Ecosystem services are inclusive and deliver multiple values. A comment on the concept of nature's contributions to people

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Abstract

A recent policy forum article in Science by Díaz et al. (2018) introduces nature's contributions to people (NCP) as an innovative approach to inform policy and decision-making. According to the authors, the NCP concept extends beyond the notion of ecosystem services by incorporating a more inclusive and interdisciplinary approach. Here this claim is challenged. Based on our experiences in Europe, we argue that the science, policy and practice of ecosystem services have progressed much beyond a mere economic and ecological rationale.

Keywords

Ecosystem services, Nature's contributions to people

Introduction

In a policy forum article recently published in Science Magazine by Díaz et al. 2018, nature's contributions to people (NCP) have been introduced as the contributions, both positive and negative, of living nature (diversity of organisms, ecosystems and their associated ecological and evolutionary processes) to people's quality of life. This definition, but also the proposed classification of NCP, is based on the definition and main categories of ecosystem services (ES). ES are commonly defined as the contributions and benefits of ecosystems to people, although more definitions exist. The ES approach aims to make biodiversity and the role of functioning ecosystems more visible in decision-making and planning at all levels of society, policy and business, by explicitly revealing the various values nature has for people. The authors present NCP as

a broader concept than ES, with more focus on the importance of culture and the inclusion of indigenous and local knowledge in one's understanding of the relations between nature and people.

Is there a need for NCP as a new framing of ES to be more inclusive in terms of incorporated knowledge and representation of worldviews, interests and values? Maybe yes. Terminology is important if there is a wish to engage different stakeholders in the sustainability debate. Green infrastructure (Tzoulas et al. 2007), natural capital or nature-based solutions (Maes and Jacobs 2017) are all concepts based on an ES approach, but they use adapted terminologies to mainstream biodiversity and ecosystem values in specific sectors. Often, simply avoiding scientific jargon is the best option to communicate complex findings and to convince people about the multiple values of nature. From this point of view, NCP is certainly a welcome alternative, especially if it aims to enhance ES approaches by constituencies, stakeholders or countries for which the term ecosystem services invokes too many connotations with "western science" (cf. Díaz et al. 2018).

In describing NCP, the NCP authors make three claims about the implementation of ecosystem services with which we disagree, at least in part. Here, these claims are challenged with experiences based on participation in different large-scale European research projects, as well as on the implementation of Action 5 of the EU Biodiversity Strategy to 2020 on mapping and assessment of ecosystems and their services in the EU member states. We conclude that, at least in the EU, ES research has progressed beyond a mere economic and ecological perspective.

Ecosystem services are more than a stock-flow framing

The NCP authors claim that "*ecosystem services are a predominantly stock and flow framing of people-nature relationships which largely failed to engage a range of perspectives from the social sciences, or those of local practitioners, including indigenous peoples*" (Díaz et al. 2018; P. 271). This claim is partly unjustified, at least when the experience and concepts developed in Europe are considered.

In Europe, where most of the published literature on ES has been produced (McDonough et al. 2017), several large research projects funded under the European Commission's programme for research and innovation have included social sciences. For instance, OpenNESS *[1], a now ended project with 37 partners from science, business and society, was led by social scientists and included a very strong, if not dominant, social sciences component, which was reflected in the scientific outputs that were produced (van Dijk et al. 2018). Moreover, the ES approach has connected ecologists, economists and social scientists in their efforts to understand how nature and people interact in coupled social-ecological systems (Spake et al. 2017).

The large scale investments under the EU Horizon 2020*[2] funding scheme to promote, for instance, nature-based solutions in cities further demonstrate that local implementation based on the knowledge of local practitioners is key to a successful

integration of biodiversity and ecosystems into policy-making and spatial planning. In the EU, cities are laboratories where an ES approach brings practitioners and local knowledge-holders together across sectors and policy domains (Raymond et al. 2017). This shows that the ES approach is not failing to engage perspectives from social sciences and local practitioners and is delivering most of its success stories at local level.

Admittedly, there is less evidence that knowledge of indigenous people is sufficiently taken up in regional ecosystem assessments. We agree with Díaz et al. 2018 that additional action is needed to include their perspectives in defining the relations between nature and people.

Social-cultural values and cultural ecosystem services

A second statement that we would like to challenge is that "*unpacking and valuation of some cultural ecosystem services not readily amenable to biophysical or monetary metrics have lagged behind*" (Díaz et al. 2018; P. 271). Novel and innovative methods have actually become available to assess social-cultural values that are applicable not only in the realm of cultural ES (Langemeyer et al. 2018). Admittedly, intellectual, spiritual or symbolic interactions with nature are much harder to quantify than regulating or provisioning ES, though not impossible (e.g. Chapter 6.2 in Burkhard and Maes 2017). For example, in addition to more traditional methods based on surveys and interviews, the collection of data extracted from social media or from mobile applications developed to share social values, experiences and observations in nature has opened new avenues to better understand how cultural ES are enjoyed by people, at least in some contexts.

Ecosystem services are inclusive and deliver multiple values

Díaz et al. 2018 present ES as a "*narrow economic approach*" built on a market-based value framework. However, already in 2013, the EU initiative on Mapping and Assessment of Ecosystems and their Services (MAES)*[3] addressed multiple values in its conceptual model. MAES has been an incentive for science and policy to enhance social, economic and natural science methods to map and assess ES at local, regional and national level. Of particular interest are the development or application of methods such as expert-scoring (Burkhard et al. 2009) or participatory GIS mapping (Brown and Fagerholm 2015), which ensure that shared social and cultural values of nature are being integrated in ecosystem assessments or in the implementation of plans. This is especially relevant in complex social-ecological systems such as urban ecosystems and agroecosystems where interactions between people and the environment are strong (Santos-Martín et al. 2013). As a result of the many real-world case studies and experiences, an integrated valuation framework for biodiversity and ecosystem services has emerged in which there is place for plural values of biodiversity and ecosystems (Jacobs et al. 2017).

A message for IPBES

The NCP concept is now adopted by IPBES, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*[4]. Our message to experts who will be involved in future assessments of IPBES is not to ignore the lessons learned and the achievements of ecosystem services research. Instead, the IPBES experts are invited to embrace the ES knowledge base, to complement and improve it and to use it in an inclusive and collaborative approach to support policies, initiatives and actions which aim to achieve a more sustainable future.

Ethics and security

The views expressed in the article are personal and do not necessarily reflect an official position of the European Commission.

Conflicts of interest

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Endnotes

*1 http://www.openness-project.eu
*2 https://ec.europa.eu/programmes/horizon2020/
*3 http://biodiversity.europa.eu/maes
*4 https://www.ipbes.net/