



The Capacity for Resilience in Land Use Planning In Serbia - Natural Hazards and Climate Change Issues

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1. Background

Floods are hazards that have very clear and obvious links to climatic change. Corresponding to contemporary international frameworks that promote sustainable development following the adoption of the Paris agreement at the 21st Conference on the Parties of the United Nations Framework Convention on Climate Change (UNFCCC), 17 sustainable development goals are specifically promoted, and, in addition to sustainability, resilience and, accordingly, disaster risk reduction. Due to the impact of climate change, planners will face not only natural hazards such as floods, more powerful hurricanes and fires, but also the migration of populations into areas with more favorable climatic conditions. (APA, 2011). Spatial plans and regulations (building codes, zoning) that treat these natural hazards, as well as the enforcement of existing building codes and regulations, are of key importance for the mitigation of all hazards, since “mitigation reduces the impact of disasters, saves lives, and reduces economic loss” (Pollner et al., 2010: 35).

The Republic of Serbia, according to the given scenarios, expects a rise in temperature and long-lasting droughts and fires, as well as more intense precipitations that could result in the occurrence of natural hazards such as floods, escarpments and other similar events.

Thus, this paper provides an overview of the current planning framework that addresses the problem of preparing areas for emergency situations and disaster risk reduction with a special reference to these climate change issues and their impact in terms of natural disasters. Taking into consideration the contemporary international and regional strategic frameworks, as well as recent trends in coping with natural hazards within planning, the goals of this paper are to (a) present the framework for the treatment of natural hazards in Serbia in relation to the climate change issues and (b) provide an overview of measures to mitigate and manage these hazards given within selected planning documents. The paper



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takes into account that within the last decade, especially after the catastrophic floods in May 2014, significant efforts have been made to innovate the legal and planning framework in this field. This paper also presents the case of the Kolubara lignite basin, the area that was under the influence of floods and that has had, due to its specific purpose and public interest, a special legal and planning treatment regarding natural hazard issues.

The issues regarding natural hazards are contained within the planning documents in Serbia. In the spatial planning documents, special conditions and measures for protection of people's lives and health from natural disasters are given within the rules for regulation and construction.

2. Methodology

In order to identify natural hazards issues within spatial planning process the authors provide relevant data through qualitative analysis of spatial planning document (spatial plan for the special purpose area for Kolubara lignite basin) and literature research, analysis of the legislative framework (mainly within the fields of emergency situations and planning and construction) and case study analysis. The case study analysis involves a assessment of the issue of natural hazards within spatial planning documents for Kolubara lignite basin, concerning the floods that occurred in Serbia in May 2014.

In the Republic of Serbia, the legal and planning framework within the subject of environmental protection, together with the management of natural disasters/hazards is continuously harmonized in line with international and other relevant frameworks. The main framework for the implementation of the Hyogo Framework in Serbia is the National Strategy for Protection and Rescue in Emergency Situations (Official Gazette of the RS, no. 86/2011), which directs the development of the national system, respecting the EU's frameworks in terms of establishing appropriate institutional, organizational and personal conditions. Together with the Law on Emergency Situations (Official Gazette of the RS, no. 111/09, 92/11, 93/12) an obligation is established to define protection conditions for the prevention of natural disasters within planning documents (heavy rain, droughts, floods, atmospheric discharges, torrents, storms, hail or landslides, avalanches and snow layers, extreme air temperatures and ice accumulation on the watercourse). The Law on Planning and Construction (2009) (LPC) sets up the conditions for planning documents (spatial and urban plans) and for presenting areas of vulnerability and activities on environmental protection, as well as protection of natural and cultural heritage. The Law on Planning and Construction also establishes the obligation to arrange the space of interest for national defense and the protection against natural disasters. In accordance with the provisions of the LPC, the planning, regulation and use of space is based, inter alia, on the principle of protection from



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natural disasters and elimination of the causes of climate change. The issues regarding natural hazards are contained within the planning documents in Serbia. In the spatial planning documents, special conditions and measures for protection of people's lives and health from natural disasters are given within the rules for regulation and construction.

3. Main Results

The Kolubara lignite basin (KLB) spreads over nearly 600 km², and coal from this basin is very important for the production of electrical energy in Serbia. Due to weather-induced natural hazard floods in mid-May 2014, the mining and energy facilities in the KLB suffered enormous damage, which resulted in the interruption of production. On occasion, the two open pit mines, which in recent years have been providers of coal production throughout the KLB, have also been flooded. 236 million cubic meters of water were accumulated in those two open pits and caused damage to the mining equipment of €124 million.

Through the development of planning documents for the subject area (within the spatial plan of the special purpose area for the exploitation area of KLB (2017), on the covered areas acquired as public property, a new regime of land use was established, and in connection with this, a new manner of water land use or land use for the construction of planned water facilities. The current cadaster, identifying land parcels, has also been changed and agricultural land has been converted into water land, in accordance with the provisions of the Spatial Plan.

After the floods occurred, there was an increase in the characteristic flows within the entire KLB (which is a significant area of the Kolubara River basin), so that, in practical terms of frequency, 1000-year floods (before the May floods) became a 100-year flood. It can be concluded that for KLB it is necessary to actively apply protective measures in view of the assessment of all the risks involved. The degree of protection of this and the wider area should take acceptable risk into account, that is, the acceptable relationship between the increased investments in achieving a certain degree of protection and the estimated expected damages.

4. Conclusions and recommendations for planning policy

Given the documented reports and recent evidence of weather trends, climate change induced disasters in Serbia are likely to rise. So, in order to implement climate change adaptation policies and investments, Serbia needs to focus on reducing its vulnerability and planning for measures to mitigate natural disaster risks. The efforts that Serbia is making are in line with international and EU frameworks



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and expressed through activities on the development of its strategic framework. Thus, in the drafting process, they are, inter alia, a national inter-sectoral strategy for climate change, which will be in line with the EU framework for climate and energy policy for the period up to 2030. This, together with the adoption of a relevant law for disaster risk management, will provide conditions for establishing a planning basis that will provide an adequate response in both the prevention of and the response to disasters. Therefore, basing of the case study analysis, future prospects in the treatment of natural hazards within spatial and urban planning in Serbia can be identified in the conducting of measures within disaster risk management – with a frequent focus on reducing climate change vulnerability, actively apply protective measures in view of the assessment of all the risks involved, together with developing guidance on an early warning system for potential risks, along with including all stakeholders and authorities.

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