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Peter Wirth  
Elena Közle  
Pavel Spirin

## ENVIRONMENTAL SUBJECTS OF PROTECTION IN THE SPATIAL PLANNING SYSTEMS OF GERMANY AND RUSSIA

### Introduction: the importance of environmental protection in Russia and the role of spatial planning

As the largest country in the world by area, Russia has a global ecological impact on the biosphere and climate. It has 800 million ha of forested land, the largest stock of woodland of any nation, and no less than 22 % of the world's total (UN FAO, 2007). 25 % of global CO<sub>2</sub> is captured in the soils of the permafrost regions of the Siberian taiga and tundra (IPCC, 2001). Lake Baikal alone contains roughly 20 % of the earth's supply of (non-frozen) freshwater, equivalent to all of North America's Great Lakes combined (Moore et al., 2009, p. 405).

In view of these impressive statistics, it is clear that maintaining Russia's diverse ecosystem functions is a basic precondition to ensure sustainable development at a global level. This notion of sustainable development, which encompasses economic, environmental and social objectives in their spatial manifestation, has become the lead concept aimed at improving the quality of life on earth for present and future generations. In particular, sustainable development seeks to reconcile the demands of economic growth, environmental protection and social integration (EU SDS, 2006).

Currently Russia has a fast developing economy characterised by a rising consumption of natural resources, especially by extractive industries, large-scale infrastructure projects and urban sprawl. Mechanisms are needed to reduce the pressure on the country's ecosystem functions. These local ecosystem functions have a direct impact on many global problems such as climate change, the protection of biodiversity and the condition of the world's oceans (cf. Henry & Douhovnikoff, 2008).

One instrument to regulate the consumption of natural resources is spatial planning. This is understood here as the interdisciplinary coordination of policies and decisions with a spatial dimension, including those concerned with the environment, infrastructure and regional economic promotion (Reimer et al., 2014, p. 1). In Germany the common understanding is that spatial planning (Raumplanung) encompasses three tiers of planning: "federal spatial planning, state spatial planning, which includes regional planning, and urban land-use planning (Bauleitplanung). Taken together, these three planning tiers constitute a coherent spatial planning system, [...] distinct from sectoral planning" (ARL, 2008, p. 246).

The Russian territorial planning system also has three levels: federal, "subject" (the Russian mega-regions with varying degrees of autonomy) and municipal. The main documents (territorial planning schemes) are defined by the Urban Planning Code (Gradostroitelnoi Kodeks). The aim is to achieve functional zoning at all levels of planning and in regard to the siting of objects of national, regional and local importance (May & Spirin, 2014).

The focus of this paper is the definition and handling of "environmental subjects of protection" (ESPs) in the planning systems. These subjects are natural goods such as soils, water bodies and the climate, all of which are fundamental for the existence of life on earth. Guiding questions are: How do the planning systems in Germany and Russia deal with ESPs? Which experiences in spatial planning in Germany could serve as an orientation for territorial planning in Russia? What are the future perspectives and options for Russia?

The results reported here are from the German-Russian research and advisory project "Integrating ecological concerns into Russia's territorial planning (EkoRus)", which ran from 2012 to 2014 and was funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The research work in Russia was supervised by the Ministry of Regional Development. The aim of the project was to find ways to foster the embedding of ecologically oriented approaches into Russian territorial planning. Legal, methodological, and technical aspects of planning as well as conceptual ideas for implementation were considered in the process of knowledge transfer. The authors of this paper were members of a German-Russian expert team that exploited German expertise and experience to generate scientific recommendations for the restructuring of the Russian system of territorial planning. All results are based on a common policy paper (Wende et al., 2013).

### Environmental subjects of protection (ESPs) and their role in the planning systems of Germany and Russia

Human-environment systems (cf. Schanze, 1998) can be adequately characterised by environmental subjects of protection (ESPs) and land-use patterns. While the latter are an expression of human needs and demands on the environment, ESPs represent natural components of our



environment which must be protected for economic, social and ecological reasons, such as surface and ground water, the air, soils, plants, animals as well as landscapes viewed as complex entities. The following two sections give an overview of how the concept of ESP is interpreted in the planning systems of Germany and Russia, beginning with the legal basis before going on to discuss the embedding of ESPs in the planning systems as well as the main tools and instruments of ecological planning.

### THE GERMAN EXPERIENCE

Section 1 of the German Federal Nature Conservation Act (Bundesnaturschutzgesetz) defines the following subjects of protection (cf. Riedel & Lange, 2002, p. 66).

- fauna, flora, biodiversity,
- soils,
- waterbodies,
- characteristic features and beauty of nature and landscapes,
- the climate and air.

These ESPs represent the basic elements of environmental planning in Germany. They are specified and assessed as “natural goods” in landscape planning according to the Federal Nature Conservation Act and also form the framework and benchmarks for environmental impact assessment (EIA) as well as strategic environmental assessment (SEA). In addition, legal provisions to regulate EIAs specify some more subjects of protection, namely “humans and human society” as well as “cultural goods and other real assets”. To avoid confusion, only the above mentioned natural goods are understood as instances of ESP in this paper.

Landscape planning is a key instrument for nature conservation and landscape management in Germany, and as such is legally defined in the Federal Nature Conservation Act. At all spatial levels landscape planning makes an important “long-term contribution to the conservation of natural resources. It not only addresses the narrower areas of particularly valuable protected sites, but also devises strategies for full-coverage, sustainable conservation and long-term development of nature and landscapes” (BfN, 2002, p. 6).

In order to make ESPs more manageable for the purposes of spatial planning, we require a system of methods and procedures for the assessment of the landscape and its individual elements. For landscape planners it is essential to be able to compare the current and target state of the landscape in a specific area (Bastian & Schreiber, 1999, p. 56). Of course, any assessment of landscapes and natural goods largely depends on societal values and goals. Landscape planning in Germany uses a wide range of tools and instruments to manage this task. The adopted methods must be able to capture the structures and functions of ESPs in both qualitatively and quantitatively.

One of the most popular such methods is ecological risk assessment (Bachfischer, 1978; see also Bastian & Schreiber, 1999, p. 367ff., von Haaren, 2004, p. 97ff.). This approach focuses on the vulnerability of ESPs to potential external pressures. Results are presented in the form of matrices (Fig. 1) and maps to illustrate various degrees of risk, e.g. high, mid and low risk. Such categories of risk are easy to integrate in planning processes. In Figure 1 the principle of ecological risk analysis is demonstrated using the ESP soil. On the one hand we have natural soil erosion disposition. Landscapes have a varying degree of vulnerability to soil erosion, determined by features such inclination and soil texture. On the other hand, the mode of land use also plays an important role. Intensive agriculture can create a higher rate of soil erosion than that found in grassland or forests. The level of risk depends on a combination of both factors – the natural disposition to soil erosion and land use (BLU, 2003, p. 9).

		Land use impact (intensification of soil erosion by agriculture)		
		low	mid	high
Natural soil erosion disposition	very low	low	low	mid
	low	low	low	mid
	mid	low	mid	mid
	high	low	mid	high
	very high	mid	high	high

Fig. 1: Result of an ecological risk analysis using the example of soil erosion (BLU, 2003, p. 9)

The results of landscape planning are integrated into comprehensive planning schemes at all spatial levels (Fig. 2). In a first step ESPs and the various forms of land use are analysed. The state and functions of natural goods are assessed as well the land use types, the intensity of land use and the environmental impact. This empirical data provides the basis for conflict analysis and for the definition of an environmental priority concept. Lastly landscape planning provides a system of measures to protect, to develop and if necessary to rehabilitate the environment. This procedure includes a final weighing of ESPs among themselves and against other requirements (von Haaren, 2004).

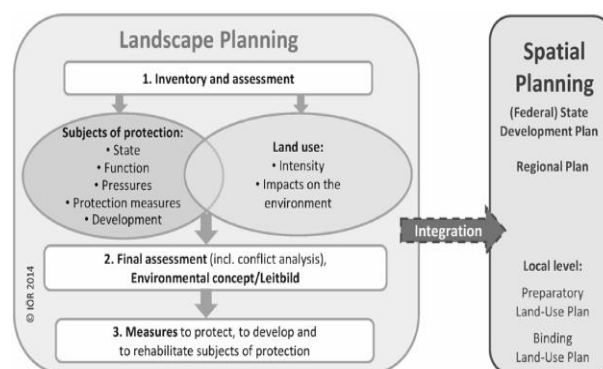


Fig. 2: Integration of landscape planning in spatial planning schemes in Germany (own draft according to Riedel & Lange, 2002, p. 77ff.; von Haaren, 2004, 49ff.; Jessel & Tobias, 2002, 32ff.)



Using this information a system of special tools guarantees the consideration of ESPs in planning schemes. It is usual to define “reserve areas” and “priority areas”, which differ in the strength of their impact on different forms of land use. Reserve areas (Vorbehaltsgebiete) are areas for which special importance is attached to certain (spatial) structural functions or uses in comparison with competing uses. Priority areas (Vorranggebiete) are areas in which priority is given to specific functions or uses which are of special significance for overall spatial structure, and where any other uses with spatial impacts incompatible with the designated priority functions, uses or goals are excluded (definitions according to COMMIN, 2007).

Whereas reserve areas and priority areas are mostly adopted from sectoral planning schemes, spatial planning in Germany, especially at the regional level, has additional tools for the protection and development of ESPs. In sensitive areas, for example where several natural goods overlap, it is possible to designate “green belts” and “green divides”. Both are tools in regional planning to safeguard open spaces. A regional green belt (Grünzug) is a continuous expanse of land reserved for ecological functions or recreational purposes and which cannot be developed for housing or any other functionally incompatible use. Green breaks and divides (Grünzäsuren) are smaller protected open spaces close to settlements that must remain undeveloped for local recreational purposes and in order to break up densely built-up areas (definitions according to COMMIN, 2007).

### THE RUSSIAN EXPERIENCE

In Russia there also exists a system of natural goods. The legal definition of ESP is part of the Federal Law “On Environmental Protection”, which provides the framework for national environmental policy. The following ESPs are specified, thereby aiming to secure a healthy environment, biodiversity, natural resources and ecological safety (Spirin et al., 2013):

- fauna,
- the earth’s surface, soils, sub-soil layers,
- surface and ground water,
- forests and other flora,
- the atmosphere, including the ozonosphere and near-earth space.

While these definitions bear a number of similarities to the German concept (see Fig. 3), at the same time a number of interesting differences and modifications are revealed. In some ways the German perspective can be said to be more comprehensive, for example in viewing landscapes and the natural beauty of landscapes as important natural goods. In other cases the Russian system is richer in content, for example by including near-earth space and sub-soil layers in the ESP list. It is also striking that forests – constituting an entire ecosystem type – are proclaimed to be protected goods. This can be attributed to the large swathes of taiga with low human influence which cover the country.

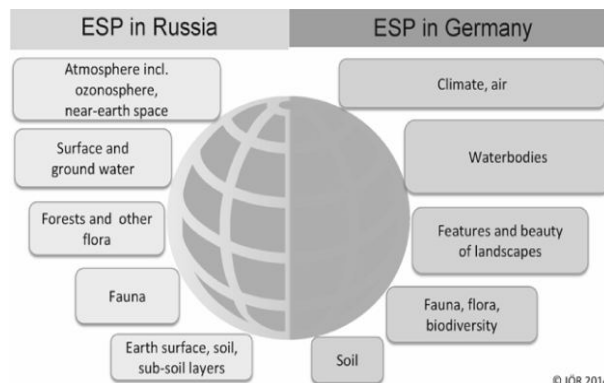


Fig. 3: **Environmental subjects of protection in Russia and Germany** (own draft according to the German “Federal Nature Conservation Act” and the Russian Federal Law “On Environmental Protection”)

Despite the similarities in the legal definitions, basic differences between Germany and Russia become apparent when we take a closer look at the relevance of ESP in planning procedures. Although natural goods are defined in the Federal Law “On Environmental Protection”, there is no downscaling in the planning legislation. A consistent ESP scheme is lacking in Russia’s Town Planning Code. Also no systematic assessment of natural goods is undertaken, with the result that no mechanism exists to consistently integrate ecological concerns into the planning process. Territorial planning in Russia is largely limited to the siting of planned objects such as residential areas and motorways and an examination of their environmental impacts. To this end we find a number of tools to guarantee that environmental concerns are acknowledged in planning processes. The most important tool is the spatial category “areas with land use restrictions”, defined as the following (Spirin et al., 2013):

- Natural protection areas,
- Water protection areas and coastal zones,
- Potable water protection area,
- Forest with protective functions,
- Valuable agricultural land,
- Fishing areas,
- Hunting areas,
- Cultural heritage areas.

All of these protected areas are subject to separate legal provisions within nature protection laws, water law, forestry law, etc. Territorial planning is relatively weak in comparison to the mentioned sectoral influences, and thus highly dependent on governmental regulation. Outside those areas with specific restrictions, it is nearly impossible to ensure that environmental concerns are taken account of. In the end the question of whether environmental issues are acknowledged in territorial planning schemes depends on the responsible person in the administration (Spirin et al., 2013).



## Discussion: options to strengthen ESPs in Russia's territorial planning

In general we can say that ESPs have a strong legal basis in Germany. The assessment and development of natural goods is the task of landscape planning, a key instrument in nature conservation and landscape management. As a rule, landscape planning includes measures to protect and to develop the environment that are integrated into spatial plans at all levels. Furthermore, spatial planning schemes offer special tools to safeguard ESPs.

The situation is rather different in Russia, where the problematic handling of environmental topics such as the protection of ecological goods is characteristic of the subordinate status of territorial planning. Although basic environmental legislation is in place, more specific provisions to regulate the sustainable use of natural resources are lacking. Sectoral planning schemes involving ESPs are governed by detailed regulations, yet territorial planning is unable to balance economic and social aims with environmental goals. This leads to a number of shortcomings regarding the consumption of natural resources, the maintenance of biodiversity, the safeguarding of landscape functions and areas of natural beauty, as well as environmental protection in general.

Having analysed the definitions and understanding of ESPs in Germany and Russia, we can now try to isolate the main problems to be solved in the Russian system of territorial planning. A cursory glance initially reveals only minor differences between the planning systems in their understanding of natural goods. Although there are some clear differences in the definition of natural goods, these disparities cannot be seen as crucial. Also knowledge of Russian planners and planning schemes gained in the EkoRus project made clear that planners are indeed aware of ESPs as well as methods for the assessment of environmental goods. Also the presented territorial schemes are of a high technical quality.

Thus it can be seen that the deficiencies in the integration of environmental concerns in territorial planning in Russia are not due to a lack of definitions and the awareness of planners but rather to weak legislation and implementation. In the Russian Town Planning Code there is no obligation to take account of ecological concerns in territorial planning schemes. Thus ESPs are only captured or assessed in those few cases where the planner undertakes such steps voluntarily. Also an examination of land use conflicts or ecological risk analyses are not foreseen. Instead the Town Planning Code focuses strongly on environmental goods defined in sectoral planning, and on the assessment of single development projects. The ESPs specified in the law "On Environmental Protection" are only relevant to territorial planning in providing a framework for the analysis of

planned projects. In order to strengthen the Russian planning system it is vital to introduce environmental principles into the Town Planning Code.

How could this be achieved in practice? One useful tool to secure individual ESPs in some areas is to specify the territorial category "areas with land use restrictions". However, in Russia there is currently no consistent implementation of ESPs for the country as a whole or for individual planning areas. Furthermore, there is no obligation to consider environmental issues at all levels of territorial planning. Consequently the Russian planning legislation results in a ragbag of environmental inventory and assessment. ESPs outside areas with land use restrictions are not protected against developments of new buildings and infrastructure, regardless of whether they have a high ecological significance or not. Here one vital improvement would be to switch to a system such as in Germany of maintaining an inventory and assessment of natural goods covering the whole territory at all planning levels.

In Germany there also exists a powerful instrument to guarantee a comprehensive assessment and development of ESPs, namely landscape planning. This is tailor-made for the country's framework conditions in which territorial planning has a relatively strong influence on spatial development. Planning in Germany aims at the development of compact settlement bodies and the bundling of infrastructure, while carefully limiting building projects in areas outside of compact settlements. The constitution of an independent "environmental planning" tool as a contribution to territorial planning would be an important step in promoting environmental issues in Russia in general. Furthermore, Russian planners can exploit the experiences made in Germany regarding the integration of landscape planning into spatial planning, as well as making use of their own experiences: In the Soviet Union in the 1970s so-called "complex territorial schemes of natural protection" (TerKSOP) were elaborated as a contribution to territorial planning. These provided a comprehensive inventory and assessment of ESPs, and could today be revitalised and modified according to new framework conditions (May & Spirin 2014, p. 325).

Finally, it is necessary to rethink the relationship between economic, social and ecological issues in planning, and to consider how to better acknowledge environmental concerns. In this regard there is an urgent need for action in Russia. When the results of a future environmental assessment become available, a mechanism will then be needed to integrate the findings into territorial planning schemes and to draw consequences for spatial development practice. Therefore it is recommended that the Town Planning Code be revised to make it obligatory to integrate such data in territorial plans. The new provision should specify a set of ESPs and responsibilities for the approval and control of planning schemes.



## Conclusions: perspectives for a better consideration of ESPs in Russian territorial planning

Based on the results of a joint German-Russian development project on spatial planning, the focus of this paper is on “environmental subjects of protection” (ESPs). We ask: (1) How do the planning systems in Germany and Russia deal with ESPs; (2) Which experiences in spatial planning in Germany could serve as an orientation for territorial planning in Russia; and (3) What are the future perspectives and options for Russia?

We have noted that the similar conception of ESPs in the two countries does not lead to similar results in spatial planning. Of much greater relevance is the role that natural goods play in the planning process. In Germany a consistent system of environmental planning is in place that characterises and assesses ESPs at all levels of planning, weighing environmental concerns with other spatial requirements. In addition to legal regulations in sectoral planning, overarching spatial planning has developed its own instruments to protect valuable natural goods. In Russia, by contrast, territorial planning is primarily socio-economic planning. Environmental goods are only accorded special status in areas with land use restrictions as determined by sectoral planning regulations. Although environmental considerations can exert some influence on the siting of investment projects, in general we can say that territorial planning is a relatively weak tool in which ESPs have a low status.

Thus the consistent use of ESPs in the German planning system constitutes an impressive role model for territorial planning in Russia. In close collaboration with German and Russian partners, a set of recommendations has been elaborated of which the following are the most important:

- ESPs must be incorporated into planning legislation and practice,
- ESPs must be consistently captured for the whole country and implemented at all levels of territorial planning,
- An independent planning instrument “environmental planning” should be created as a contribution to territorial planning,
- Environmental planning should be integrated into territorial planning schemes.

Of course, along with these recommendations we must bear in mind that we are dealing with a sensitive topic. Any advice on policy cannot be simply to transfer an entire planning concept from one system to the other. Instead we have to consider the substantial differences between Germany and Russia in terms of their respective political, societal, legal, organisational and mental conditions. Alongside cultural differences, attention must also be paid to historical sensitivities.

Thus it is vital to comprehend the options and to respect the constraints of the “other party”. This requires not only insight but also sufficient patience when not all ideas are immediately implemented. In closing, three points can be mentioned as reason for optimism. Firstly, territorial planning, including the consideration of ecological issues, has a rich tradition in Russia (TerKSOP and others). Although these schemes have become much less prominent since the early 1990s, there is still a strong awareness of this tradition amongst Russian planners. This awareness should be revitalised and redeveloped. Secondly, the political climate in Russia currently seems favourable to environmental protection. In recent years there has been a number of initiatives to strengthen environmental policy. Thus a statute on the “Basic principles of national environmental policy to 2030” passed by the Russian government in 2012 proclaims a range of strategic objectives including a healthy environment, the preservation of biodiversity and the protection of natural resources for present and future generations (May & Spirin, 2014, p. 321). Last but not least, we note that the Russian Ministry of Regional Development is currently preparing some legal provisions to promote the status of environmental issues in planning. At the final symposium of the EkoRus project in St. Petersburg in May 2014 we were informed of a legislative proposal in the field of marine spatial planning.

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