



Универзитет у Београду    University of Belgrade  
АРХИТЕКТОНСКИ ФАКУЛТЕТ    FACULTY OF ARCHITECTURE  
Булевар краља Александра 73    Bulevar kralja Aleksandra 73  
Београд, Србија    Belgrade, Serbia



ŠESTI MEĐUNARODNI NAUČNO\_STRUČNI SIMPOZIJUM  
**INSTALACIJE & ARHITEKTURA 2015**

ZBORNİK RADOVA\_





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Ana Perić<sup>1</sup>

## **GREEN INFRASTRUCTURE IN SERBIA: AN OVERVIEW OF ENVIRONMENTAL AND SPATIAL PLANNING POLICIES**

### **Summary**

Since one of the most effective ways of strengthening the implementation the green infrastructure principle is through spatial planning, the paper aims at presenting the overview of the contemporary policies in the domain of environment and planning. After a brief overview of European and regional (i.e. Western Balkan) documents in the field, the central part of the paper elucidates the extent to which the concept of green infrastructure is elaborated in Serbian legislative framework.

### **Key words**

green infrastructure, climate change, environment, spatial planning, legislation

## **ZELENA INFRASTRUKTURA U SRBIJI: PREGLED POLITIKA U DOMENU ŽIVOTNE SREDINE I PROSTORNOG PLANIRANJA**

### **Rezime**

Kako je jedan od najefikasnijih načina za pospešivanje implementacije principa zelene infrastrukture kroz prostorno planiranje, glavni cilj ovog rada je prikaz savremenih politika u domenu zaštite životne sredine i planiranja. Nakon sažetog pregleda evropskih i regionalnih (tj. sa područja Zapadnog Balkana) dokumenata u datom domenu istraživanja, centralni deo rada osvetljava do koje se mere koncept zelene infrastrukture razmatra unutar legislativnog okvira Srbije.

### **Ključne reči**

Zelena infrastruktura, klimatske promene, životna sredina, prostorno planiranje, legislativa

---

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## 1. INTRODUCTION

Today above 60% of the world population lives in cities [1] and, according to some forecasts, over 70% of population will live in urban areas until 2040 [2]. Such a growing population tendency has a great effect on environment or, more generally, on climate change. Some of the particularly obvious consequences of climate change in urban areas are the following: flooding risks, landslides, public health problems, increase of the energy use, etc. In other words, we are aware of the need for preparing and undertaking the adequate measures and actions at various decision-making levels [3].

One of the mechanisms for dealing with the problem of climate change and its negative effects on urban areas is the green infrastructure or green systems. Green infrastructure (GI) can be broadly defined as: “A strategically planned network of high quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings” [4]. Some of the main goals of implementing the green infrastructure principle in urban areas are defined as follows [4]:

- Fostering a better quality of life, by providing a high quality environment of living
- Improving biodiversity, by reconnecting isolated nature areas and increasing the mobility of wildlife across the wider landscape
- Mitigating the effects of climate change, by alleviating floods, storing carbon or preventing soil erosion

Thus, we can agree that GI serves the interests of both people and nature. More precisely, green infrastructure affects the spatial structure of natural zones, but also addresses the environmental features of urban patterns. In the world of great land consumption, green systems can be a cost-effective alternative to intensive land use, also creating new jobs and social cohesion. However, the questions are: Is the topic of GI adequately addressed in the relevant environmental and spatial planning documents? Is it a part of climate change or biodiversity policies or is it recognised as an independent topic of importance for sustainable development? Are there precise implementation measures in order to promote the GI principle? What is the difference between developed and post-socialist countries when dealing with the topic of GI?

The paper is structured as follows. After introductory remarks, the position of the GI topic in relation to various aspects of sustainable development as well as to other sectorial themes is provided. The central part of the paper is about the overview of the GI related policies at different levels: European, regional (i.e. Western Balkan), and, finally, local (i.e. Serbian). The recommendations for improving the regulative framework concerning the GI topic in Serbia is provided in the final part of the paper.

## 2. BENEFITS OF GREEN INFRASTRUCTURE

Although the topic of GI can be mainly observed through environmental and psychical aspects, the effects of its implementation in broader spatial and social context are inevitable. Table 1 presents the compatibility of the GI functions with the policy objectives in the economic, environmental and social domain. It is expected to find a greater extent of congruence between environmental policies and the GI functions and benefits. However,

the implementation of the GI principles has an effect on economic growth and employment, as well as on community cohesion and creating the healthy communities [5]. In one word, economic, social and environmental benefit can be achieved through the implementation of the green infrastructure practices.

Table 1. Compatibility of green infrastructure functions with examples of other policy objectives

Green infrastructure functions and benefits	Policy priorities					
	Economic	Environmental			Social	
	Economic growth & employment	Protect & enhance cultural heritage	Protect & enhance the landscape, geodiversity & natural environment	Biodiversity conservation & enhancement	Climate change mitigation & adaptation	Promoting sustainable transport & reducing the need to travel by car
		Community cohesion & lifelong learning; volunteering				Healthy communities; health & well-being
Access, recreation, movement and leisure	●	●			●	●
Habitat provision and access to nature		●	●	●	●	●
Landscape setting and context for development	●	●	●			●
Energy production and conservation	●			●		
Food production and productive landscapes	●	●	●	●	●	●
Flood attenuation and water resource management	●		●	●		●
Cooling effect	●		●	●		●

Table 2. Overview of key interactions between EU sector/environmental policies and green infrastructure benefits

EU environmental and sector policy areas	Potential synergies		Potential conflicts	
	Green infrastructure benefits	Policy objective	Green infrastructure benefits	Policy objective
Climate change	Interconnected habitats	↔	Resilience to deal with climate impacts	No conflicts
	Storing floodwater	↔	Resilience to deal with climate impacts	
	Mitigation of urban heat island	↔	Resilience to deal with climate impacts	
	Encouraging sustainable travel	↔	Reduction in GHGs	
Biodiversity	Interconnected habitats	↔	Sustain and improve biodiversity	No conflicts
Energy	Reducing energy use in buildings, and encouraging sustainable travel	→	Securing energy supply	Interconnected habitats ↔ Securing energy supply
	Natural habitats	↔	Promoting biomass	Natural habitats ↔ Promoting biomass
	Space for renewable energy	↔	Promotion of renewable energy	Natural habitats ↔ Promoting biofuels
Transport	Encouragement of sustainable travel	↔	Modal shift and integration of transport systems	Natural habitats ↔ Minimising congestion

Having in mind that various aspects of sustainable development tackle the topic of green systems, we can assume that policies and actions for the improvement of green infrastructure belong to various fields, such as: climate change, disaster risk management, biodiversity, forestry, water, agriculture, health, transport and energy, sustainable urban development, etc. However, there are different interactions between the mentioned fields' and the GI benefits, as shown in Table 2. According to this overview, there are no conflicts between the topics of climate change and biodiversity, on the one hand and GI on the other. Moreover, policy objectives in the domain the GI and climate change and biodiversity are the same [5].

However, the most effective way to deal with strengthening the GI is through spatial planning. More precisely, some of the main obstacles towards minimization of the vulnerability of the certain areas is a lack of legislation and regulation for planning the land use, as well as a lack of adequate institutional framework for dealing with and implementing the GI policies [6]. Hence, in the next part of the paper the main policies directly related to the topic of GI or indirectly related, i.e. dealing with the themes of climate change and biodiversity, will be presented.

### **3. GREEN INFRASTRUCTURE POLICIES: AN OVERVIEW**

The focus of this overview is related to Serbian policies in the field of environment and spatial planning. However, before we proceed with such an overview, some of the main European as well as regional, i.e. Western Balkan, policies will be mentioned.

#### **3.1. EUROPEAN CONTEXT**

Besides different studies and programmes related directly to the GI infrastructure topic, there is no European policy concerning exclusively this domain. Rather, the green system are discussed in the context of improving the environmental quality. Some of these documents are the following:

- *Sixth Environment Action Programme*
- *Thematic Strategy on Urban Environment*
- *European Landscape Convention*
- *Leipzig Charter*
- *Aalborg Charter of European Cities*
- *Towns Towards Sustainability*

#### **3.2. WESTERN BALKAN CONTEXT**

Among regional documents, there are no these specifically related to green systems. More precisely, the main documents which tackle the topic of green infrastructure are mainly concerned with the climate change and its effect on urban development. These are:

- *South East European Climate Change Framework Action Plan for Adaptation*
- *Regional Climate Vulnerability Assessment: Synthesis report*
- *Assessment of capacities for low-carbon and climate resilient development*

In the preparation of the *South East European Climate Change Framework Action Plan for Adaptation* [6], the countries of Albania, Bosnia and Herzegovina, FYR Macedonia, Montenegro and Serbia were involved. They agreed on the following goals:

- Reducing the sensitivity towards climate change
- Improving the resilience of socio-economic, environmental and cultural systems

In order to achieve the mentioned goals there is a need for strengthening the institutional capacities and appropriate policies. Within this document, the Republic of Serbia expressed an intention to coordinate the sub-regional projects and the activities in the field of adaptation in water management, forestry, agriculture, public health, land use, biodiversity and buildings.

Croatia, FYR Macedonia, Montenegro and Serbia participated in the formulation of the *Regional Climate Vulnerability Assessment: Synthesis report* [7]. The main goals defined in this document are:

- Focusing on the adaptation measures to climate change
- Creating the new and implementing the existing legislation in the field of planning and environment

All Western Balkan countries participated in preparation of the *Assessment of capacities for low-carbon and climate resilient development* [8], whereas the main goals are the following:

- Improving the institutional capacities
- Strengthening the expertise in the respective fields
- Establishing the coordination mechanisms among various sectors
- Creating the new legislation

Based on the abovementioned goals, it is clear that one of the mechanisms to define effective policies in the domain of climate change is strengthening of both the institutional and legislative framework within the states.

### 3.3. SERBIAN CONTEXT

In the following lines, the focus will be on a brief presentation of the main strategical documents, as well as on the legislation in the field of environment and planning. The reasons for this is simple: based on the overview of the regional documents and insight into the Serbian legislation in the field of environment and planning, it is possible to define the main recommendations for improving the current situation in the legislative and regulative framework of Serbia.

The main strategic documents focused on environment and planning are the following:

- *Initial National Communication under the UNFCCC*<sup>2</sup> (2010)
- *Sustainable development strategy* (2008)
- *National programme of environmental protection* (2010)

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<sup>2</sup> *United Nation Framework Convention on Climate Change.*

- *National strategy of involvement of the Republic of Serbia into the mechanism of clean development* (2010)
- *Energy development strategy until 2015* (2004)
- *Forestry development strategy* (2006)
- *Biodiversity strategy* (2011)
- *Spatial development strategy* (2009)

Within these documents the topic of GI is not explicitly mentioned. Hence, it is interesting to observe how the green systems are covered within national legislation. For the purpose of this overview, two groups of legislative documents are analysed:

- 1) Environmental legislation:
  - Act on environmental protection
  - Act on protection and improvement of green areas (draft)
- 2) Planning legislation:
  - Act on spatial plan of the Republic of Serbia
  - Act on planning and construction

In the Act on environmental protection [9], there is no mentioning of the term GI. The only similar concept is green areas, more precisely, public green areas, whereby there is an obligation for taking these into account within spatial and urban plans, in order to keep and improve natural and artificial space values.

In the Act on protection and improvement of green areas (draft) [10], there is the definition of the green system. In addition to this, various categories of green areas are classified, i.e. there are public green areas – land intended for green area, own by public authorities (mainly municipalities) and other green areas – they accompany other land use and can be under various ownership. The Act proposes the synergy effect, i.e. there is “an obligation for building the communal infrastructure – waterway, public lightning and maintenance of other public spaces in the vicinity of green areas – traffic, pedestrian routes” [10].

Before the proceeding with the legislation in the planning domain, the main contribution of *National sustainable development strategy* [11] as one of the main strategic document of Serbia should be mentioned. Namely, for the first time in any Serbian planning document, the term green infrastructure was used. More precisely, planning the “green infrastructure”, “green urbanism” and “green architecture” should provide absolute protection of green and open spaces within urban pattern and public spaces. There is also a need to increase public awareness on the significance of sensitive development and maintenance the quality of environment [11].

Act on spatial plan of the Republic of Serbia [12] defines green corridors and green network, while the main goal of its implementation in spatial context is the protection and improvement of environment. The act proposes certain actions in both urban and rural zones. Thus, in urban zones there is a need to develop green areas in the cities, plan and maintain the green corridors and networks. In rural areas, it is important to afforest and improve the quality of landscape. Within this Act, the following measures for the improvement of urban landscape are defined [12]:



- Building regulation in accordance with the character of landscape
- Keeping the elements of rural landscape in peri-urban areas
- Maintenance, improvement and sustainable use of open, green spaces and nature elements in the cities
- Creating the network of green and public spaces in order to connect natural and cultural values of settlement, peri-urban and rural areas

Finally, Act on planning and construction [13] does not treat the topic of GI.

#### 4. CONCLUDING REMARKS

Taking into account all the threats relevant for Serbia as the post-socialist country, such as: mixed land ownership, slow administrative procedures, low public acceptance, different points of view and priorities, limited opportunity to change spatial plans, lack of knowledge and expertise, etc., the barriers to further green infrastructure development can be overcome in the following ways. Namely, it is important to: 1) promote and support the development of green infrastructure through the coordination among national agencies; and 2) integrate the green infrastructure concept in existing planning policies, including general principles to be considered or concrete priorities and measures to be taken.

The role of the national government should be to:

- Promote and support development of GI
- Coordinate among relevant agencies
- Create relevant legal frameworks where lacking
- Support public private partnerships

Furthermore, the integration of GI in spatial planning policy should be done through:

- Adoption or revision of legislation by a political institution for regulating land use
- Determining the method for preserving or enhancing GI and time scale (e.g. integrated coastal zone management, regional or national GI strategies, climate adaptation strategies)

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