"A thousand flowers are flowering just now" – Towards integration of the ecosystem services concept into decision making

Malgorzata Blicharska [a,b,*], Tuija Hilding-Rydevik [b]

[a] Natural Resources and Sustainable Development, Department of Earth Sciences, Uppsala University, Villavägen 16, 752 36 Uppsala, Sweden
[b] Swedish Biodiversity Centre, Swedish University of Agricultural Sciences, Box 7016, 750 07 Uppsala, Sweden

ARTICLE INFO

1. Introduction

The concept of ecosystem services (ES) has received increasing attention since the Millennium Ecosystem Assessment (MA, 2005) and TEEB initiative (TEEB, 2010). In recent years there has been a large increase in scientific publications on ES (Martinez-Harms and Balvanera, 2012; Milcu et al., 2013) and conceptual advancements of the concept have laid the theoretical foundation for a wide range of approaches to and methods for ES assessment (e.g. Burkhard et al., 2012; Liquete et al., 2013; Martín-López et al., 2014). At the same time the concept has also been increasingly put into practice and integrated into policies at different levels. For example, the European Union (EU) Biodiversity Strategy 2020 (EC, 2011) urges Member States to improve their knowledge about their country's ES and promote integration of their values into national accounting and reporting systems (Target 2, Action 5). Policies at national levels also underline the need to integrate an ES approach into decision making (e.g. Maczka et al., 2016; SOU, 2013). In both science and policy there exist high expectations of how the concept of ES will change current planning and decision making so that it moves in a more sustainable direction. At the same time criticism of the concept is put forward. The question we pose in our study is: what experiences are gained when actors in actual decision making and planning contexts attempt to put the ES concept into action?

Right now still relatively little is known about how the ES concept is being interpreted, assessed, acted upon and integrated in actual decision making at different governance levels in EU Member States. Although some existing studies focus on investigation of if and how the concept has been integrated in e.g., the spatial planning or environmental assessment discourses (Hansen et al., 2015; Maczka et al., 2016; Mascarenhas et al., 2015; Rinne and Primmer, 2016), many of them concentrate on a single, particular decision-making context at one particular governance level, such as local or regional planning, or river management (Albert et al., 2014; Beery et al., 2016; Böck et al., 2015; Galler et al., 2016; Plant and Ryan, 2013). Even though there exist particular studies that explore ES integration at multiple governance levels or with regard to different sectors (e.g. Hauck et al., 2013; Dick et al., in press), these are still relatively rare. What is particularly missing is, firstly, more investigation of the ES concept's integration from the perspective of the actors close to the "street level" and the details of the day-to-day implementation of the ES concept; and, secondly, exploration of this integration at multiple governance levels.

When a new policy and a new concept like ES is to become a practice some kind of learning, understood as "capacity change" (Illeris, 2007), will take place. In our study we are inspired by theories of learning, and specifically theories related to informal learning (outside the realms of educational settings) and learning at workplaces as outlined by Illeris (2004a,b, 2007, 2009). We focus on the content, incentive and interaction dimensions of learning at workplaces. Learning is neither intrinsically good nor bad, right nor wrong. Learning a new practice, like integrating ES can thus take different directions. Learning as such is a complex process as outlined in the theory section below. The learning challenges, of integrating ES in planning and decision making, may range from emotional factors linked to what motivates actors to work with ES to technical issues like lack of context specific data for ES assessments. The learning perspective thus enables us to pinpoint a broad range of factors, at individual and organisational level, that facilitate or hinder integration of the ES concept in the practical work and the associated challenges. Insights into the use of the ES concept can thus provide an empirical basis for judging how the high expectations and criticism turn out in practice and give

* Corresponding author at: Natural Resources and Sustainable Development, Department of Earth Sciences, Uppsala University, Villavägen 16, 752 36 Uppsala, Sweden.
E-mail addresses: malgorzata.blicharska@geo.uu.se (M. Blicharska), tuija.hilding-rydevik@slu.se (T. Hilding-Rydevik).

a foundation upon which to discuss how to proceed with the development of the practice and address challenges.

The aim of our study is twofold: to investigate the actual day-to-day professional experiences gained so far from attempts to put the concept of ES to work in planning and decision making, and, through that, to draw conclusions about where implementation of the ES policy is heading in practice. Different governance levels in Sweden are included and the empirical material is collected through interviews.

The article continues with a brief description of the expectations of the ES concept, together with some mention of the criticism of the concept. After this follows a short account of the Swedish ES policy context. The learning theory and methods applied in our study are included in Section 2. Section 3 describes the results in relation to the Illeris learning theory, and results are then discussed in Section 4.

1.1. High expectations but also criticism

Both scientific literature and existing policies reveal a wide array of positive expectations as regards the use of the ES concept in planning and decision making. Since it draws attention to the benefits people receive from nature (Lamarque et al., 2011) the ES concept is seen as a tool for recognising the dependence of human societies on the natural systems (Beery et al., 2016). It is thus expected to provide a bridge between considerations of ecosystems and human wellbeing (Braat and de Groot, 2012), i.e. to function as a bridge between ecology and economy (Chan et al., 2012a). As such, the use of the ES concept is seen as a tool for internalising the value of ecosystems into essential decisions (Chan et al., 2012a; Daily et al., 2009), designing policies that take account of these values (Geijzendorffer and Roche, 2013; Luck et al., 2012; Primmer et al., 2015), and communicating their value to different stakeholders (Luck et al., 2012). The key expectation is, however, that integrating the ES approach into the work of different actors will improve everyday decision making, by taking account of both the needs and priorities of ES beneficiaries and of the ecosystems that provide services (Beery et al., 2016; Chan et al., 2012b), and thus contribute to sustainable development. Increased knowledge on ES and their links to both the ecosystems that underpin them (Harrison et al., 2014) and human needs (Blicharska et al., 2017) is supposed to change the decisions taken about natural resources (Primmer et al., 2015). Because of that it is particularly important in decisions concerning land use planning (Chan et al., 2012a; de Groot et al., 2010).

Parallel to the high expectations there exist criticism of the concept. In particular, the vagueness of the concept is seen as a challenge in making ES operational in decision making (Nahlik et al., 2012), and the anthropocentric nature of the concept (Mc Cauley, 2006; Batavia and Nelson, 2017), as well as controversies around the issue of economic valuation (Gómez-Baggethun and Ruiz-Pérez, 2011; Silvertown 2015), may lead to resistance towards the concept's implementation (Redford and Adams, 2009; Jax et al., 2013). Although scholars have addressed these different aspects of the ES criticism and provided counter-arguments (e.g. Schröter et al., 2014; Schröter and van Oudenhoven, 2016; Costanza et al., 2017) they may still hinder the concept's implementation in practice (see e.g. Beery et al., 2016).

1.2. ES in the Swedish policy context

In 2013 the Swedish government adopted a policy aiming at integration of the ES concept in Swedish planning and decision making linked to 16 Swedish environmental quality goals (Swedish Government, 2013). This policy highlighted the need to induce change in planning and decision-making practice by inte-grating ES thinking. Municipalities, County Administrative Boards, National Authorities and other actors are now, following the start of the new policy, in the process of taking on this new concept, i.e. learning how to approach it as part of each organisation's daily tasks and routines. From that point of view a learning perspective is a relevant starting point for the study reported here.

2. Theoretical background and methodology

2.1. Learning

As outlined in the Introduction the integration of the ES concept is expected to change planning and decision making. In this process policies and strategies will be interpreted, assessed and acted upon in different, specific, day-to-day planning and decision-making contexts and various actors will be engaged in the processes of learning. At the general level learning can be described as "any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or ageing" (Illeris, 2007, p. 7). The concept of learning as change is fundamental for scholars with a socio-cultural perspective on learning who view learning as a social process (see e.g. Lave and Wenger, 1991; Wootton, 1997; Rogoff, 2003; Lave, 2009; Wenger, 2009). Lave defines learning as "changed participation in the culturally designed settings of everyday life" (2009, p. 201) and Rogoff (2003) sees it as a process of socialisation; as changed participation in cultural practices. Illeris' definition (Illeris, 2007) includes not only change; the focus of interest is the change of capacity, i.e. the ability to do a particular thing, e.g. work with the ES concept. Furthermore, this changed capacity should be permanent, indicating change with a higher degree of consciousness and intentionality.

Learning in the workplace, which Illeris has been studying in particular (2004a), takes place in a dynamic relationship between employees' individual learning processes and the work environment comprised of the socio-cultural communities and the technical-organisational learning environment. Illeris (2004a, p. 432) illustrates this with a model in the form of a triangle, where human learning includes *three key dimensions*, which, in practice, are all part of every learning process (Illeris, 2009). What is actually to be learnt is the *content* dimension, comprising knowledge and skills but also opinions, insight, outlook, attitudes, values and strategies. The second dimension is the *incentive* dimension, consisting of the learner's mental energy, feelings, motivation and volition. "The incentive dimension provides and directs the mental energy that is necessary for the learning process to take place" (Illeris, 2009, p. 10). These two dimensions are initiated by impulses from the third dimension, the *interaction* processes. The interaction dimension of learning contributes to integration in communities and society and thereby reinforces a learner socially. This is the dimension in which it is easiest to influence another person. It occurs in concrete interaction such as participation, communication and co-operation (Illeris, 2004b, p. 83), but also in situations in which an individual is (physically) alone, through her/his interplay with the environment as it is mediated through written sources (Illeris, 2004a, p. 434). In comparison to the aforementioned socio-cultural theories of learning, the strength of Illeris' model is that it explicitly takes the preconditions at the workplace into account and enables their description and analysis. Thus, in our study learning is seen as a constant interaction between the individual's learning process and the learning environment, comprised of the social-cultural environment and the technical-organisational environment.

The learning theory of Illeris as outlined above was the starting point for the present study. However, the theory of 'communities of practice', as expressed by Wenger (1998) is also relevant in