

INTEGRATING CLIMATE CHANGE ADAPTATION POLICIES IN SPATIAL DEVELOPMENT PLANNING IN SERBIA - - A CHALLENGING TASK AHEAD

*Nada Lazarević Bajec*¹, University of Belgrade, Faculty of Architecture, Belgrade, Serbia

Climate change adaptation policies integration process adds a new dimension to spatial planning. National planning systems need to be reviewed for their capability to incorporate new procedures and implementation tools with a view to upgrading general efficacy of public response to climate change.

The Spatial Plan of the Republic of Serbia (SPRS) adopted in October 2010 devotes special attention to issues of climate change, mitigation and particularly adaptation. This paper argues that regional level of governance is key to considering climate change vulnerability and setting a framework for specific actions on the local level. In the absence of the regional level, great responsibility is on the national planning level to lay out detailed guidelines and regulations as a guidance for spatial planning practice.

What problems may be expected in the SPRS implementation with respect to climate change adaptation? How the adaptation policies adopted in the plan will be integrated into subordinate plans, regional and local? What limitations will the overall system face in policy harmonization? Although this brief paper cannot answer all of these questions, it will try to explain them and indicate the necessary transformations to the planning system to be discussed in the coming period.

Key words: *Climate change, Adaptation, Spatial Plan of the Republic of Serbia, Planning system in Serbia, Regulations*

INTRODUCTION: FROM MITIGATION TO ADAPTATION

While climate change causes, trends and scenarios may be debated, the number of climate change related tragic events in Europe has reportedly doubled in the 1990s compared to the previous decade, leading to severe economic and social consequences (EEA, 2004). The most pessimistic scenario projects temperature rise about 4.0°C (best estimate for a "high scenario") with a likely range between 2.4 to 6.4°C (°C at 2090-2099 relative to 1980-1999) (IPCC, 2007).

Climate projections for South East Europe show that this region is particularly sensitive to climate variability (IPCC, 2007; CEPS, 2008). In some parts of South East Europe precipitation has decreased by up to 20%.

Projections are uncertain, but the researches indicate that Serbia belongs to areas highly vulnerable to climate change (UNECE, 2007). Mean annual air temperature in Serbia exhibits a rising trend and forecasts project sharp drop in precipitation during summer and intensified droughts (Spatial Plan of the Republic of Serbia, 2010).

The emphasis placed on mitigation in combating climate change has recently started to shift toward adaptation, under a broad consensus in sustainable development policies that adaptation to climate change is necessary and urgent (EEA, 2006). Adaptation is defined as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2001: 72). Climate change adaptation (hereinafter CCA) includes "actions taken by governments including legislation, regulations and incentives to mandate or facilitate changes in socio-economic systems aimed at reducing vulnerability to climate change, including

climate variability and extremes" (Burton et al., 2002:146).

A bulk of documents produced worldwide and in Europe emphasize that while adaptation cannot prevent climate change consequences, it can alleviate them (IPCC 2007; Stern 2006). Under its climate change policy, the EU has adopted the Green Paper on adapting to climate change. The document pays special attention to adaptation, defined as "reducing the risk and damage from current and future harmful impacts cost-effectively or exploiting potential benefits" (EC, 2007a, 3). Its importance is also recognized by the Copenhagen Accord (2009), which is keen to support the research on possible adaptation actions.

The research supporting adaptation policies is

This paper is prepared as a part of the scientific project TR 16013 "The approach and conception for formulation and implementation of the Spatial Development Strategy of Serbia", financed by the Ministry of Science and Technological Development of the Republic of Serbia.

¹ Bulevar kralja Aleksandra 73/II, 11 000 Beograd, Serbia
jbajec@eunet.rs

growing (Klein and Tol, 1997, Burton et al., 2002, Eggenberger and Partidário, 2000, Füssel, 2007). According to Klein et al., it is no longer a question whether to mitigate climate change or to adapt to it. Both mitigation and adaptation are essential in reducing the risks of climate change (Klein, Schipper and Dessai, 2005) and they are assured a prominent place in sectoral policies, particularly the ones integrated in spatial planning. At the same time, however, it is noted that insufficient attention is paid to consideration of operationalization mechanisms. Therefore, the EC Green Paper on adapting to climate change (2007) stresses that programs and projects adopted under the Cohesion Fund, Regional Development Fund, pre-accession instruments, Trans-European Networks Programmes, and infrastructure measures under the Rural Development Fund need to ensure that climate change considerations are adequately incorporated into these important funding streams.

Materials prepared for the Cancun Summit (2010) place equal emphasis on mitigation and adaptation. "Parties have emphasized that adaptation and mitigation need to be accorded the same level of importance. Adaptation does not replace mitigation of greenhouse gas emissions. On the contrary, both adaptation and mitigation need to be pursued in parallel during the same period of time, thus complementing each other, and they need to be implemented through sufficient financing and appropriate technology" (UNFCCC, Fact sheet, 2010).

In an effort to combine both types of policies, researches seek an optimal mix of adaptation and mitigation. The policies are tightly interwoven and "the greater the effectiveness of adaptation in reducing vulnerability to climate change, the less will be the urgency to reduce emissions of greenhouse gasses" (Burton et al., 2002).

However, despite the researchers' claims that mitigation and adaptation policies are connected and that sole reliance on adaptation may accelerate climate change, it seems that in research and policy formulation these two areas need to be separated. The researches point out to the problems and limitations in efficiency and effectiveness of the synergy for different scenarios of climate and socio-economic change. This primarily concerns the complexity of institutional setup and incorporation of adaptation and mitigation policies into sectoral policies and linking them with financial instruments. It is a very challenging process: "Striking the balance will be

particularly challenging because of some unique characteristics of the problem; long time horizons; non-linear and irreversible effects; the global nature of the problem; social, economic, and geographic differences amongst affected parties; and the fact that institutions needed to address the issue have only partially been formed" (Klein et al., 2005: 583).

UNDP has developed Adaptation Policy Frameworks for Climate Change underpinned by four major principles that provide a basis for integrated climate change adaptation action:

- Adaptation to short-term climate variability and extreme events serves as a starting point for reducing vulnerability to longer-term climate change;
- Adaptation occurs at different levels in society, including the local level;
- Adaptation policy and measures should be assessed in a development context; and
- The adaptation strategy and the stakeholder process by which it is implemented are equally important (UNDP, 2004).

Particularly pertinent for climate change adaptation is vulnerability of the planning system, one of its focal points, which is why it is crucial that planning reviews institutional capacities in formulation of policies, legislation, strategies and programmes, local actors' capacities to implement them, capacities for striking a consensus between competing interests, compiling information and knowledge, as well as monitoring and evaluation capabilities (Haanpää and Peltonen, 2007: 5).

Spatial planning and climate change adaptation

The awareness of the need to incorporate climate change adaptation into spatial planning has developed over more than a decade. Natural hazards and risks have been associated with climate change since the 90s. A range of measures and tools have been developed, closely tying climate change area with other economic, social and environmental objectives, struggling with all the difficulties of balancing conflicting objectives characteristic of spatial planning.

Numerous documents and guidelines are available advising on how to incorporate hazards and risks in spatial planning on a global, European and national scale (UNFCCC, 2008; 2010; UNDP 2004; EC, 1999; ESDP, 1999; EC, 2004, 2006, 2007a, 2007b, 2009). Given that uncertainties and growing natural

hazards associated with climate change call for concerted management, it is emphasized that hazard mitigation has to be incorporated into spatial planning and management on a transnational, national, regional and local scale to effectively save human life, settlements and infrastructure (UNISDR, 2004).

Spatial planning plays an important role in the implementation of climate change adaptation measures and policies, and in this sense it is urged to broaden the scope of all plans and programmes with potential effects on risk and vulnerability (EC, 2003; EC 2007b). The issues of the character of planning, types of measures and cooperation with other sectors are raised (e.g. integrating land use planning and water resources management in support of risk mitigation) and, particularly, the need for stronger integration with civil protection measures (Peltonen, 2006). In that sense, climate change adaptation should become an integral part of the planning process, similarly for example to the way in which environmental impact assessment is today integrated into all strategic plans and projects.

What is new?

Spatial planning has always attached great weight to the issue of adjustment to climate factors. What is new in adaptation to climate factors? Several aspects have considerably changed the situation: unprecedented climate conditions that will soon affect many regions; expected future unprecedented rate of change necessitating urgent action; and also, unprecedented knowledge as a basis for understanding causes and effects and forecasting future trends, thus enabling informed action. Spatial planning is faced with the need to change traditional methodology and develop a new one able to cope with the uncertainties of global climate change dynamic, include new actors who so far never considered climate hazard issues in their decisions and refine innovative measures that will most effectively respond to challenges (Füssel, 2007: 268).

As a form of public climate change adaptation policy, spatial planning is guided by four key objectives: increasing robustness of infrastructures; increasing flexibility and adaptability of vulnerable managed systems; reversing trends that increase vulnerability; and improving awareness and preparedness (Klein and Tol, 1997). In order to meet these objectives it is necessary to identify appropriate adaptation variables against which adaptation options can be assessed; determine priority sectors, regions and locations for adaptation investment; facilitate adaptive capacity-building processes; establish

possible inter-institutional coordination; and assist in the estimation of the costs and benefits of adaptation measures (UNFCCC, 2010: 60).

Context

Climate change adaptation policies depend on the specific context in which adaptation is considered. Given the difference in contexts, it is impossible to apply a uniform approach in the assessment, planning and implementation of adaptation measures. "There is no 'one size fits all' with adaptation. Each adaptation action is different, and depends on the level(s), sector(s), support (financial, technological, capacity-building, educational) and stakeholders involved" (UNFCCC, 2010:51). It follows that in each specific case different methodological approaches need to be thought through, to enable adequate insights and assessments of geographic, social and institutional vulnerability.

Füssel indicates key aspects of adaptation which need to be looked into in concrete spatial planning situations: establishing climate-sensitive domains; the types of average climate hazard situations, climate variability, and climate extremes; predictability of climatic changes that are in some aspects associated with more and in others with less uncertainty; defining adaptation purpose – autonomous vs. planned adaptation; timing – reactive vs. proactive/anticipatory planning with different planning horizons; familiarizing with non-climate factors that vary across regions – economic, social and cultural factors and stakeholders – individuals, groups and institutions in private and public sectors on different hierarchical levels. The form of adaptation involves a broad range of measures facilitating implementation through effective risk mitigation actions – technical, legal, educational (Füssel, 2007: 267).

Approaches

Two approaches may be distinguished in spatial planning, relying on different aspects of adaptation, primarily the plan's horizon, available data and their reliability. On the one hand, there is *the hazards-based approach* that relies on probabilistic information on the events themselves, suitable for long-term planning since it builds awareness about the problem and enables identification of priorities. The underlying assumption is that the existing risks are effectively controlled and that climate scenarios, enabling reliable projections of future climate impacts, are defined. On the other hand, *the vulnerability based approach* that relies on understanding and mitigating

vulnerabilities, rather than scenarios and precise projections, requires better understanding of the context. It is most suitable in circumstances where the existing risks are inadequately managed, posing great uncertainties with regard to future climate impacts, where climate and other factors are firmly intertwined, primarily in short-term planning with limited funding. Developing countries often resort to policies focused on short-term improvements through management of existing climate-sensitive risks which at the same time try to cover a range of possible climate projections (Füssel, 2007:271). In this way reduction of vulnerability does not require accurate predictions, but relies on understanding the context of the problem, which makes it more comprehensible to all relevant stakeholders (Peltonenet et al., 2005:1).

Hazards are considered based on information about highly vulnerable areas. In the context of new planning for large-scale development areas microclimatic conditions are monitored and defined on an ongoing basis, and zoning is reexamined according to degree of risk (floods, droughts, heightened risk of erosion and similar), areas requiring special protection measures are identified (e.g. flood management, water retention areas, flood dams etc.), hazard protection regulations are specified in building regulation plans, prevention of heat islands is ensured in densely built-up areas, securing green areas of sufficient size, etc. "Management measures include structural and nonstructural measures to avoid (risk prevention) or limit (risk mitigation and preparedness) adverse effects of hazards such as early warning systems, socio-environmental safety nets and risk-sharing mechanisms such as insurance" (UNFCCC, 2008).

Risk-based climate change adaptation calls for new planning approaches. Since hazard probability cannot be precisely determined, instead of relying on past experience (which is typically the case) planning needs to involve all interested stakeholders in the assessment of hazard probability and types of measures to be undertaken. In cases of conflict of interests, binding decisions should be corroborated by well-founded expert opinions. On the basis of expert assessment, hazard zones and risk plans are identified and incorporated into land use planning. Risk areas most often extend over local community boundaries. Documents and researches indicate that these assessments are most effectively conducted on the regional level, where it is also possible to strike an equitable trade-off between costs and benefits.

Adaptation underpinned by vulnerability

assessment enables linking of planning and management. Trans-sectoral approach in considering environmental requirements enables integral assessment of the environmental effects of planned activities and points to limitations with regard to certain forms of land use. Spatial planning has a very important role in preparing for long-term changes, so it is necessary to explore possible innovations to the planning system, process and work method which could provide more adequate responses.

Coordination

Inter-sectoral coordination

Contemporary spatial planning calls for integration of adaptation options across economic sectors and at different levels and defining of programs and projects that will reconcile stakeholders' needs and create multi-sectoral partnership necessary for plans implementation. The ways and means of adaptation need to be assessed in the light of their combined impact, identifying potential conflicts and linking them with social and economic determinants of vulnerability in a development context. "This means that the questions of *who* adapts and *how* become of central importance" (Peltonen et al., 2005:6). Emphasis is thus placed on development of legal and institutional frameworks to enhance cross-sectoral collaboration on adaptation.

Despite a clear need for holistic understanding on the issue of adaptation, cross-sectoral approach encounters numerous difficulties, primarily in dealing with organization of competences that favors sectoral approach, and trying to identify effects across sectors and sectoral adaptation responses. In order to overcome the divisions, an assessment method needs to be established that would take into account the interrelation of measures, assess their combined effects and recognize potential conflicts (Cassar et al., 2007:3).

Experience and knowledge about adaptation is upgraded across a range of agencies and actors. The precondition for effective planning is that clearly defined public participation procedures and collaborative planning methods are incorporated into the risk-based planning process. An important role is played by the private sector: "The specific expertise of the private sector, its capacity to innovate and produce new technologies for adaptation, and its financial leverage can form an important part in the multi-sectoral partnership that is required for planning and implementation of adaptation. "...Businesses are undertaking a large range of ongoing practices in a range of sectors, that they are carrying out as part of

their strategic business practices that enhance adaptive capacity and expand the coping range of communities" (UNFCCC, 2010:51).

Coordination of different planning levels

With a view to reduce vulnerability, it is recommended that climate change adaptation is integrated into and coordinated across all levels of spatial planning. Adger et al. (2005:79) deem that "All dimensions of adaptation can be implemented at any scale", however, given that spatial distribution of impacts and social distribution of resilience and adaptive capacity are local issues (regions and local communities) the plans need to be harmonized across levels and at the same time partially binding, so as to allow flexible application on lower levels. "Understanding adaptation therefore requires consideration not only of different scales of human action, but also of the social construction of appropriate scales by institutions to further their own aims" (Adger et al., 2005:80). In carrying out complex adaptation policies responsibilities for action need to be specified for a range of actors, the state, region, local communities, starting from strategic to urban land use plans, which also calls for corresponding decision-making freedom (e.g. assessment of relationship between plans, which aim to provide guidance, and binding regulations).

Adaptation policies and planned actions are underpinned by global and national policy frameworks, as well as national adaptation strategies and plans. Over the last decade, in many countries around the world and especially in the EU, climate change adaptation policies on the national level have been defined or prepared in the form of a comprehensive national adaptation policy which also considers the impact of climate change on spatial planning and adaptation responses. (National Adaptation Strategies adopted for example in the UK, 2010, Denmark, 2008, Hungary, 2008, Portugal, 2006, Spain, 2006, Finland, 2005, etc. see National Adaptation Strategies, European Environment Agency).

Although plans are capable of identifying climate related hazards and risks and areas at risk on different levels, experiences of many countries have shown that climate-related hazards and risks are best identified and monitored on the regional level. Regional strategic plans provide a link between national adaptation strategies and spatial planning that is supposed to guide lower levels on how to incorporate climate change measures and tools in their plans, i.e. formulate plans and projects that will reduce vulnerability of local commu-

nities. These plans are based on regional climate change studies which lay basic criteria for impact assessment.

In policy coordination, special emphasis should be placed on the links between adaptation problem and land use objectives and coordination of development objectives. Peltonen et al. (2005:27) offer an example of a paradigm promoted in the Finland's National Adaptation Strategy - concentrating development within the current urban structure. Debates on this policy have demonstrated that such orientation is hindering the provision of safe and good quality living environments, since densely populated urban areas pose challenges to adaptation.

Effectiveness

Effectiveness is the key objective of planners' actions addressing climate change adaptation. Spatial planning is effective only if its actions contribute to reducing climate change impact, i.e. mitigate risks and enhance safety. However, limitations should also be kept in mind. Adger et al. (2005) point out several aspects that cause difficulties in assessing effectiveness. "First, there may be uncertainty over how a particular adaptation option will work even under defined conditions. ...Second, the effectiveness of an adaptation option introduced by an organization may be reliant on actions taken by others... Third, the effectiveness of an adaptation action may depend on the future — unknown — state of the world... Fourth, whilst an adaptation measure may be effective in reducing the impacts of climate change or increasing opportunities in one location or time period, it may increase pressures "downstream", or lessen the abilities of others to adapt to climate change" (2005:81).

With a broad range of economic, social, political and environmental circumstances affecting the effectiveness of climate change adaptation planning, no general rules apply. Decision-making is located depending on the decision-making and implementing agent: national, regional or local authorities, communities, groups or individuals. It also depends on available knowledge and tools as well as the timing and time horizon of the adaptation action (UNFCCC, 2010:52).

On the one hand, according to Adger et al., sustainability of adaptation measures depends on different adaptive capacities of a variety of stakeholders, while on the other, this very heterogeneity of stakeholders' capacities, benefits and objectives may pose a limitation. Therefore, division of responsibilities, with clearly defined roles of different public and

private sector stakeholders who take part in adaptation segment of spatial planning through legislation and guidance would have to take into account their capacities and resources. This also includes specifying procedures that link climate change and its impacts to the planning processes and practice.

Central to adaptation planning is the assessment that has shifted from science-driven assessments to policy-driven assessments. According to Adger et al. (2005:80) "Adaptation to climate change ... can be evaluated through generic principles of policy appraisal seeking to promote equitable, effective, efficient and legitimate action harmonious with wider sustainability". Focusing on the use of adaptation assessments for adaptation planning and policy-making, Fussel stresses that the purpose of assessment is "identifying options to adapt to climate change and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency and feasibility" and gives an overview of recommendations and guidance formulated to this aim by numerous international and national organizations (Fussel, 2007:271.) However, guidance and planning principles remain the subject for further research and verification.

Integration of climate change adaptation issue into spatial planning is very complex. Many current researches claim that risk-based planning instruments are poorly developed even in developed countries and usually boil down to hazard maps. In order to assess the adequacy of spatial planning response to adaptation, we need to start from the research and assessment of vulnerability on the one hand and the response provided by the existing policies on the other. Research findings may help toward gradual change and adjustment of existing competences, procedures, planning forms and tools, including legislative and financial ones.

INTEGRATING CLIMATE CHANGE ADAPTATION POLICIES IN SPATIAL DEVELOPMENT PLANNING IN SERBIA

In this part we tackle some aspects of the problem of integration of climate change adaptation policies in spatial planning in Serbia. The integration overview should serve as a starting point, "adaptation baseline" (Burton, et al. 2002:157) against which policies and improvements are proposed and contemplated, based on identified gaps and resource needs, and which helps to establish what hinders adoption and what are the reasons behind it. However, we are not aware of any such analysis. Therefore, our considerations

are based on the recently adopted Spatial Plan of the Republic of Serbia from 2010 to 2020 (The Law on Spatial Plan of the Republic of Serbia from 2010 to 2020, hereinafter referred to as the SPRS). The SPRS, as the first strategic and development spatial plan that includes climate change adaptation issues, is underpinned by previously adopted environmental documents, particularly the National Sustainable Development Strategy of the Republic of Serbia (2008) and The Action Plan for the implementation of the National Sustainable Development Strategy for the Period 2009 – 2017 (2009). The Spatial Plan provides an exhaustive overview of problems in the area and climate change adaptation policies, so its analysis can give an insight into the current state of planning in Serbia and indicate necessary changes to the spatial planning system that would more adequately respond to climate change adaptation problem. In that sense of particular interest are the problems related to integration and operationalization of general policies, decision-making levels, vertical and horizontal coordination, participation of relevant stakeholders, capacity for implementation, monitoring and enforcement (Vujošević, 2004).

Recognizing key problems from the standpoint of climate change adaptation, the SPRS places an emphasis on:

- lack of adequate support for implementation of multidisciplinary research programs on climate change impact, vulnerability and adaptation options;
- absence of a special state program to address climate change problems;
- limited financial support for building capacity (systemic, institutional and individual), education, training and informing (SPRS:118).

The Republic of Serbia “so far had no clearly defined policy for protection from natural hazards, and the problem was addressed either by sectoral studies on specific types of hazards or as an integral part of various planning documents.” In linking CCA goals with hazard protection measures, it is stressed that in order to proceed with adequate integration on all levels and in all stages of planning – “an acceptable level of risk from natural and technological hazards needs to be identified and the system of preventive, organizational and other measures employed to prevent their occurrence and/or reduce hazards effects to an acceptable level” (SPRS 2.6. Natural and Technological Hazards, 2010:146)

Policy Implementation

Clearly, climate change adaptation topic intertwines vertical and horizontal planning levels. In a top-down and bottom-up decision-making concept the key role in the EU countries is played by the national level hand in hand with the local, with a view to creating a conducive environment for joint (collective) action (Dasí, 2006). Nationally made decisions are binding and represent the starting point for the regional and local level. Hence, the form and the exactness with which the decisions are formulated and suitability for their use on lower decision-making levels seem to be of crucial importance.

Key weaknesses and problems associated with strategic planning practice do not concern so much strategy conceptualization and development, as does the implementation process. Researches point out the fact that a bulk of strategies fail to be implemented exactly because of the difficulties arising in realization (Mintzberg, 1994). The problem on the one hand lies in the absence of a clear methodology that would enable the understanding of strategy implementation, while on the other, as in Serbia's case, striking discrepancies in the systemic framework, undeveloped institutions, procedures and relationships and outdated methodologies also pose an obstacle.

Although the basis of the planning system in Serbia is hierarchical and assumes that national policies and measures are transferred to lower levels (the Law on Planning and Construction, 2009, hereinafter referred to as the LPC), difficulties are encountered in concrete planning practice. A myriad of reasons account for that, from financial, through institutional and staff limitations, to lack of knowledge and readiness to reflect numerous new challenges in the planning process. All this makes salient problems related to vertical coordination in directing spatial development. We find the main problem in the fact that the system fails to define clearly the dynamic aspect, i.e. does not really answer the question of harmonization of non-flexible, binding documents. It is very important to establish clear links between policies on the same and different levels of governance because even the best proved strategy on one level can limit adaptation options on other levels. It follows that adjustment procedures need to be embedded into the system, carefully linking binding policies and measures and modes of their adjustment in a changing environment.

Integration of CCA issues in local plans, i.e. planned elaboration of policies outlined in the

SPRS is foreseen through development of regional plans and spatial plans for special purposes (they are developed and adopted on national level as there is no regional administrative level in Serbia). In addition, policy implementation is envisaged through drafting of development and regulatory planning documents that fall under the remit of local government units, namely spatial plans of local government units and urban plans (SPRS in the section 1.1. Requirements and Guidelines for Planned Elaboration, 2010:337).

Emphasis on CCA integration implies vertical and horizontal harmonization of policies and measures, in line with the principles set out in the LPC, 2009, 3. *Principles of Development and Use of Space* which likewise underlines that the principles also include the instruments for implementation. How is this reflected in reality in Serbia?

Vertical Integration

Vertical integration implies coordination between plans on different levels of governance. That means that the national spatial plan lays out responsibilities and guidelines for planned elaboration in subordinate plans – “general and sectoral plans, strategies and programs on regional and area level and priorities under development.” Although the SPRS presents the basic goals, principles and priorities, the Program for the Implementation of the SPRS has yet to be developed (SPRS, Requirements and Guidelines for Planned Elaboration, 2010:337).

A problem may arise in relation to a wide range of the SPRS's operative goals which encompass all aspects of climate change related activities (see: Operative Goals, SPRS, 2010:118 -119) while remaining silent on the modes of their local implementation. An extensive range of competences related to SPRS operationalization is transferred to the local level. Problems in the area of climate change, particularly those related to adaptation, are largely unfamiliar in local planning. There is no adaptation strategy, despite a multitude of general and sectoral national strategies and a variety of underlying methodologies, with barely any mutual coordination. Some problems may be expected in integration of general policies into local plans, for example when cities set out to define sustainability standards tailored to the local level. Given the available financial and staff resources, it is questionable whether the cities and local communities will generally be able to innovate the planning methodology, which is one of the important themes underlined by the SPRS. Since this activity has yet to take off, it is

unclear how a new generation of regional and local plans through which the SPRS is to be implemented and whose development starts immediately upon the plan adoption (2010) (SPRS IX Toward Plan Realization, 2010:337) is going to operationalize and elaborate the SPRS policies (Vujošević, 2004).

Local planning, defined as a very complex activity, will not have sufficient input to reduce vulnerability locally. Despite a very prominent role assigned to sustainability issues in the SPRS and other strategic documents, there are no clear criteria, measures, regulations to facilitate the job of local stakeholders. The fact is that there is no adaptation strategy currently available, while it remains to be seen how the SPRS Implementation Program (under preparation) will address all open issues.

It is characteristic of all developing countries, and Serbia is no exception, that best results are achieved on the national, systemic level, where there is knowledge of the problems and awareness on the need for adaptation, while this knowledge is inadequately transferred to the local level. The problem that deserves particular attention with CCA in its inception stage only, but nevertheless as a matter of urgency, is how to formulate policies and regulations to make them accessible and operative on the local level.

Stakeholders in spatial and urban planning on the local level typically have very limited knowledge on climate change and adaptation options. Their perspective of the problem is usually limited, neglecting complex topics and failing to take into account all the requirements of CCA. Another problem burdening local level is relatively short mandate of elected decision-makers, which diminishes their interest in long-term effects of planning (Wilson, 2006). Particularly troublesome is local plans financing. In circumstances when averagely one third of municipality income originates from the republic level in the form of state transfers, as government controls share of wages tax, while property tax account for the rest, planning will unavoidably rely on private investors, which may have adverse effects on sustainable development and climate change adaptation in particular.

While complex social and economic situation in Serbia is particularly manifested on the local level, one may expect that the debates on climate change adaptation modalities will involve mainly scientific and research community, as well as politicians, on the national level. In recognizing capacity building needs, primarily on the national level, the SPRS emphasizes the expectation for

“...ongoing improvement of knowledge and technologies and strengthening capacities in the area of climate change in the European integration process.” It foresees the advancement of national institutions responsible for climate change issues (Republic Hydro-meteorological Service, Environment Protection Agency, Environment Protection Fund, and also strengthening of the Sub-regional Climate Change Center, hosted by the Republic of Serbia) (SPRS, 2010:21). Although the plan also envisages general enhancement of problem understanding “among decision-makers, relevant stakeholders and wider public”, there is no clear policy on how to carry out this type of activity locally. Other measures may need to be considered to this aim: regulations and guidelines to support local planning.

Horizontal coordination

Horizontal coordination is also the LPC (2009) requirement and it primarily “implies linking with adjacent territories during planning, in order to resolve common functions and interests”. However, the second part of the definition - “as well as the networking and participation of all those involved in spatial development of the public and civil sectors, and citizens” (3. Principles of Development and Use of Space, Article 3) failed to clearly pinpoint the problem of sectoral harmonization.

Strong sectoral policies tend to make horizontal coordination much harder to achieve than vertical. Eggenberger and Partidário (2000) identify different aspects of coordination as a prerequisite for integration: substantive, methodological, procedural, institutional and political.

Climate change adaptation lays groundwork for assuring development conditions, provided that relevant changes are made to numerous sectoral strategies, plans and projects. Horizontal policy integration (in the context of sustainable development) implies commonly understood and balancing economic, social and environmental interests and policies in a way that trade-offs (or negative effects) between them are minimized and synergies (or win-win opportunities) maximized. Realization of horizontal integration goal that the SPRS insists upon is by no means a simple activity, as pointed out by many researchers, and calls for a range of strategic tools and a complex institutional setting (Berger and Steurer, 2009).

The solution for better horizontal as well as vertical coordination would probably be to develop the national Climate Change Adaptation Strategy that could contribute to better definition of series of problems and

ensure that local authorities will have to give priority to CCA issues. It can also provide the broad extent of the options and instruments for effective policy making across different geographical administrative borders, departments and sectoral interests (Campbell, 2006). Targeted incorporation of CCA into legislation in key areas should also be considered. Tools need to be developed on the national level that could serve as specific guidance for operationalization of goals and for resolving conflicts that may arise in harmonization of planning decisions locally (fiscal incentives and sanctions, monitoring mechanisms that enforce the effective implementation of climate sensitive proposals, advices on better practice, etc).

Regional Planning Level

All research into CCA policies' position in spatial planning assigns central importance to regional level. It is on this level that long-term spatial planning for sustainability and climate change adaptation takes place (Glasson, 2004). It may also play mediating role between national and local levels of governance, provide an insight into regional vulnerability to climate change and support adequate informing on, for example, advantages and risks in land use, and where regional administrative level of governance is in place, it may provide a link between environmental and economic concerns (Peltonen, 2006).

However, the SPRS states that “Regional development and the issue of regional organization of the Republic of Serbia have never been adequately positioned in the hierarchy of country's development goals” (SPRS, 2010:54). While the position of regional level of governance in Serbia still remains unclear, the issue of representation of regional, amid national and local interests, will probably be regulated in the coming period. From the standpoint of climate change adaptation, it seems justified to insist on setting up and strengthening institutional organization that would promote regional approach, i.e. strengthen horizontal connections and cooperation between local units. That way, regional planning level could more adequately and systematically incorporate CCA issues and provide better local planning framework.

In a still uncertain institutional setting, the SPRS section *Toward Plan Realization* (2010:338) stresses: “Planned elaboration of the Spatial Plan of the Republic of Serbia 2010 - 2020 sets a requirement for development of regional spatial plans for all regions and areas in the Republic of Serbia, as a

priority activity to be carried out by the end of 2012, i.e. before the completion of the first implementation stage of this spatial plan by 2014" (p. 338) Despite the SPRS's commendable clear commitment, doubts remain as to whether the plans in the given institutional setting, adopted without precise information and defined regulatory basis, will be able to assess vulnerability and formulate policies to overcome the existing sectoral discrepancies.

Regulations

Problems that will likely occur in the SPRS implementation in CCA area stem from the fact that Serbia's planning system has not yet conformed to the changes in the social-economic system, from plans to regulations-driven development. Even after two rounds of changes to the planning system in 2003 and 2009, there is still no law on planning regulation. There is awareness of this problem in the SPRS, and the section *Key measures and tools needed for climate protection and climate change risk management in the Republic of Serbia* particularly stresses the need for development of legal tools and advancement of "standard methods and guidance for applying climate data and information in planning and design." In addition, the section *Natural and technological hazards: Operative objectives of protection against natural and technological hazards* points to the need "to harmonize national regulations in the area of natural and technological hazards management with the EU legislation". It is further underlined that it is "...necessary to adopt a strategy for integral protection from natural and technological hazards in the coming period, which in addition to appropriate planning and other necessary measures and tools, has to be supported by adequate legal, *spatial-planning urban and technical regulations, especially with regard to policy of land use, construction of buildings and technical infrastructure.*" (SPRS, 2010:148) [italics added].

The Adaptation Green Paper emphasizes the need to incorporate CCA in amendments to the existing and drafting of new legislation (EC, 2007a). Effective implementation and monitoring of achievement of adaptation objectives calls for clear guidance, so priority in the coming period should be the research into the possibilities of integration of these regulations into the spatial planning system of Serbia.

In bringing together different sectors and necessitating formulation of very clear measures and tools, the need for climate change adaptation seems to provide an opportunity for thorough reexamination and changes to the Serbia's planning system, from plan - oriented

approach to elaboration of regulations. This could be a decisive step toward aligning with the planning systems of developed European countries.

CONCLUSION

A number of tasks lie ahead in integration of CCA policies into spatial planning: enhancing capabilities of adjustment to climate change, alleviating potential damage and addressing adverse spatial consequences. The fulfillment of these tasks requires identification of appropriate adaptation variables and criteria against which adaptation options can be assessed: prioritize sectors, regions and locations for adaptation investment; facilitate adaptive capacity-building processes; establish possible inter-institutional coordination; build resilience and assist in the estimation of the costs and benefits of adaptation measures. These tasks are a requirement under ratified international conventions.

Spatial planning has a very important role in addressing the causes and impacts of climate change and preparing different concepts of spatial development. Therefore it is necessary to explore possible innovations to the planning system, process and work method which could provide more adequate responses beyond mere inclusion of the CCA as a policy principle. The CCA problem asks for more fundamental changes in the traditional planning methodology. On the one hand, particular emphasis should be placed on better problem definition in connection with land use objectives, while on the other, greater collaboration between planners and other actors involved in the assessment of hazard probability and choice of measures should be established in order to mobilize all available resources to achieve policy objectives.

Adaptation policies are formulated across a range of policy domains. In a still unfledged institutional setting in Serbia, policies in many sectors have yet to be developed and mutually aligned. The SPRS, as an integral spatial development strategic document, makes an effort to formulate policies and integrate them in spatial planning. This undoubtedly entails a host of difficulties. Serbia has not yet developed adaptation assessment methods and tools, and lacks adequate legislative and regulatory framework for promotion of adaptive friendly action, as well as procedures for aligning the interests of stakeholders, including the ones from the private sector. Likewise, policies could not have been corroborated by an analysis of the current state of integration against which possible improvements, resource gaps and needs are generally weighted. Such an analysis could have cast a light on difficulties hindering adoption and reasons behind them.

Policies and priorities, as well as detailed guidance and regulations on adaptation have yet to be formulated, and substantial progress is expected in this area. Adaptation planning process involves a range of time-scales and levels and sectors, all of which will require ongoing amendments and adjustments to the planning documents which are the basis of Serbia's spatial development. Their rigidity accounts for the hierarchical and mandatory nature of the system which makes adding new input, knowledge and sectoral policies a daunting task. Therefore, in this paper we urge for the review of vulnerability of the planning system and exploring possibilities for its transformation so that it can adjust to the changing conditions and engage on adaptive actions. A shift in emphasis from plan - to regulation - driven development would contribute to a much more flexible system, susceptible to change and adjustments, which is of crucial importance for integration of CCA and many other policies faced with uncertainty.

References

- Adger W. N., Arnell, N.W., Tompkins, E.L. (2005) Successful adaptation to climate change across scales, *Global Environmental Change*, 15, pp.77-86.
- Berger, G., Steurer, R. (2009) Horizontal policy integration and sustainable development: conceptual remarks and governance examples, *ESDN Quarterly Report*, June. Vienna: Research Institute for Managing Sustainability. http://www.sd-network.eu/?k=quarterly%20reports&report_id=13 (accessed 5 11 2010)
- Burton, I., Huq, S., Lim, B., Pilifosova, O., Schipper, E. L. (2002) From impacts assessment to adaptation priorities: the shaping of adaptation policy, *Climate Policy*, 2 (2), pp. 145-159.
- Campbell, H. (2006) Is the issue of climate change too big for spatial planning? *Planning Theory & Practice*, 7 (2), pp. 201-230.
- Centre for European Policy Studies (CEPS) (2008) Adaptation to climate change: Why is it needed and how can it be implemented? CEPS Center for European Policy Studies CEPS Policy Briefs No 161 May. <http://www.ceps.eu/system/files/book/1667.pdf> (accessed 12 12 2010)
- Cassar, M., Davies, M., Lowe, R., Oreszczyk, T. (2007) *The building stock: impacts and adaptation*. London: The Bartlett School of Graduate Studies, University College London.
- Dasí, J. F. (2006) *ESPON project 2.3.2. Governance of territorial and urban policies from EU to local level*, Luxembourg: ESPON.
- Eggenberger, M., Partidário, M. R. (2000) Development of a framework to assist the integration of environmental, social and economic issues in spatial planning. *Impact Assessment and Project Appraisal*, 18 (3), pp. 201-207.

- European Commission (EC) (1999) European spatial development perspective: towards balanced and sustainable development of the territory of the European Union http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/pdf/sum_en.pdf (accessed 1.10.2010)
- European Commission (EC) (2003) Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment, http://www.bmu.de/files/pdfs/allgemein/application/pdf/sea_guidance_en.pdf (accessed 12.10.2010)
- European Commission (EC) (2007a) Green Paper, Adapting to climate change in Europe – options for EU action. Brussels, November 2007. ec.europa.eu/environment/climat/adaptation/index_en.htm (accessed 15.10.2010)
- European Commission (EC) (2007b) Climate change: Europe must take adaptation measures to lessen impacts of current and future warming, DG ENV Press release IP/07/979, Brussels, 29 June.
- European Commission (EC) (2009) White Paper - Adapting to climate change: towards a European framework for action. Internet: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0147:FIN:EN:PDF> (accessed 10.10.2010)
- European Environment Agency (EEA) (2004) *Impacts of Europe changing climate*, An indicator-based assessment. EEA Report No 2/2004, EEA, Copenhagen. http://www.eea.europa.eu/publications/climate_report_2_2004 (accessed 15.12.2010)
- European Environment Agency (EEA) (2006) *Vulnerability and adaptation to climate change in Europe*, EEA Technical Report, No. 7/2005, European Environment Agency, Copenhagen.
- European Environment Agency (EEA) National Adaptation Strategies, <http://www.eea.europa.eu/themes/climate/national-adaptation-strategies> (accessed 10 11 2010)
- Füssel, H.M. (2007) Adaptation planning for climate change: concepts, assessment approaches, and key lessons, *Sustainability science*, 2(2), pp.265-275. http://www.pik-potsdam.de/~cfuessel/download/sust07_published.pdf (accessed 15 10 2010)
- Glasson, J. (2004) Regional planning and sustainability: towards integration in the UK and EU, *Spatium, International Review*, No. 10, pp. 1-11.
- Government of the Republic of Serbia (2008) *National Sustainable Development Strategy of the Republic of Serbia. Official Gazette of the Republic of Serbia*, No 57/08.
- Government of the Republic of Serbia (2009) *The Action Plan for the implementation of the National Sustainable Development Strategy for the Period 2009 - 2017*. Official Gazette of the Republic of Serbia, No 22/09.
- Haanpää, S., Peltonen, L.(2007) Institutional vulnerability of spatial planning systems against climate change in the BSR. ASTRA project report. http://www.gsfi/projects/astra/sites/download/ASTRA_institutional_vulnerability_final_SH_YTK_160507.pdf (accessed 22 10 2010)
- Intergovernmental Panel on Climate Change (IPCC) (2001) *Climate change 2001: Impacts, adaptation, and vulnerability*. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [McCarthy, J.J., O.F. Canziani, N.A. Leary, D.J. Dokken, and K.S. White (eds)]. Cambridge and New York: Cambridge University Press.
- Intergovernmental Panel on Climate Change (IPCC) (2007) *Climate change 2007: Synthesis report*. IPCC's Fourth Assessment Report (AR4). IPCC, Geneva, Switzerland. http://www.ipcc.ch/publications_and_data/ar4/syr/en/main.html (accessed 10 11 2010)
- Klein, R.J.T., Tol, R.S.J. (1997) *Adaptation to climate change: options and technologies*, Amsterdam: Vrije Universiteit.
- Klein, R.J.T., Schipper, E.L., Dessai, S. (2005) Integrating mitigation and adaptation into climate and development policy: three research questions, *Environmental Science and Policy*, 8, pp. 579-588.
- Mintzberg, H. (1994) The fall and rise of strategic planning, *Harvard Business Review*, January-February, pp.107-114.
- Peltonen, L., Haanpää, S., Lehtonen, S. (2005) *The challenge of climate change adaptation in urban planning*. FINADAPT Working Paper 13, Helsinki: Finnish Environment Institute.
- Peltonen, L. (2006) Recommendations for a risk mitigation oriented European spatial policy. Natural and technological hazards and risks affecting the spatial development of European regions. *Geological Survey of Finland, Special Paper 42*, pp.153–167.
- Spatial Plan of the Republic of Serbia from 2010 – 2010 (Draft) (2010) Agency for Spatial Planning of the Republic of Serbia <http://www.rapp.gov.rs/index.php?idstr=171> (accessed 10 10 2010)
- Stern, N. (2006) *The economics of climate change (The Stern Review)*, Report for the Cabinet Office – HM Treasury, Cambridge: Cambridge University Press.
- The Law on Planning and Construction* (2009) Official Gazette of the Republic of Serbia, No. 72/2009.
- The Law on Spatial Plan of the Republic of Serbia from 2010 to 2020* (2010) Official Gazette RS, No. 88/10.
- United Nations Development Programme (UNDP) (2004) *Adaptation policy frameworks for climate change: developing strategies, policies and measures*, Lim, B., Spanger-Siegfried, E. (Eds.) Cambridge University Press, http://www.undp.org/gef/documents/publications/apf-front-matter_contents_foreword.pdf (accessed 12 10 2010)
- United Nations Economic Commission for Europe (UNECE) (2007) *Belgrade Initiative: enhancing the regional SEE cooperation in the field of climate change – Climate change framework action plan for the SEE region, and the establishment of a sub-regional, virtual climate change related centre for research and systematic observation, education, training, public awareness, and capacity building*. <http://www.unece.org/env/documents/2007/ece/ece.belgrade.conf.2007.20.e.pdf> (accessed 12 12 2010)
- United Nations International Strategy for Disaster Reduction (UNISDR), 2004, *Living with risk: a global review of disaster reduction initiatives*, Geneva: United Nations. http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm (accessed 10 10 2010)
- UN Framework Convention on Climate Change (UNFCCC) (2008) *Mechanisms to manage financial risks from direct impacts of climate change in developing countries*. Technical paper. FCCC/TP/2008/9. <http://unfccc.int/resource/docs/2008/tp/09.pdf> (accessed 12 10 2010)
- UN Framework Convention on Climate Change (UNFCCC) (2010) *Adaptation assessment, planning and practice. An overview from the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change*. http://unfccc.int/files/adaptation/nairobi_work_programme/knowledge_resources_and_publications/application/pdf/an_overview_from_the_nairobi_work_programme_on_impacts_vulnerability_and_adaptation_to_climate_change.pdf (accessed 10 10 2010)
- UNFCCC (2010) *Fact sheet: The need for adaptation*. October. http://unfccc.int/files/press/application/pdf/adaptation_fact_sheet.pdf (accessed 12 11 2010)
- Vujošević, M. (2004) The search for a new development planning/policy mode: Problems of expertise in the transition period. *Spatium, International Review*, 10, pp. 12-18.
- Wilson, E. (2006) Adapting to climate change at the local level: the spatial planning response. *Local Environment* 11(6), pp.609-625.