Improving spatial planning by developing an indicator-based monitoring system in the Republic of Serbia

Louisa J.M. JANSEN, The Netherlands, Tijana ZIVANOVIC, Serbia, Judith BORSBOOM-VAN BEURDEN, The Netherlands, Sinisa TRKULJA, Serbia, Theo OVERDUIN, The Netherlands, Ljiljana ZIVKOVIC and Aleksandar DJORDJEVIC, Serbia

Key words: spatial planning, monitoring system, implementation programme, Serbia

SUMMARY

In the Republic of Serbia a National Spatial Plan has been adopted in 2010 covering a wide range of sectors. This Spatial Plan will enhance sustainable development of the territory, protect the environment and cultural heritage, as well as stimulate economic development. It will be monitored by building a system based upon a set of indicators. This monitoring system will improve the policy cycle in the country from creating a baseline to evaluating policies and making adjustments to policies. As the Plan covers a multitude of sectors, data from different sources and in different formats are needed. This entails close collaboration with numerous institutions that can deliver these data, while at the same time this collaboration needs a long-term vision to succeed as a collaborative effort. By being part of Europe, it is important to harmonise these data in line with the INSPIRE Directive. Therefore close collaboration with the National Spatial Data Infrastructure that is being set up is a key element of success. Linkages and data compliance between different levels of planning will be crucial: national level with regional and local plans; as well as collaboration with institutions at the various levels. The period up to 2014 is crucial for the execution of the National Spatial Plan. Recently, the Programme of Implementation has been approved and the focus will now shift from legislation and development of plans to their implementation. A stepwise approach has been selected for the introduction of the indicators in the annual reporting system. The experiences of the Netherlands have proven to be valuable for the ambitious task ahead. The introduction of other indicators in subsequent steps will be facilitated by the knowledge and experience gained while working with a limited set of indicators. In this manner the monitoring system will develop and mature over time, its robustness can be assessed and if necessary adjustments made.

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1. INTRODUCTION

The change from a centralised to a market economy requires from government and citizens to make difficult choices. In the Central and Eastern European Countries (CEEC) this process started in 1989 with the exception of the Republic of Serbia where the process of reform started only in 2001. The economic, social and institutional deterioration of the 1990s left a more difficult legacy in comparison to the stabilisation and reform processes that took place in other CEEC at their transitional beginnings. The democratic revolution in 2000 led to a path of political and economic reforms. An impressive accomplishment is the improved macro-economic climate, but Serbia is still lagging behind its neighbours in terms of low per capita GDP (3525 USD), low competitiveness (ranks 87th on the world list), high unemployment rate (more than 20%), high poverty rate (approximately 20%) and an uneven regional development by European standards (Djordjevic and Dabovic 2009).

The uncertainty concerning European Union (EU) membership status has very recently been solved and this may act as a catalyst for further reforms. This will bring good territorial planning to the forefront as spatial planning will be a key issue for development. Planning systems and laws mimic the societal dynamics with tendencies in path-dependency and discontinuity (Nedovic-Budic *et al*. 2011). There are not only new institutions but there is a new notion of planning that strives to recuperate its legitimacy, become more flexible and adapt to the new political and economic circumstances. In this reality of transition new legal, constitutional and institutional frameworks come into being. There is a new economic order, there are new rules of social integration and new choices for privatisation and redistribution of public assets (Djordjevic and Dabovic 2009).

The Republic Agency for Spatial Planning (RASP), an independent governmental agency, of the Republic of Serbia was established in 2003 under the previous law on spatial planning. The Ministry of Environment, Mining and Spatial Planning (MESP) has a supervision role. RASP is to provide conditions for the effective implementation and improvement of development policy and spatial planning. RASP was established by law with three objectives, the making of:

- The 'Spatial Plan of the Republic of Serbia' (national level) (Dulic and Stojkov 2010);
- The 'Regional Spatial Plans' (this level is currently being established, but the spatial plans are elaborated according to functional regionalisation); and
- The 'Spatial Plans for Special Purpose Areas'.

The 'Spatial Plans of Local Communities' (the 2007 *Law on Territorial Organisation* declares that there are 24 towns with the official status of 'city') are not the competence of RASP.

The elaboration of the first 'Spatial Plan of the Republic of Serbia' started in 1968 and lasted for 28 years. The plan was adopted in 1996 and had a timeframe of 15 years, expiring in 2010. The second 'Spatial Plan of the Republic of Serbia' was adopted in 2010 for the period until 2020 (Dulic and Stojkov 2010). At the regional level the territory of Serbia was never completely covered with plans. By January 2012, four regional spatial plans were adopted (South Pomoravlje, Timocka Krajina, Region of Belgrade and Vojvodina) and five are in the process of elaboration. 'Plans for Areas of Special Purpose' are plans for specific territories (e.g., national parks or other protected natural or cultural heritage sites, infrastructure corridors, water accumulations and mining areas).

The preparation and adoption of the 'Spatial Plan of the Republic of Serbia' (hereafter called National Spatial Plan) under the recently approved *Law on Planning and Construction* (Official Gazette RS, No. 72/2009, 81/2009, 64/2010 and 24/2011) is a major task of RASP. It comprises the vision of what Serbia should be in future: "*Territorially defined and regionally well balanced, competitive, socially coherent and stable with sustainable economic growth, proper infrastructure and good transport accessibility, preservation and protection of natural and cultural heritage, enhanced environment and functionally integrated with neighbouring countries and regions*". The key targets set are described in the 'Programme of Implementation of the Spatial Plan of Serbia' (hereafter called Programme of Implementation). Necessary policies will be defined, legislatively and strategically, through the legislative system of the country and the normative system at the level of Autonomous Province of Vojvodina, Belgrade city and some other towns or municipalities. A significant contribution should be made by the spatial plans at the different levels (i.e. national, regional, district and local spatial plans).

In all European countries the orientation towards a unified, integral strategic planning system is present. But such a system can be established only as a consequence of a comprehensive and integral view of development, it is not merely an amalgamation of social, economic, spatial and environmental components of development aspects. Moreover, few countries have been able to establish such a comprehensive system (e.g., the Netherlands and Finland) (Maksin-Micic *et al*. 2009). Spatial planning has assumed a European dimension (e.g., Plan4all[1]), though at country level political and institutional support in relation to sectoral policies is often not strong compared to agrarian and transport policies. The main task of spatial planning is to plan sustainable territorial development as a general strategic framework for general and sectoral policies. Thus, spatial planning realises a role of control because it enables policy and decision makers to observe the results and effectiveness of different policies in space and to predict their efficiency and required adjustment (Adams *et al*. 2006).

Linkages and data compliance between different levels of planning and between different sectors will be crucial in Serbia:

- National level with local self-government plans currently being completed; and
- Introduction of regional level for economic development and spatial planning.

Emphasis on these linkages will overcome the pitfall of having plans without connections between sectoral plans and different levels of planning. For the implementation of spatial plans an Information System (IS) is being created compatible with the European Spatial

[1] The main aim of the project is harmonisation of spatial planning data and related metadata according to the INSPIRE principles. The Plan4all Consortium has 24 partners from 15 European countries (www.plan4all.eu).

Planning Observation Network (ESPON) 2013 and the Infrastructure for Spatial Information in Europe (INSPIRE) Directive. The set of indicators included in the National Spatial Plan have a link to the INSPIRE Directive (e.g., entities, data formats, contents, standards, etc.).

The regional spatial plans exist since 1974 but they are not sustained by an administrative support level. The regional spatial planning level is interesting for two reasons: (1) the Ministry of Economy and Regional Development, responsible for the *Law on Regional Development*, envisages a territorial division in NUTS2/3 areas for which regional economic development plans have to be elaborated and this in turn will foster the establishment of agencies for socio-economic development and strategies; and (2) collaboration with these regional offices could reinforce regional spatial plans by close collaboration on data collection and planning.

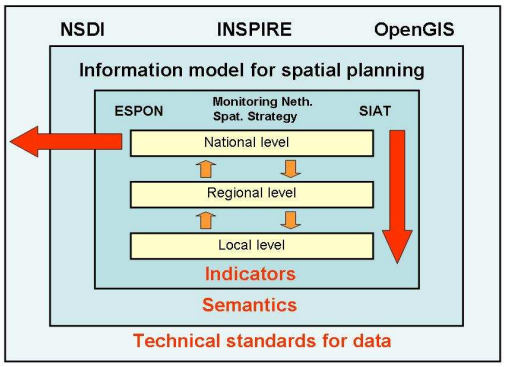
The Serbian-Netherlands Government-to-Government (G2G) 'Building capacity for INSPIRE Directive and ESPON 2013 Programme in the Republic of Serbia' project made a direct contribution to the implementation of national and regional spatial plans by exchanging knowledge on indicator-based monitoring systems. In addition, the timeliness of the project was a key factor:

- The *Law on Planning and Construction*, the *Law on Regional Development*, *Law on Territorial Organisation* have come into force;
- The 'National Spatial Plan of the Republic of Serbia' was nearly approved at the start of the project; and
- The period up to 2014 is crucial for the execution of the National Spatial Data Infrastructure (NSDI).

However, the success of the monitoring system depends on first-rate inter-institutional collaboration. NSDI is a prime example of a subject for which collaboration is indispensable.

By harmonising spatial data with the INSPIRE Directive and using the ESPON methodology of indicators as a basis, Serbia will be able to substantiate a monitoring system for spatial planning (at national and regional levels). With this monitoring system the policy cycle of spatial planning (i.e. formulation, execution, monitoring and evaluation) will be improved. The G2G project provided assistance to RASP in the further development of working standards in line with the INSPIRE Directive and its implementation rules by exchanging knowledge on methodological, institutional and legal aspects.

Figure 1. Focuses in the G2G project



Focuses in G2G project

Figure 1 shows the approach selected in the project: from the spatial planning at different interacting levels (indicated by the orange arrows), indicated by the red arrow pointing downwards, for which indicators have been or need to be defined. It is proposed to start at the national level because RASP needs to develop its indicator framework at national level. Sources of inspiration are the ESPON database, the Monitoring System of the Dutch National Spatial Strategy, and tools measuring sustainability in relation to spatial dynamics such as Sustainability Impact Assessment Tool (SAIT). At the same time, it is necessary to address the various aspects related to the information needed, such as:

- Indicators (concrete information on the state of specific variables);
- Semantics (what does this information mean for what I actually want to know); and
- Technical standards for data (which requirements have to be fulfilled to enable exchange and comparison and to ensure a certain level of quality).

For the technical standards the work and activities of NSDI, INSPIRE and the OpenGis Consortium are important. This is indicated by the red arrow pointing to the left. The indicators can be used to monitor the past and present situation, whereas the SIAT can be used to assess future scenarios.

2. AN INDICATOR-BASED MONITORING SYSTEM

2.1 Needs and gaps analysis - prioritising the indicators

The needs and gaps in the development of the monitoring system according to the INSPIRE Directive have been further examined, in particular:

- Methodological aspects of a monitoring system for spatial planning using indicators as proposed in the National Spatial Plan;
- Institutional aspects (i.e. roles and responsibilities of relevant organisations); and
- Legal framework (e.g., *Law on Planning and Construction* and other relevant laws).

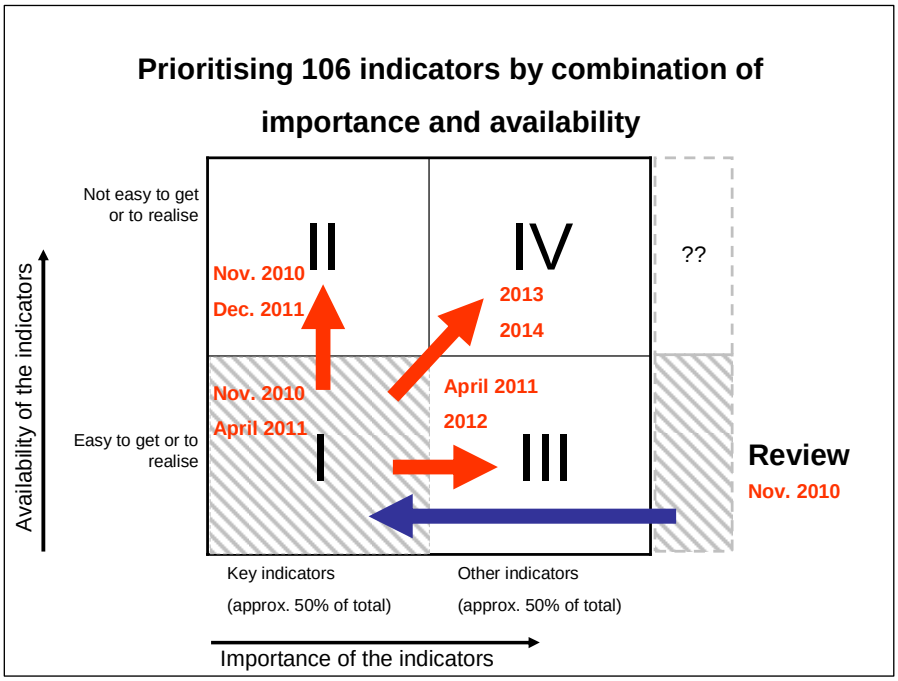
A kind of ranking for the list of indicators, 106 in total, was useful for RASP because it would facilitate the implementation of the monitoring system in a feasible, stepwise manner. The time in which to elaborate the First Annual Report was short, therefore the ranking and classification of the indicators was unavoidable. Two ways to create a ranking were used: (1) data availability, and (2) the relevance, or urgency, or importance, of the indicator in relation to the goals and priorities within the National Spatial Plan. The combination of these two criteria for ranking is shown in Figure 2. Basically the two criteria create four groups of indicators that can be handled over time. The most easy to get key indicators are found in block I, key indicators for which data are more difficult to get are found in block II, whereas other indicators that are easy to get are found in block III. The most difficult set of indicators is found in block IV. This ranking and grouping of indicators leads to the developed timeline indicated. An important aspect is that each time a group of indicators is being calculated this group should be reviewed and this evaluation may lead to adjustments in the set of indicators (indicated by the blue arrow).

This approach led to a shortlist of 32 key indicators that are of high importance and are (assumed to be relatively) easy to get (using existing statistical data and sources).

Other aspects that are important to consider were:

- The geographical scale on which data are collected, produced and visualised. The regional level (NUTS-3 level) may be the most appropriate scale; however for some indicators it could be more useful to have more detailed data (e.g., municipalities).
- The frequency in time because some indicators are available on an annual basis, while others are part of the 10-year Statistical Census. The availability of as much information as possible on an annual basis is the pre-eminent guarantee for a modern and reliable monitoring system.
- The main purpose of monitoring is important because if the purpose is to find out how the implementation of the National Spatial Plan is moving forward then a different approach is needed then if the scope would be broader. At first the monitoring system will mainly support the implementation and evaluation steps in the policy cycle. However, gradually it will develop towards a strategic and fundamental source of information that serves the public sector as a whole and the private sector, too. Thus, the monitoring system will be a in accordance with the National Spatial Data Infrastructure (NSDI) that is being developed by the initiative, and under the leadership, of the Republic Geodetic Agency (RGA). The NSDI will be fully compliant with the INSPIRE Directive.

Figure 2. Prioritisation of the set of 106 indicators using two criteria: importance and availability



2.2 In-depth analysis of the indicators

A more in-depth analysis was made as to the kind and nature of the indicators for the monitoring system of the National Spatial Plan. The focus for the first half of 2011 was on the Programme of Implementation including the development of the First Annual Report, being based on a subset of the indicators and to be delivered in draft by late 2011. Some indicators of the preliminary set were examined in detail considering: (1) expected outcomes in relation to the policy goals; (2) the scale and quality of available data; (3) method of calculation; and (4) method of visualisation.

Fact sheets for the single indicators were prepared in a standard format. They show what data are needed, from what sources, describe the indicator in more detail and provide the algorithm with which the indicator is calculated. How the calculated indicator will be presented in the First Annual Report is something to find out by trial and error (e.g., map, table, graph, etc.). In mid-2011 a number of consultations were held with data providers and stakeholders to clarify the feasibility of elaborating the selected subset of key indicators. The data model for the IS became more real over 2011 to create a structured database contributing to (inter)national standardisation. The data delivered by various institutions was pre-processed in late 2011 and, if necessary, improved by RASP before being used in the indicator calculations.

The Government has adopted the 'Strategy for establishment of spatial data infrastructure (SDI) in the Republic of Serbia for the period between 2010 and 2012'. The implementation of the monitoring system of the National Spatial Plan can be seen as one of the first user-driven projects and as a 'launching customer' of the NSDI. The SDI implementation in Serbia and in the Netherlands shows many similarities. Building and implementing a SDI is a complex and long-term programme that needs a solid vision, cooperation between stakeholders, governance and leadership over a period of several years. Structural funding is very important to ensure that the SDI is well maintained and state-of-the-art.

2.3 Development of a road map

For the first time RASP dealt simultaneously with the Programme of Implementation, the First Annual Report, the cooperation with a lot of stakeholders, the collection of data for the set of key indicators, and all this in a very limited timeframe and with a limited group of experts. Consequently, it is a crucial step to develop a road map with clear responsibilities and division of roles. RASP gave priority to the Programme of Implementation and to the progress made on the data for the first subset of strategic priorities. Many stakeholders are involved so this is a very labour-intensive process. Concurrently the first steps were taken to collect the statistical data needed for the calculation and presentation of the selected key indicators.

While working on these topics several issues occurred, not all of them anticipated. An example is the exact relationship between the (strategic and operational) objectives, the strategic priorities and the indicators. This needs to be elaborated in full detail otherwise one cannot build a solid IS to support the National Spatial Plan in future in an efficient and effective manner. Concerning the development of the IS, the strategy to be followed is:

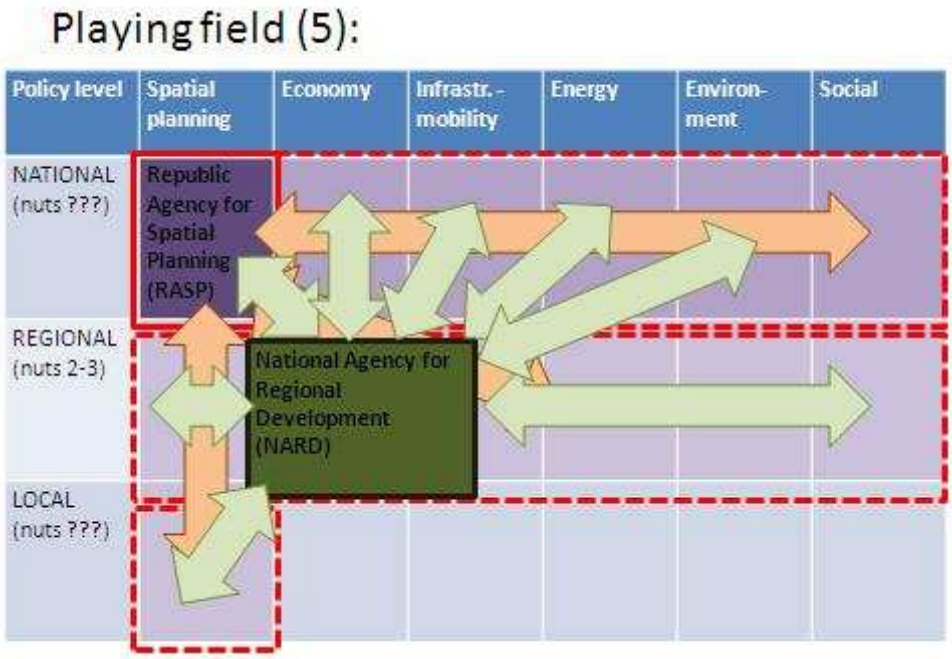
1. Create a simple and easy understandable system design and emanate from that the business architecture (i.e. process and product views).
2. Based on the business architecture derive a simple and solid information architecture and information models.

2.4 Possible linkages between spatial and economic regional development

The focus of the National Agency for Regional Development (NARD) is on regional development in the first place, in particular on stimulating the regional economy and innovation, and improving the infrastructure. NARD intends to run some 30 projects in 2012 on various subjects (e.g., business incubators, support regional chambers of commerce, region branding, SME innovation, education), and in various regions. These projects are part of the 'National Investment Plan' of the Ministry of Economic Affairs. It was explored whether the

indicator set of RASP was useful for NARD and where complementarities and overlap in their monitoring programmes could be found. Although the main focus of RASP is on spatial planning at the national level, the implementation of the National Spatial Plan has also implications at regional level. Furthermore, there is a strong relation between spatial planning, regional economy, accessibility and infrastructure. Enhanced cooperation between the two agencies could have mutual benefits, their potential overlap is shown in Figure 3.

Figure 3. Potential overlap between RASP and NARD



In the analysis of mutual benefits the set of 106 indicators of RASP was prioritised by NARD in a comparable way as performed at RASP using the MoSCoW methodology. This analysis gave both agencies a better insight in the respective common use of data and information. This might prevent double work, waste of limited financial resources, and squandering of effort and knowledge (Table 1).

Table 1. Overview of the common interests of NARD and RASP on the 106 indicators for the monitoring of the National Spatial Plan of the Republic of Serbia

MoSCoW-categories	Number of indicators		
	Total	Key indicators	Other indicators
Must have	15	4	11
Should have	40	11	29
Could have	35	7	28
Won't have	16	3	13
Total	106	25	81

From the MoSCoW analysis it became clear that:

- More than 50% of the key indicators selected by RASP are also relevant and important to NARD; and
- 40 indicators, not selected as key indicators by RASP, are relevant and important for NARD. This revealed that mutual benefits existed and that by collaborating both NARD and RASP would profit.

Dominant clusters within the indicators identified as relevant and important by NARD were general background information on areas (e.g., population dynamics, urban growth, accessibility to infrastructure and services), next to regional economic characteristics (e.g., regional economic structure, unemployment and labour productivity).

In the Netherlands, like Serbia, the relation between economic development and spatial planning is in a process of transformation at various scale levels. In the Netherlands it is clear that the regional level of provinces will be the level where most interaction between regional development and spatial planning will take place. If this will be the regional level in Serbia remains to be seen.

2.5 Annual reporting

Regarding the Strategic Priorities and the collection and elaboration of data needed for the production of the First Annual Report, RASP put lots of effort in making the strategic priorities -the backbone of the Programme of Implementation- operational, in defining the indicators represented in annual monitoring reports, and the definition and development of a robust, effective, and user-friendly IS.

This integrated and systematic approach is valuable and it will pay itself back in time in terms of efficiency and effectiveness. However, the time left to produce the First Annual Report was limited. A practical, concrete vision on the process of data collection, data pre-processing, GIS calculations, indicator production, indicator interpretation, and indicator visualisation was elaborated since the phases of data collection, pre-processing and visualisation are usually time-consuming and undervalued. The process of production of the First Annual Report was organised as follows:

1. Work in an iterative way towards the final product.
2. Reserve some time for the exploration of alternatives in case some indicators prove to be very difficult to produce.
3. Do not postpone the interpretation of indicator values to the end but make preliminary interpretations that can be reviewed at an early stage.
4. Keep a good logging system on the manner in which indicators are calculated.
5. Take time to store fact sheets and data in the IS after release of the First Annual Report.

Nine regional spatial plans were being developed by different consortia. The regional spatial plans are developed for functional, not administrative, regions. The coordination will be performed by RASP, while the regional plans have to be approved by a Planning Commission, organised and chaired by MESP, and government adopts them.

Apart from the Programme of Implementation, a number of detailed purpose-oriented plans contributing to direct implementation of strategic priorities of the National Spatial Plan are

under development. The town plans will also be included in the IS. The incomparability of used definitions and underlying data are a major problem. In due course RASP will be the custodian of all existing spatial plans and accompanying documents at all levels.

The progress of the First Annual Report is encountering envisaged problems such as elaborating data or missing data. Furthermore, *a priori* classification of calculation results does not guarantee the best visualisation. Several attempts at visualisation of results should be made before selecting the one that gives the best illustration. Also the assistance of subject matter experts may be required as the National Spatial Plan deals with all sectors and not all of them are represented in RASP. Even in a preliminary phase it is important to pay sufficient attention to a systematic, structured and efficient organisation of the process of production and interpretation of indicators to be able to repeat the process in future. The key messages based on indicator values and policy themes should be drafted at an early stage because these messages will guide the further calculation of indicators. This means that the relation to and consequences for strategic priorities are essential: what does the interpretation of indicator values tell about the state and progress of the strategic priorities?

The team working on the First Annual Report needs to interact on a daily basis to get an efficient and effective process that takes a shorter turnaround time to get the best result within the available time frame. This team will then be in a position to improve the process gradually over the coming years. The evaluation and monitoring of the whole process of monitoring will be a key element in the success of the implementation of the monitoring system.

3. DISCUSSION AND CONCLUSIONS

The spatial development of Serbia requires strong political will, a good institutional organisation and funds to advance from the position in 2010 to the important thresholds of 2014 and 2020. The strategic priorities represent key priorities without which the successful spatial development of Serbia, in the sense of approaching EU standards, cannot be imagined.

Since the spatial planning monitoring system is required by the new law and RASP is already elaborating the details of this system, the sustainability of project results was very high. The G2G project has, in fact, acted as a catalyst and contributed to consider the establishment of such a monitoring system from the Dutch and European perspectives. Serbia is in the position to set up a spatial planning monitoring system compliant with *de facto* standards in the EU.

RASP can benefit in the coming years from more knowledge on the concept of scenario studies in spatial development so that not only past developments can be monitored but that one can also make predictions for the future. A good link and synergy with the NSDI development process in Serbia is important and all institutions involved should invest in good relations and enhanced cooperation.

The regional planning level in Serbia can (re)use the extended knowledge and experience on this topic in the Netherlands (e.g., 12 provinces, several urban regional cooperation). Important is to make good use of the knowledge on functional regions rather than following administrative NUTS-boundaries.

The development of an IS always contains the risk of requiring lots of dedicated resources and maintenance over time. Therefore, it is important to keep the IS simple and user-driven.

The introduction of other indicators in subsequent steps will be facilitated by the knowledge and experience gained while working with the first set of a limited number of indicators. In this manner the monitoring system will develop and mature over time, its robustness can be assessed and if necessary adjustments made.

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