

THE RIVER AGREEMENT. EVALUATION AND PLANNING FOR CO-EVOLUTION OF
RESILIENT COMMUNITIES AND TERRITORIES

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SOMMARIO

Il paper intende descrivere alcune prime considerazioni sulla costruzione di una metodologia per individuare come le reti verdi e blu (e in particolare i contratti di fiume), sempre più individuate come uno strumento di pianificazione per la preservazione del territorio e dell'ambiente, possano contribuire alla definizione di un territorio resiliente, nell'ottica di un approccio co-evolutivo, che sia capace di adattarsi alle diverse tipologie di cambiamento. Il paper fa riferimento ad alcune sperimentazioni italiane (in particolare quelle della Città Metropolitana di Torino) prendendo come caso esemplare quello di alcune sperimentazioni francesi di *Trames Vertes et Bleues*.

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1. Introduction

In urban and regional planning, environmental and ecological concerns have acquired an increasing and relevant role. The necessity of integrating them in new urban developments and regeneration activities and adapting them to current situations and expectations arose from the evident mutations and transformations that cities are continuously and increasingly facing (such as, for example, disasters caused by climate change). Many cities are comprehending that the wellness of a territory passes through the recognition of its environmental, social and ecological vulnerability and through the ability to overcome difficulties in a resilient perspective.

In this perspective, many cities have indeed started drafting some national and/or regional and local policies and strategies specifically dedicated to the inclusion of environmental issues in urban planning practices. In this perspective, in the attempt of overcoming the concept of sustainability, there is a growing interest and concern around the concept of urban resilience (Davoudi *et al.*, 2012). Within this framework, a leading role is the one led by green and blue infrastructures (an exemplary case study is the French one) and by ecological networks (Meerow and Newell, 2017), as intended in Italy and in particular in the case study here analyzed of Piedmont Region. In this regional context, the Metropolitan City of Turin has led and is still leading some important experimentations of local ecological networks (Bruino, Ivrea and Bollengo, and Chieri) by connecting them also to the definition of River Agreements (RA) and of the Environmental Compensation Plan.

2. Green and blue infrastructures for a resilient planning evaluation

In the perspective of a “co-evolutionary” approach to resilience (Davoudi *et al.*, 2012), the idea of urban resilience implies that urban systems own the capacity to react to several external disturbances (economic, social and environmental) by including all the components of urban governance and by transforming itself in a new development model.

With regard to environmental components of a resilient approach to territories, green (and blue) infrastructures have been widely recognized as one of the principal planning tools for the activation of the supply of ecological, economic and social benefits (EC, 2013) through the use of nature-based solutions, and for their multifunctionality (Hansen and Pauleit, 2014). In the attempt of evolving and adapting the concept for the construction of a resilient approach to territories, green infrastructures, as intended in the European definition, appear as a strategically planned network of natural and semi-natural areas which supply a vast array of ecosystem services contributing to urban resilience (Meerow and Newell, 2017). The relevance of green infrastructures is also detectable in some megacities policies; cities such as Paris, London, New York City and Detroit have indeed taken into serious consideration the implementation of green infrastructures in their planning and design policies, both at local and large scale. This policies’ approach is based on the integration of both administrative and territorial scales that allows the introduction of green, but also blue, infrastructures from the national to the lot scale, with some interventions and projects of nature into cities. Even though recent studies have focused their attention on both green and blue infrastructures, the blue element (mainly composed by rivers and damp areas) is not yet widely diffused.

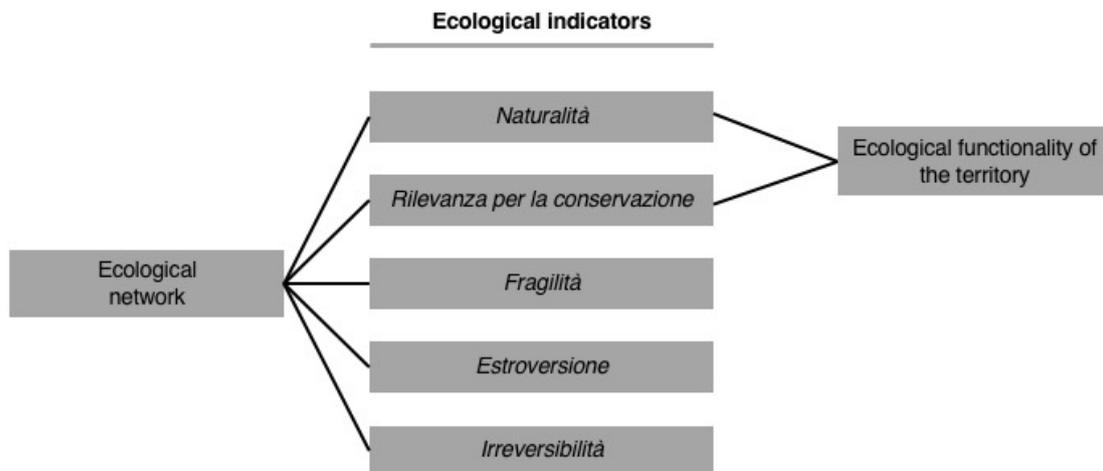
In the international framework, one of the most significant case studies that included both green and blue infrastructures in its national policy is the French one (*Trames Vertes et Bleues* - TVB). This policy (Clergeau and Blanc, 2013) characterizes itself to be not merely relegated to the national level, but it attempts to develop physical and ecological transformations also at a local level through the development of specific urban projects. The adoption, and adaptation to each territory, of these green and blue systems is mainly based upon a general territorial and environmental evaluation of green areas (natural parks, ecological corridors, etc.) which is developed by each Region, in drafting the *Schéma régional de cohérence écologique* - SRCE. In order to construct a functional and fitted TVB, some Regions have defined a specific methodology (for example, the ex-region of Auvergne) based on a multicriteria analysis for both green and blue infrastructures.

Italy is also attempting to define an integrated system of both green and blue infrastructures with a particular attention to urban regeneration and new governance tools, such as river agreements, recognized by the Italian National Adaptation Strategy 2015 as a resilient approach.

3. Ecological networks and river agreements in the Metropolitan City of Turin

The Metropolitan City of Turin, together with ENEA³, has defined some Guidelines for the green system within which it identified a specific methodology for the definition of an ecological network. This definition is made upon the identification of a set of ecological and environmental indicators (figure 1).

Figure 1 – Ecological indicators of ENEA’s methodology



These indicators have different levels of specificity, varying from 5 (*naturalità* and *estroversione*) levels to 3 (*irreversibilità*). The combination of the first two indicators has allowed to define a territorial zoning based upon its reticular value and its ecological functionality: 4 different classes of areas have been identified, from the one with the highest value of ecological suitability to the one with the lowest. The application of this methodology to specific territories has allowed to define a diffused “reticularity” for the territories involved and it contributed to make more evident which parts of these territories are more sensitive to sudden changes caused by human activities.

In addition to green infrastructures, in the construction of these ecological networks, rivers (as it happens in the French case study) could lead an important role in the definition of a resilient territory; they are indeed considered as an interesting space for experimental workshops on resilience, as a driver of territorial policy and for ordinary communities and landscapes. In the Italian context (following some European experimentations), some important revitalization actions on rivers have been held within the framework of River Agreements (RA); they appear to be an innovative governance method which can enable new plans and practices in favor of a resilient development of fluvial territories.

RA are a form of negotiated planning that contributes to involve stakeholders in: the evaluation and valorization of the fluvial environment and landscape, the improvement of people’s knowledge of current territorial conditions and of the effects of human activities, the increase of social awareness, the inclusion of the society in the identification and implementation of practical solutions; the encouragement of innovative changes in planning objectives and urban and architectural design, starting with the legal and planning framework of an Action Plan.

In the Region of Piedmont, RA are recognized as a successful territorial governance tool used to define shared strategies, measures, rules and projects. Within the framework of RA, a particular case study is the

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Environmental Compensation Plan of the Stura River Agreement. It can indeed be identified as one of the first participatory evaluation and planning tools in Piedmont signed by local actors. The main objective is to actualize, through experimentations which integrate evaluative approaches and territorial and landscape projects, different scenarios aimed at giving operativity to the ecological network in local planning. The operativity of ecological networks, in the Italian context, appear to be an aspect that still needs to be reinforced in the field of planning practices. The Environmental Compensation Plan is a method for the support of a shared and strategic governance oriented to environmental and landscape mitigation and compensation actions in the territory of a fluvial basin.

This experimentation is the first attempt of constructing a systemic and integrated plan which tries to overcome the idea of the compensation as a mere realization of specific interventions with no reference to a specific overall strategy of protection, valorization and environmental recovery. The Environmental Compensation Plan can contribute to activate interventions for the recovery of ecosystems, for the realization of some nodes of the ecological network and for the valorization of landscape and quality of life. It can help in guaranteeing a partial maintenance of biodiversity and ecosystem loss (Cowell, 2000) by increasing its resilience.

The construction of this plan is based upon the Guidelines for mitigations and compensations (drafted by the Metropolitan City of Turin within the framework of the Provincial Coordination Plan of 2011) which identify as areas suitable for environmental compensations the ones more fragile or the ones which can play a strategic role in the implementation of the ecological network. The methodology identified by these guidelines takes the cue from the bio-ecological approach (Bennett and Wit, 2001); it identifies landscape as an interconnected system of habitat which connects the areas of *Rete Natura 2000* (core areas, corridors and buffer zones) and the sustainable use areas and potential restoration areas (identified starting from land uses of Land Cover of the Piedmont Region).

In a process of biodiversity preservation and resilience construction, the Environmental Compensation plan defines a strategic and implementation scenario for the conservation and design of ecological and landscape networks. It has some elements in common with the ENEA methodology: the procedural nature is based on a habitat evaluation system which, in relation to their ecological and landscape values, defines the set of planning and design actions to be implemented in favor of the implementation of the ecological network.

4. First considerations

This first attempt of schematizing the different planning and evaluation tools that concur to the construction of a green and blue infrastructures network makes evident how there is the necessity of systemizing the different planning tools in order to achieve a more coherent and common methodology which is able to deliver evident and practical results.

In the attempt of defining a methodology which is able to measure resilience, it is necessary to include such elements as green and blue infrastructures also with the contribution of tools as River Agreements and. These two tools can indeed be considered as instruments able to implement the ecological network in a vast area scenario and to contribute to the enhancement of the environmental and landscape system. The Environmental Compensation Plan can constitute a strategic reference framework for the different projects that insist on the territory at different territorial scales (the masterplan brings together all the projects falling on the basin in one instrument). This process allows, on the one hand, to actively involve the various stakeholders and, on the other hand, to establish large-scale equalization mechanisms that are fundamental for the implementation of the plan.

The Plan, conceived at the scale of the river basin to make synergy with the enhancement of the environmental and landscape system, bases on territorial concertation the activation of mechanisms functional for the system enhancement, through the involvement in wider area strategies of even more municipalities, guaranteeing a general vision on a supra-local scale and a systemic and evaluative approach to compensation.

All these tools can confer to the concept of resilience relevant elements for the construction of necessary synergies and a shared strategic framework for the environmental enhancement of a territory. The definition of a methodology for compensation actions can also contribute to the achievement of an integrated approach which is capable of building long-term visions for the construction of resilient green and blue infrastructures, involving thus both rivers and green areas.

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ABSTRACT

The paper intends to describe some initial considerations on the construction of a methodology suitable to identify how green and blue networks (and in particular river contracts), increasingly identified as one of most efficient planning tools for the preservation of the territory and of the environment, can contribute to the definition of a resilient territory, in a perspective of a co-evolutionary approach, which is able to adapt to the different types of change.

The paper refers to some Italian experimentations (in particular the ones held by the Metropolitan City of Turin) by taking as an exemplary case study some French experimentations of *Trames Vertes et Bleues*.