role of resilient cities

A new program named Horizon 2020 was established by the European Research and Innovation in year 2013, and this identifies the challenges dedicated to Climate Action, Environment, Resource Efficiency and Reflective Societies. The program aimed to increase awareness of these issues within the European Community, as well as competitiveness and efficiency of European Countries about sustainability. Today, these themes assume the guise of skills needed to cope with the changes driven by the transformations from the social, economic and ecological point of views (UNECE, 2012). Considering that ecosystem resilience is the

ability to react to changes, restoring new features through adaptation (HOLLING C.S., GUNDERSON L.H., 2002) involves the development of design strategies that can cross the territorial stairs. This is done by taking into account many variables: spatial, social, cultural, ecological and economic. In fact, a "resilient city" is one that has developed the capacity to absorb future shocks and stresses within social, economic, technological systems, and develop infrastructure through processes of evolution and/or adaptation, keeping its functions, structures and identity"(*ResilientCity.org*).

It is therefore strategic to pursue the idea of resilience as a way to create new models of sustainable development in socio-ecological systems. Universities are key institutions that, among areas of innovation, develop and consolidate knowledge-based economies.

Major international institutions of higher education and research have a key role s in tertiary education, scientific research and technology transfer, and they are beginning to be considered more and more as urban institutions (WIEWEL & Perry, 2008) and also a driving force for the development of human communities to be capable of future shocks.

### Building sustainability and resilience: the role of universities

The mutual relation between universities and cities is due to the high flux of communication, the hyper mobility of capital, and economic globalization. This long-term relationship

1

<sup>1</sup>Associate Professor of Urban Planning, Department DICAR, Technical University of Bari, [nicola.martinelli@poliba.it](mailto:nicola.martinelli@poliba.it); <sup>2</sup>Ph.D. Research fellow, Department of Biology, Bari University, [gabriella.calvano@uniba.it](mailto:gabriella.calvano@uniba.it); <sup>3</sup>Ph.D. Student, Department of Innovation Engineering, University of Salento, [giovanna.mangialardi@unisalento.it](mailto:giovanna.mangialardi@unisalento.it); <sup>4</sup>Professor of Ecology, Department of Biology, Bari University, [angelo.tursi@uniba.it](mailto:angelo.tursi@uniba.it)

appears today in major overhaul, especially the impacts of globalization on shareholder structure of urban territories.

Therefore, the centuries-old relationship between university communities and urban communities can find today a strategic dimension (Pavia Protocol signed in September 2015 by the CRUI and ANCI). The universities do not evaluate statically thus spontaneous environmental effects, but they are committed to activate strategies and systems which make communities aware of the social responsibilities for sustainable living.

Climate change is a hot topic among university communities, local and territorial membership; they are called jointly to prepare studies, actions and interventions, aiming for more sustainable and resilient cities, limiting risks from climate change (Beck U., 2001). This effort to mitigate and adapt to climate change in fact feeds and strengthens the link between universities and cities, which is becoming more and more critical.

This is because building networks between universities, cities, communities and stakeholders assumes strategic function in order to make cities and their communities smart, considering 'smart' in its polysemy: in fact, at the same time smart is synonymous of digital, green and learning (HAMBLETON, 2014).

#### **From university network to university in the network: the RUS**

Sustainability Interventions are being activated by several Italian Universities, which are also participating in the newborn network RUS (*Rete Università Sostenibili*). These interventions may allow construction and dissemination of optimal practices in urban resilience, supported by unprecedented smart communities that can contribute to knowledge transfer and models for policy implementation and practices in local and university contexts. These structures

represent the plurality of university settlement types (multifunctional university complex; widespread universities in the historic and consolidated city; fenced university campus, cluster-university research centers-companies in the urban region) and the multiplicity of relation between universities and cities.

An interdisciplinary and inter-scalar approach is necessary to promote the building of network among universities and cities. Upon this, it is also essential to 1. act not only to improve efficient technology and university structures and services, but also on the behavior and lifestyles of communities (COP21 Outcome Paris, Art. 12), 2. to explore new territorial projects, and 3. intercepting sustainable strategies for universities that catalyze smart actions relevant to the entire urban community.

Universities and student communities can contribute largely to innovation, starting with re-qualification and innovation of university spaces and better integration with the city.

From this perspective, educational-training paths take an indispensable role to support change, by calling for changes in the mindsets of people by providing them awareness of sustainability (MORIN 1999; 2000; 2014).

#### **Future recommendations**

The focus on these complex issues is becoming increasingly urgent, and is driving some Italian university establish networks for sustainability. RUS will contribute to strong interdisciplinary visions and is essential to build sustainable future pathways. The aim of RUS is to jointly study some solutions that comprise sustainable universities, respecting the plurality of the relation between universities and cities (MARTINELLI, 2012) and also the plurality of settlement types of university campuses.

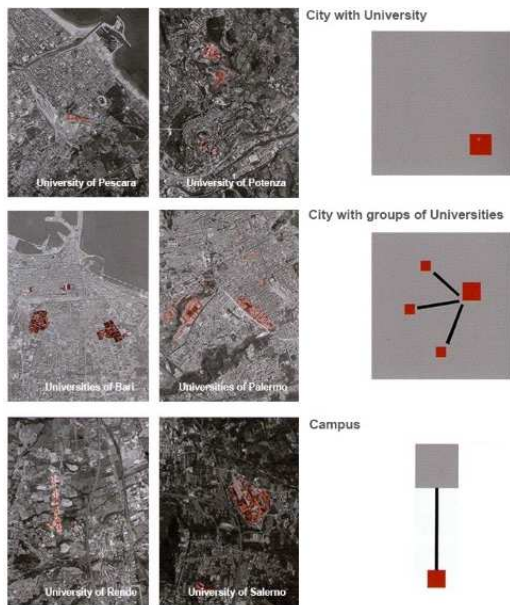


Image 1: City-University Relation

Sources: rielaboration by MARTINELLI, N. (2012), *Spazi della Conoscenza. Università, città e territori*

Best practices of each university will be shared and discussed with other universities in the network. In this way models, tools and solutions are transferred to other Italian Universities and Third Countries and, as waterfall effect, in their cities and communities for the creation of a network of sustainability that catalyze good practices and develop resilience.

Inevitably, this challenge raises attention and attaches value at human resources: the students and members of the university community will be involved in training programs and participation in issues addressed by each university and in identifying possible solutions through procedures for problem-based learning (UNESCO, 2014). They will be the first bearers of sustainability in the community.

Therefore, the interdisciplinary joint and shared research as a force for promoting change. As advocated by European Community RRI this research could be the basis of scientific and participated solutions to

climate change, the only one to favour authentic empowerment processes of people, companies and institutions.

## References

BECK, U. (1998), *World Risk Society*. Cambridge: Polity Press

HAMBLETON R. (2014), From the smart city to the wise city: The role of universities in place-based leadership. In: *Smart City: New Media, Social Participation and Urban Governance*, Shanghai, China, 5-7 June 2014. Shanghai, China: Shanghai University Available from: <http://eprints.uwe.ac.uk/24142>

HOLLING C.S., GUNDERSON LANCE (2002), Resilience and Adaptive Cycles. In: Gunderson L.H. and Holling C.S. (editors), *Panarchy, understanding transformations in human and natural systems*, Island press, Washington, 2002

MARTINELLI, N. (2012), *Spazi della Conoscenza. Università, città e territori*. Bari: Mario Adda Editore

MORIN, E. (2014), *Enseigner à vivre: Manifeste pour changer l'éducation*. Arles: Actes Sud.

MORIN, E. (2000), *Les Sept Savoirs nécessaires à l'éducation du future*. Paris: Seuil.

MORIN, E. (1999), *La Tête bien faite: Penser la réforme, reformer la pensée*. Paris: Seuil.

PRIN 2010-2011, [www.postmetropoli.it/atlante](http://www.postmetropoli.it/atlante)

RETE UNIVERSITA' SOSTENIBILI, <http://www.cruil.it/HomePage.aspx?ref=2279>

UNESCO, (2014), *Shaping the future we want. UN Decade of Education for Sustainable Development*. Paris. [https://www.bibb.de/dokumente/pdf/a33\\_un\\_decade\\_final\\_report\\_2014\\_230171e.pdf](https://www.bibb.de/dokumente/pdf/a33_un_decade_final_report_2014_230171e.pdf)

UNITED NATIONS (2015), *Paris Outcomes COP21*. <http://unfccc.int/resource/docs/2015/cop21/eng/I09.pdf>

UNITED NATIONS (2015), *Sustainable Development Goals*.  
<https://sustainabledevelopment.un.org/index.php?menu=1300>

UNITED NATIONS ECONOMIC COMMISSION EUROPE (2012), *Learning for the future. Competences in Education for Sustainable Development*, Utrecht.

WIEWEL W., PERRY D. C. (2008), *Global Universities and Urban Development. Case Studies and Analysis*, Lincoln Institute of Land Policy, United States of America