

Evaluation of policy instruments in promoting ecological connectivity

RIIKKA PALONIEMI, EVANGELIA APOSTOLOPOULOU, JOANNA CENT, DIMITRIS BORMPOUDAKIS, ANNA SALOMAA, MARIANA A. TSIANOU, MARCIN RECHCIŃSKI, MALGORZATA GRODZIŃSKA-JURCZAK, JOHN D. PANTIS

Introduction

The need for scale-sensitive governance has been increasingly recognized in biodiversity conservation, especially during the last decade (Paloniemi et al. 2012, Young et al. 2013, Primmer et al. 2014). The current challenges for European nature conservation largely stem from the increasing habitat fragmentation (Hanski 1998, Giulio et al. 2009) which confirms the necessity of improving policies to more efficiently promote ecological connectivity. Also current European policies and practices need to be thoroughly evaluated and renewed in order to improve policy integration and synergies.

This book chapter contributes to the emerging literature on scale and governance (e.g. Cash et al. 2006, Apostolopoulou and Paloniemi 2012). Empirically, we focus on the possibilities of selected policy instruments to improve ecological connectivity by drawing on perspectives of researchers and practitioners from England, Finland, Greece and Poland. We begin by presenting the results of our multinational study, evaluating the possibilities of various policy instruments and approaches in promoting connectivity. Then we continue by focusing on the case of England, which enables the study of a policy instrument specifically dedicated to connectivity enhancement. Finally, we discuss the implications of the results for scale sensitive biodiversity governance across multiple scales.

Policy instruments and promotion of ecological connectivity

Policy instruments can be defined as “the set of techniques by which governmental authorities wield their power in attempting to ensure support and effect or prevent social change” (Vedung 1998, p. 21) or more broadly as the “myriad techniques at the disposal of governments to implement their policy objectives” (Howlett 1991, p. 2). Given the fact that not only specific arrangements provided by formal institutions, but also activity of informal institutions, as well as spatial, temporal and jurisdictional scales have an effect on the outcome of environmental policies (e.g., Paavola et al. 2009), policy instruments should be evaluated in the broader governance context. This need is reflected in the chapter as its principle goal. Moreover, it is intended to address current scale related challenges of biodiversity conservation (Paloniemi et al. 2012, Apostolopoulou and Paloniemi 2012), through covering a wide set of policy instruments.

Exploring the opinions of experts

To gather comparable results from a broad audience involved in the designation and implementation of biodiversity policy and relevant research across Europe, we implemented similar surveys in England (34 respondents), Finland (47 respondents), Greece (54 respondents), and Poland

(44 respondents). The respondents were selected based on the level of their expertise, practical experience and influence on decisions regarding conservation, particularly ecological connectivity, at the national level. The respondents cover a variety of opinions and attitudes of both researchers and practitioners regarding the current performance of policy instruments in promoting ecological connectivity in the case study countries.

The aim of the survey was to explore policy instruments from various perspectives. To get an overall picture of the situation in each particular country, before asking individuals to evaluate specific policy instruments, we asked them to express their opinion on whether connectivity measures are an important aspect of the current biodiversity policy in their country. Moreover, because various instruments are in use in investigated countries, we analyzed the value of both existing and potential policy instruments in enhancing ecological connectivity and implementing biodiversity policy in each country separately (see Box 1). The respondents were asked to evaluate the importance and current performance of the policy instrument in promoting ecological connectivity *in practice*.

More precisely we focus on England, which has, at least discursively, taken connectivity into account more actively than the other case study countries, and at least one policy instrument – Nature Improvement Areas (NIAs) – does specifically aim to enhance connectivity. In England we conducted qualitative interviews to provide a more nuanced understanding of current connectivity conserva-

Box 1. List of policy instruments evaluated in Finland, Greece and Poland

- National spatial development strategy/plan(s)
- Regional spatial development strategies/plan(s)
- Local spatial development plans
- Biodiversity strategy
- Biodiversity law
- Strict nature reserves
- National parks (national parks: national and regional parks)
- Habitat/species management areas
- Natura 2000 – Special Areas of Conservation
- Natura 2000 – Special Protection Areas
- Wildlife refuges
- Protected landscapes/seascapes -landscape parks, areas of landscape protection, nature-landscape groups
- Protected area with sustainable use of natural resources (areas of ecological use)
- Agri-environmental schemes/subsidies related to/aiming to support biodiversity conservation
- Other funding mechanism (respondents were asked to define)
- Ecological corridors
- Buffer zones around conservation areas
- Environmental impact assessments
- Networks of protected areas
- Green infrastructure (GI)
- Other policy instruments (respondents are asked to define)

tion. Based on the interviews, we present experiences about NIAs that are part of the large-scale conservation trend in England.

tive in practical promoting ecological connectivity in their countries.

In *Finland*, the policy instruments that were most appreciated in practice

– i.e., Natura 2000, wilderness areas, national parks, permanent conservation contract in the current forest biodiversity program called ‘METSO’

Results

Policy instruments for promoting ecological connectivity in Finland, Greece and Poland

We found that connectivity conservation has been taken into consideration in Finland, Greece and Poland only to a limited degree. In the survey, the most popular response was that connectivity measures are only a less important part of current biodiversity policies whereas the second most frequently used response in Greece and Poland was that connectivity measures are not important at all, and in Finland that they are relatively important (Figure 1).

In Figure 2 we present the five policy instruments that respondents evaluated as the most and least effective

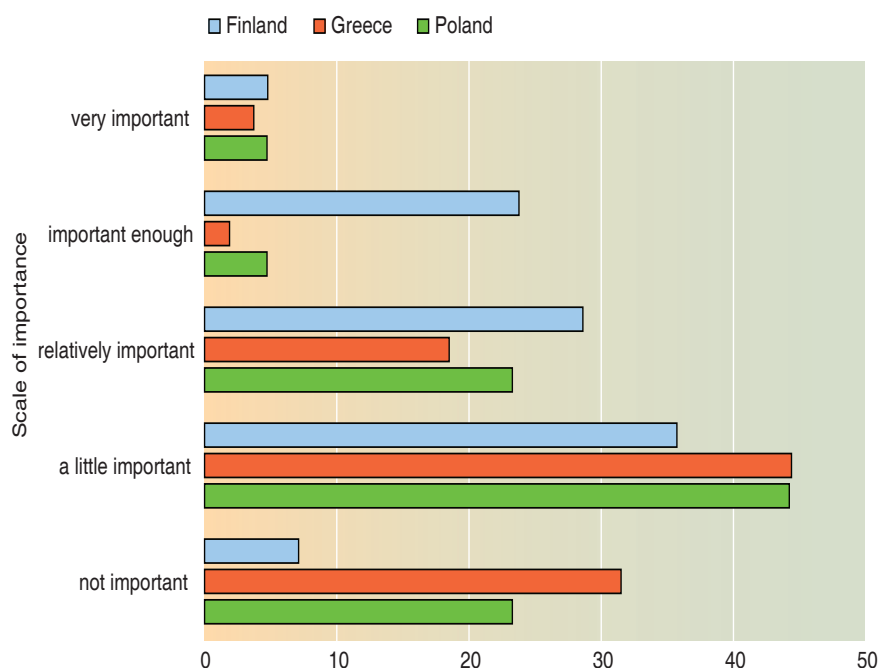


Figure 1. Importance of connectivity measures in biodiversity policy of each country. The scale used was the following: 1= not important; 2= of little importance; 3= relatively important; 4= important enough; 5= very important.



Figure 2. Current performance of selected policy instruments in promoting ecological connectivity in practice in Finland, Greece and Poland. The five *most* and five *least* appreciated policy instruments were evaluated with a scale: A= I do not know; B= instrument not in use; 1= unimportant; 2= of little importance, 3= moderately important; 4= important enough; 5= very important.

and habitat/species management areas – are all more traditional, ‘command and control’ type of instruments. In general, the four most appreciated instruments cover wide spatial areas and longer temporal scales than other evaluated instruments. The regulation of wilderness areas is less strict than that of other most appreciated instruments. The large spatial area included in wilderness areas and their location in northern Lapland, where biota is extremely vulnerable to the probable effects of climate change, can explain the perceived importance of the instrument. The least appreciated instruments — i.e., buffer zones, agri-environmental subsidies, building ordinance and natural monuments — are all operating on much smaller spatial scales. Green Infrastructure GI has not yet been implemented at all, buffer zones have

not been used widely, and natural monuments have been established to protect only certain, small scale valuable items or spots, which explains the poor ability of these instruments in promoting ecological connectivity. It is worth noticing that the policy instruments designed primarily to protect certain small scale sites are not well adapted to promote ecological connectivity. Moreover, even though widely implemented agro-environmental subsidies could be useful in developing corridors or in encouraging conservation practices favorable to biodiversity and ecological connectivity, so far these subsidies have not been able to fulfill such promises (Arponen et al. 2013).

In *Greece*, the most appreciated policy instruments include both traditional types of nature conservation instruments, such as protected

areas ranging from National Parks to strict nature reserves, as well as more recent instruments, such as the Natura 2000 network designed to enhance and restore connectivity through the establishment of a coherent network of protected areas. This is not surprising given that, due to the limited integration of biodiversity into other policy sectors, biodiversity conservation measures are being implemented mostly at species level or only within PA boundaries. The least appreciated are GI (which has not been implemented in Greece so far, except for few projects at local level) as well as spatial planning policies from local to national levels. The poor performance of planning policies is strongly related to the chronic criticism against spatial planning policies in Greece. The latter have been shaped by laws and plans focusing

primarily on urban development and on the extension of statutory town plans (Sapountzaki and Karka 2001) whereas unauthorized development, especially residential, has been widespread and poorly controlled resulting in chaotic urban patterns and environmental degradation.

In *Poland*, policy instruments evaluated as the most effective for connectivity promotion are well-established (secured by law). These were: protected areas, and agri-environmental schemes (voluntary instrument with assured funding). The least important are forms of weak legal foundations, such as: ecological corridors, GI, buffer zones and national and local spatial plans. Buffer zones are, in the opinion of respondents, not very important, mainly due to their weak protection regime. National spatial development plans are not crucial due to their low compatibility with existing concepts of ecological connectivity, whereas local plans are simply not implemented in majority of municipalities. Moreover, there are still local plans which come into being not as a result of a sound

planning process but because of instrumental reasons e.g. the need of realizing new commercial investment (Blicharska et al. 2011).

Nature Improvement Areas (NIAs): A case study of promoting ecological connectivity in England

In *England*, contra the other case study countries, the NIA approach shows significant potential regarding connectivity: on the conservation and ecological side, preserving larger areas has clear benefits for the viability of populations. Additionally such large-scale work is not easy to undertake by a single organization, and NIAs were correctly conceived as partnership projects. Despite the potential, however, there are also some misgivings inherent in the way NIAs were designed and implemented *as a policy*. First, from ecological and conservation perspectives, conservation should

be done at multiple scales and “*there is no preferable scale*”, as argued by an interviewee, even if that scale is quite large. The coherence of a network as a multi-scale attribute cannot be achieved without some co-ordination and planning at the national or county administrative and ecological scales. While the NIAs can provide significant benefits locally, there is still the question of how much they contribute to national level coherence, an attribute found lacking in the protected area network in England. The way the NIAs were selected could have exacerbated this problem, as it was through a funding competition between partnerships that did not consider network coherence as an important factor for the spatial allocation of the funds.

Conclusion

This study provides empirical evidence about the possible existence of various policy instruments to respond to the current scale-relevant challenges of biodiversity policies by focusing



Figure 3. Isokivenniemi, Natura 2000 site in Finland (photo: Terhi Asumaniemi).



Figure 4. National Park of Koroneia-Volvi, Natura 2000 site in Greece (photo: Evangelia Apostolopoulou).

on the promotion of ecological connectivity. We found that in Finland, Greece and Poland, the most appreciated policy instruments were Natura 2000 sites and national parks. These instruments have been designed with the explicit aim to protect biodiversity on the sites but they are also expected to work as core sites of a wider functional network improved by other instruments. What is relevant from the scale perspective, is that both instruments aim to cover large spatial scales: national parks constructing a base for nationwide networks and Natura 2000 doing the same at both national and European level.

The role and performance of policy instruments specifically targeted to promote ecological connectivity is still not clearly recognized in the studied countries. GI was among the five instruments whose current performance in promoting ecological connectivity was perceived as very limited in Finland, Greece and Poland. Even

though GI has only been implemented in England and there are concerns over “*what it actually is*”, it is already a key part of current EU strategy for biodiversity conservation. The limited acknowledgment of GI’s potential reflects the need for better communication between EU and national levels for addressing the concerns regarding whether GI actually aims to promote ecological connectivity.

Moreover, the least appreciated instruments were also often, especially in Greece and Poland, related to spatial planning, reflecting the chronic problems in integrating biodiversity and planning in many EU countries (see, e.g., Apostolopoulou and Pantis 2009), highlighting the need to revisit them by promoting connectivity on larger scales and by explicitly reflecting conservation objectives at all levels. This is strongly related to the fact that in many cases the goal to integrate biodiversity to other policies or reconcile biodiversity conservation with development

and growth leads to the underestimation of biodiversity objectives and to the opposite outcome: namely the integration of growth or development objectives into biodiversity policies.

However, the NIAs are a promising example of connectivity instruments used in England. They focus mainly on connectivity, but also take into consideration community engagement with nature, spiritual and cultural ecosystem services, biodiversity offsetting, payments for ecosystem services, and economic growth. NIAs should be seen in relation to the emergence of landscape or large scale conservation in England in the early 2000s. Emerging as a consensual and inclusive way of ‘doing’ conservation, landscape scale conservation flourished with the input of large NGO schemes such as the RSPB’s Futurescapes into a national conservation imperative in the late 2000s. Multi-partner projects, across the civil society-markets-state spectrum got involved in this attempt to move



Figure 5. Agri-environmental subsidies in Beskid Żywiecki, Poland (photo: Joanna Cent).

away from habitat and species based conservation. Despite the success of several projects, like the National Character Areas, it was felt that a ‘step change’ was needed after 2010. NIAs embody this shift: the move from a ‘third-way’, ‘win-win-win’ and consensual way of protecting the environment *and* achieving growth, to a yet-to-be-assessed type of conservation policy that foregrounds competition among localities, heavy monitoring and evaluation, market-based conservation and economic growth. Tellingly, in the second year report, only two of the twelve NIAs even managed to assess connectivity in their area, the very issue they were designed to do.

Conservation networks are consistent with the aims of large-scale conservation, one of the central imperatives of global biodiversity conservation, to emphasize the importance of conserving entire ecosystems as opposed to patches of protected areas (Igoe and Croucher 2007). In the re-

sults of the survey some of the above-mentioned goals proved to be evaluated positively by respondents, such as the establishment of conservation networks, and some others were criticized as not very successful so far, such as the integration of connectivity measures to land use planning and development policies. This brings our attention to one of the most widely agreed aspects in the results of the common survey regarding policy integration: the opinion that any effort to improve ecological connectivity would be futile unless integrated into a wider framework that smoothly and efficiently co-ordinates land-use, balancing conservation, social and economic factors.

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