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POSSIBILITIES OF USING THE CONCEPT OF ECOSYSTEM SERVICES AT THE REGIONAL LEVEL IN EXPERTS' OPINIONS

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ABSTRACT: In the European Union countries, including Poland, work is being conducted on the implementation of the ecosystem services (ES) approach in policy and decision-making. This process is relatively advanced at the level of individual member states; however, it still constitutes a big challenge on the sub-national level. The determination of reasons for such a status quo and searching for solutions were main subjects of one of the workshops at the ECOSERV 2016 symposium that was held in Poznań in 2016. 30 persons representing the most important Polish authorities and institutions dealing with environmental management participated in the workshop. The analysis performed made it possible to identify a set of conditions, which, according to the experts, are the most important for the development of the ES approach in the regional scale.

KEY WORDS: ecosystem services, EU Biodiversity Strategy, World Café Method, regional level

JEL: K32, Q57, R00

Introduction

In May 2011, the European Commission adopted a strategy in which a framework structure was defined for European Union (EU) actions aimed at protecting biological diversity for the period until 2020 (EU, 2011). One of its main objectives is maintaining and restoring the ecosystems and their services (Target 2, Action 5). At the EU level, the ecosystem services (ES) approach is already being integrated in various policy contexts (e.g. EC, 2012; EU, 2013). The individual member states differ significantly in the implementation of the ES concept (Kopperoinen et al., 2016). In Poland, the advancement of work on the mapping and assessment of ecosystem services at the national level can be regarded as satisfactory. Following the scientific development and the EU activity, Polish strategic papers have started to postulate the implementation of the ES approach (NUP, 2015; PCSB, 2015). However, there is no developed system that would make it possible to use this approach at the regional level.

The possibilities of operationalization of the ES concept were analysed during the ECOSERV 2016 symposium held in Poznań on 5–6 September 2016. The ECOSERV symposia (Symposia on Ecosystem Services in Transdisciplinary Approach) have taken place in Poznań every two years since the year 2010. The meetings create an opportunity to review progress in the methodology and application of the ES concept. These events are an informal platform for experts – representatives of science, administration and non-governmental organizations – for information and experiences exchange; each time they attract several dozen participants who are active and interested in this field.

Within ECOSERV 2016, a workshop was held concerning the implementation of the ES approach in policy and decision-making at the regional level. 30 persons participated in the workshop representing universities, the Ministry of the Environment, State Forest Administration, national parks, provincial spatial planning offices, provincial environmental protection and water management funds, regional bodies for water management and non-governmental organizations. This article is aimed at showing the perception of the conditions for using the ecosystem services approach by a broad group of experts. The paper attempts to identify a set of factors that, according to the experts, are the most important for the development of the ES approach in the regional scale.

Research methods

The workshop was conducted using the World Café method. The organizers prepared a set of strategic questions, which allowed them to divide the findings into three groups of problems: factors conditioning the use of ES, sources of information helpful in the identification of types and levels of ES and the possibility of including the ES concept in legal acts. The organizers cared about the exchange of the workshop participants' knowledge and experience and on constructing and creating ideas on this basis and not necessarily about finding specific solutions. The participants were divided into three 10-person groups, which in three cycles (moving from table to table) dealt with three designated topics, making it possible to combine ideas and the ways in which various problems were perceived.

Results of the research

Ecosystem services approach as a practically useful tool of environmental management

In this part, the experts were asked to identify factors that will determine the use of the ES approach as a practical tool by politicians and practitioners in Poland. Additionally, for each of the identified factors, the participants were asked to decide at which level the decision-making is important and how important it is for increasing the human well-being (figure 1).

During the discussion on the importance of individual factors for the increasing the human well-being, the participants concluded that all of the identified factors are of the same high importance. Therefore, this aspect is omitted in the further presentation of the results.

However, for several factors, the experts pinpointed their diverse importance at various decision-making levels. With regard to the wider incorporation of the ES concept in legal regulations, at the central level, the participants focused on the need to define precise indices and reference values in executive regulations. At the regional and local scale, special importance was attached to the presence of ES aspects in environmental impact assessments. In the participants' opinion, however, this requires political will (especially at the central level), the awareness of the issue importance (regional level) and social acceptance (local level).

The same importance at all three decision-making levels was assigned to the other identified factors. Thus, the speakers indicated the role of developing ecosystem knowledge and methods of defining the desired structure and the ES level. The importance of ES inclusion as an educational element,

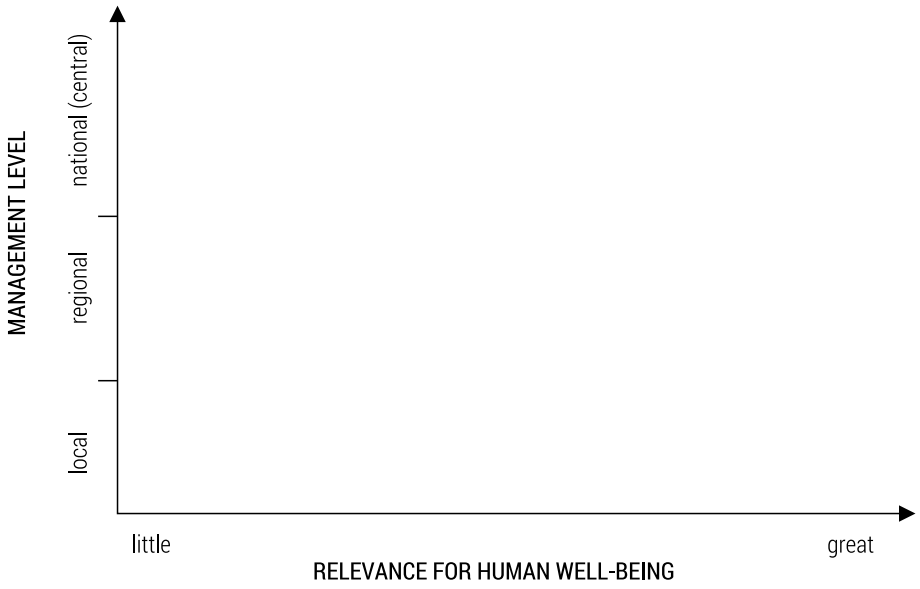

Figure 1. Work template used in the workshop

including personnel education, was also emphasized. At present, the topic of ES is hardly noticeable in the public debate devoted to environmental policy (Pietrzyk-Kaszyńska, Grodzińska-Jurczak, 2012). The participants also stressed the role of media interest, the positive atmosphere around ES-related problems. Further factors included the economic conditions of the ES approach implementation, concerning profits or a lack of losses for companies and availability of supporting funds. Additionally, the speakers indicated that the quality of the entire process of the ES implementation would depend on the flow of information (including access to data) and cooperation.

As indicated by A. Mizgajski (2008), the process of environmental management is shaped by knowledge, education, the legal system and also by social and economic conditions. The opinions of workshop participants confirm that implementation of the ES concept into the policy and decision-making will depend on this spectrum of factors. It should be noticed, however, that the experts did not diversify the importance of individual factors for the implementation of the ES approach. Still, when demands are very high, the process of evaluating factors and ranking them in order of importance and urgency allow the best use of limited time and social, economic and political resources. Discussion on the specificity of activities needed at individual levels of management to achieve the goal of putting ES in practice also appears to be necessary.

Workshop participants' reflections did not include the role of scientific understanding of the demand for ES information by decision-makers. According to the Honey-Rosés and Pendleton (2013), in current research on ES, the choice of what to value stems more from the researcher side and interests rather than from the policy demand; the operationalization of ES requires taking into account decision-contexts and requirements of potential users, including better reflection on the usefulness of different types of ES analysis for solving the particular empirical and policy questions (Stępniewska, 2016a).

Sources of information helpful in the identification of the types and levels of ecosystem services

Available sources of information limit the possibilities of mapping and assessment of ES, especially at the regional and higher levels. Several studies have been prepared for the European Union in recent years on data for contribution to Target 2 Action 5 of the EU Biodiversity Strategy to 2020 (EEA, 2015; EEA, 2013). Such a comprehensive study has not been prepared for Poland yet, despite the fact that available data was the subject of interest in the context of, for example, the influence of the degree of data generalization on the estimated level of ES (Lupa, Mizgajski, 2014). During the ECOSERV 2016 workshop, in the identification of sources of information, experts indicated mostly data concerning the quality of the environment that modifies the potential of ecosystems to provide particular services (table 1).

First, participants paid attention to thematic vector maps that can be interpreted using GIS tools. These include sozological, hydrographic maps, the map of Poland's hydrographic division and the Numerical Forest Map. They were also able to identify portals where such data are made available, mostly Geoportal (http://geoportal.gov.pl/) and the IT System of State Forests (https://www.bdl.lasy.gov.pl/portal/). Among sources concerning the quality of the environment, the interlocutors did not indicate monitoring data that are mostly used by the main inspectorate of environmental protection and its provincial branches. This particularly applies to the "Ecosystem services" specialist programme implemented within the framework of the National Environmental Monitoring (Kostrzewski et al., 2014; Stępniewska, 2016b).

The experts attached a lot of importance to forms of environmental protection and portals, which publish data on this subject, mostly the Central Register of Nature Conservation Forms (http://crfop.gdos.gov.pl/CRFOP/) and Geoserwis GDOŚ (http://geoserwis.gdos.gov.pl). The experts omitted the role of the Mammal Research Institute of Polish Academy of Sciences, General Directorate for National Roads and Motorways with regard to

Table 1. Sources of information on ecosystem services available in Poland according to participants of the ECOSERV 2016 workshop

Source of data	Scale	Type of benefits for people
Vector maps (Map of Poland's hydrographic division, sozological map, hydrographic map)	Local, regional and national levels	Mostly regulating and provisioning
Central register of forms of environmental protection, standard data forms and plans of protection tasks for Natura 2000 areas	Local, regional and national levels	Mostly regulating and provisioning, cultural services to a lesser extent
Geodesic and Cartographic Documentation Centre (numerical model of the area, aerial imagery)	Local, regional and national levels	Mostly regulating and provisioning, cultural services to a lesser extent
European Environmental Agency	Regional, national and European levels	Mostly regulating and provisioning, cultural services to a lesser extent
Information system of State Forests	Local, regional and national levels	Mostly regulating and provisioning, cultural services to a lesser extent
Public Opinion Research Centre, Central Statistical Office	Regional and national levels	Mostly cultural and provisioning, regulating services to a lesser extent
National Water Management Authority (mostly water management plans in river basins)	Regional and national levels	Mostly regulating
District and provincial spatial information systems	Local and regional levels	Mostly provisioning and cultural

Source: based on responses of the ECOSERV 2016 workshop participants.

ecological corridors and obstacles to migration of animals, mostly large mammals. No controlled hunting and fishing zones or mushroom and herb purchasing centres were indicated, despite the fact that they have information both on the numbers of specific animal species and their actual use by people. Instead, attention was paid to the importance of hydrological data, especially with regard to flood and drought hazards, which are collected by the National Water Management Authority.

The workshop participants did not list any data used for the estimation of plant production in the agriculture, mostly soil and agriculture maps. They did not mention maps containing the regionalization of natural phenomena in Poland gathered in thematic atlases concerning the climate, forests, agriculture etc., as well as data on river flow, rainfall and insolation (The Institute of Meteorology and Water Management), which can be very useful for determining the size and type of crops. The data of the Central Statistical Office and the Public Opinion Research Centre were indicated in the aspect of social and economic data that conditions the demand for specific goods and services.

In general, it must be concluded that the workshop participants mostly listed sources of information concerning the status of the environment and

the potential of ecosystems for providing services. To a very small extent, interlocutors mentioned data allowing the assessment of the demand for ES and data concerning their actual use. Hence, research concerning the potential for providing services clearly predominates. At the same time, there are no ready-to-use data that could be employed for mapping and the assessment of services using social and economic methods, especially with regard to cultural services. On the basis of expert opinions, a synthetic table was constructed that assessed the availability of data on ES in Poland (table 2).

Table 2. Availability of data on ecosystem services in Poland according to the method and scale of research – synthesis

Methods	Scale								
	Local			Regional			National		
	P	R	C	P	R	C	P	R	C
Biophysical	3	2	1	3	1	1	3	0	0
Social	0	0	1	0	0	0	0	0	1
Economical	3	1	1	2	0	1	1	0	1

Categories of availability: 0 – none, 1 – low, 2 – medium, 3 – high. P – provisioning services, R – regulating services, C – cultural services.

Source: based on experts' opinions.

Where and how to incorporate the concept of ecosystem services into legal acts?

Experts unanimously decided that the basis step includes an overview of national legal acts and strategic documents in terms of introducing provisions concerning ES into them. This would increase the chances of implementing the ES concept in legislation in a comprehensive and cohesive manner. At present, the ES approach appears in Polish legal acts and strategic documents only in an implicit form (Mączka et al., 2016; Stępniewska et al., 2016). The workshop participants concluded that the ES concept should be taken into account in a range of acts concerning environmental issues. However, the interlocutors warned against including the ES concept into legal documents using only general statements, i.e. without specifying a comprehensive and transparent vision of ES implementation into environmental policy. Such an approach may lead to the creation of a too general and chaotic law that would be difficult to use in environmental management and would be ineffective.

Thus, the participants were in favour of identifying the special role of protected areas in the provision of ES, especially regulating and cultural ones, in the Act on Nature Conservation. In their opinion, the protection of ecosystems should be strengthened due to the benefits they provide.

Some experts thought it necessary to add additional content to the Act on Protection of Agricultural and Forest Land and to the Act on Forests. Their provisions should oblige forest owners to identify and quantify ES provided by these ecosystems. Special attention would need to be paid to services defined as non-production ones by foresters, as provisioning services are quite well known already.

In the case of the Water Law, the implementation of provisions concerning ES has already been initiated by introducing the term "water services" to define activity allowing the satisfaction of water demands of people and the economy. Experts proposed that the Water Law Act should include additional provisions imposing the obligation to take ES into account while making decisions on water and water depending ecosystems and in issuing water-law permits. Such actions would lead to the inclusion of water services in water management not only at the national and regional levels but also at the local level.

The participants also decided that an introduction of changes into the Act on Spatial Planning and Development would be important. There also appeared proposals to modify the regulations of the aforementioned act by harmonizing its terminology with the set of notions of the ES concept. Experts proposed that ES issues should be included in the National Development Strategy and the National Spatial Management Concept and in strategic and planning documents at the regional and local levels. At the local level, the workshop participants suggested that municipality development strategies, ecophysiographic studies and studies of conditions and directions of spatial development of municipalities should contain descriptions of the current status and forecasts of the future status of ES. For this purpose, one should use the indicator approach together with scenario analysis of changes in ecosystems related to the implementation of indicated directions for development. On the other hand, in local spatial development plans, special attention should be paid to the inclusion in the financial forecasts the effects of the implementation of the plans on ES.

The participants were in favour of introducing the ES concept into the procedure for environmental impact assessment (provisions of the Act on Providing Information on the Environment and Environmental Protection, Public Participation in Environmental Protection and on Environmental Impact Assessment). Some experts also noticed the possibility of including the ES concept in the Act on Preventing Environmental Damage and its Repair in the context of estimating changes of the structure and level of ES.

The experts proposed the introduction of additional provisions into agri-environmental programmes and into the Rural Development Programme, taking into account the potential of agricultural ecosystems to provide ES. The participants also saw the necessity to include the economic value of enhanced or lost ES in defining activities in regional operational programmes.

Surprisingly, none of the participants quoted the Environmental Protection Law that seems to be predestined to introduce the ES approach as it formulates the principles of environmental protection and the conditions for using its resources that are of key importance for the maintaining of natural capital.

Conclusions

The analysis performed made it possible to identify a set of conditions that, according to the experts, are the most important for the development of the ES approach in the regional scale. The organizers prepared a set of strategic questions, which allowed them to divide the findings into three groups of problems.

Among the conditions for the use of ES in environmental management, the need for including ES into the system of environmental impact assessment was highlighted. It was also noticed that it was necessary to introduce ES into the educational system and into the public debate in the media. Experts indicated that political will at the national level, understanding of the importance of the ES issues at the regional level and acceptance of local communities are conditions necessary for implementing ES approach.

Participating experts identified a broad range of available sources of information that are useful in identifying ES. They indicated the existing recognition of the quality of the environment, various thematic databases containing spatial information, including data on the forms of environmental protection.

Specific proposals of experts concerned the possibility of introducing the ES concept into the Polish legal system. Particular acts and regulations were discussed where new solutions could be introduced. However, fragmentary solutions should be avoided before developing a comprehensive vision of ES introduction into the state's environmental policy.

The presented results of the expert workshop can be an impulse and a reference point in the further efforts aimed at transforming the ES approach from a scientific concept into a concrete planning and management practice.

The contribution of the authors

Małgorzata Stępniewska – 40%
Damian Łowicki – 30%
Piotr Lupa – 30%

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