



The relevance of the ecosystem services framework for developed countries' environmental policies: A comparative case study of the US and EU



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ABSTRACT

The ecosystem services (ES) framework reveals ecosystems' benefits to society and presents a fundamental natural resource management approach. In the last several decades, it has gained increasing attention from the research community, and it recently reached the political agenda. However, does the concept have the capacity to cause institutional change in environmental policy? To answer this question, we developed certain criteria for an "ideal" ES-driven policy. Based on these criteria, we analyzed the main water and biodiversity acts, current policy developments, and future trends within the US and the EU. Our analysis shows that most acts cannot be explicitly characterized as ES-driven policies, but parts of the concept are already included. The ES framework, increasingly a driver in several policy fields, can be assumed to be a major future influence for shaping existing environmental policies in the coming decades. We discussed the results based on its strengths for existing environmental policy conceptually, e.g., cross-sector cooperation and ES win-win and trade-off considerations, and its weaknesses operationally, such as measurability and governance changes.

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Introduction

The use of the ecosystem service (ES) framework reveals the dependency of our human well-being on ecosystem structures and processes by highlighting their economic and social benefits for beneficiaries (e.g., Boyd and Banzhaf, 2007; Fisher et al., 2009). This benefit-oriented ES framework has received increasing attention in the last several decades. Originating from research, it was initially seen as a way to communicate "societal dependence on ecological life systems" (Gómez-Baggethun et al., 2010, p. 1209). However, it has recently spread to the private, financial, and governmental sectors through the Millennium Ecosystem Assessment (MA, 2003) and "The Economics of Ecosystems and Biodiversity" (TEEB)² reports (e.g., TEEB, 2009, 2010). Gómez-Baggethun et al. (2010) suggest its 'fit' with existing ideological and economic structures as a reason for its broad application. The question of the ES framework's true relevance for environmental policy-making

emerged accordingly. Especially in countries with pre-existing, wide-reaching environmental policies, it appears relevant to analyze whether and how they fit with the ES framework approach. Answering these questions can improve awareness of different policy options, understanding of threats, and recognition of appropriate action options.

Gómez-Baggethun et al. (2010) recently analyzed the development of the scientific ES framework in the literature, distinguishing three stages in the history of ES science: (1) the introduction of the overall ES framework by Ehrlich and Ehrlich (1981); (2) its shaping through the value of nature functions idea (e.g., King, 1966; Helliwell, 1969), and (3) the framing of ecological concerns in economic terms (e.g., Westman, 1977; de Groot, 1987). They perceive "mainstreaming" as driven by Costanza et al.'s (1997) paper on the value of global natural capital, its appearance on the international policy agenda (e.g., MA, 2003), the increasing literature presented by Fisher et al. (2009), and projects on ES (e.g., the Stern Review on Economics of Climate Change³ and TEEB). Lastly, they recognize a

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² The TEEB study was endorsed by G8+5 leaders at the Heiligendamm Summit on 6–8 June 2007, hosted by UNEP with financial support from the European Commission, Germany, the United Kingdom, Netherlands, Norway, Sweden, and Japan (<http://www.teebweb.org/>).

³ Sir Nickolas Stern, Head of the Government Economic Service and Adviser to the Government on the economics of climate change and development, led a major review on the economics of climate change to help understand more comprehensively the nature of the economic challenges and how they can be met in the UK and globally (http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics.climate.change/sternreview_index.cfm).

growing interest in the design of market-based instruments (MBI) or, in broader sense, economic instruments (e.g., Wunder et al., 2008; Bayon, 2004). They conclude that “ecosystem services have been bought and sold in markets for a long time although they were not called ‘ecosystem services’...” (Gómez-Baggethun et al., 2010, p. 1214) and quote exemplarily from both continents (e.g., the EU’s and US’s environmentally friendly agricultural schemes, Wetland Mitigation Banking in the US, European Climate Exchange). The potential of market-based instruments in addition to the suite of policy options available to resource management are described by different authors (e.g., Lockie, 2013).

Despite great differences between the landscapes (Nitsch et al., 2009) and environmental policy development in the US and Europe, we found ES-related policies in both analyzed regions (Weiland, 2007). The differences therein may be due to differences the political systems; Weiland (2007) denotes the US political system as a ‘competitive model’, whereas the European states follow various coordinating political approaches. The US political process is characterized by competition and concurrence and deep liberal-individualistic ideas (Weiland, 2007). The overall EU environmental politics is delineated as social integrative, principally targeting a coordination of interests, and perceived as shaped by European traditions, i.e., the state’s policy-making role and acknowledgment of political rights and duties (Weiland, 2007).

Starting from the basic assumptions that the ES framework (1) was developed from a science-based idea and (2) may already be partially included in existing environmental policies, we recognized a knowledge gap concerning the actual dissemination of the concept into national policies, beyond international/supranational programs and agreements. Certain governmental payment programs from developed countries have been categorized and surveyed based on payments for ecosystem services (PES) research (cf. Uthes and Matzdorf, 2013), but no comparative reflection of the interrelations between the ES framework and existing and developing environmental policy exists. While Hauck et al. (2013) give interesting insights into the different ES addressed by single EU policies, they only refer to particular ES provisions without including the different features of the policies that may promote the ES framework. Martín-Ortega (2012) discussed the potential of the ES framework regarding the European Water Framework Directive (WFD). Our comprehensive work may help determine where the concept is successful or unsuccessful and may suggest possible future improvements in environmental policy through the ES framework. Thus, we analyzed a broad range of current, ongoing, and potential future EU and US environmental policies regarding the influences of the ES framework and focused on EU and US biodiversity and water policies (including agri-environmental policies) to answer the following research questions:

- What should an ES-driven policy look like?
- Has the ES framework been applied to US and EU environmental policy?
- Is the ES framework influencing ongoing US and EU environmental policy?
- What is the ES framework’s potential for future environmental policy?

Methods

Our research was based on a multi-method framework, including a literature review, legal content analysis of the main US and EU water and biodiversity laws, and qualitative expert interviews with experts from relevant administrative entities and research (see Fig. 1). We chose a case study approach to capture the real-life political situation regarding past, present, and future development

(cf. Flyberg, 2006) by exploring individuals and organizations (cf. Baxter and Jack, 2008) and covering contextual conditions (cf. Yin, 2003). Initially, we needed a reference to compare the existing and developing environmental policy with an ES-driven policy, so conformity, similarities, and overlaps may be identified. Based on a literature review, we developed four conditions that an “ideal ES-driven policy” should fulfill. This definition (Section “An “ideal” ES-driven policy”), presented to experts interviewed, was changed and adapted according to their annotations and then validated as our reference level. Building upon it, we analyzed environmental laws and designed interview guidelines. This expert-approved “ideal ES-driven policy” definition will be our first result, delineating and framing further research processes.

To select the main laws concerning water and biodiversity protection for our case study, we looked at (i) the US National Environmental Protection Act of 1969 (NEPA), (ii) the US Endangered Species Act of 1973 (ESA), (iii) the US Federal Water Pollution Control Act (CWA), (iv) the EU Directive on the conservation of wild birds (BirdsD), (iv) the EU Directive on the conservation of natural habitats and wild fauna and flora (HabitatsD), and (v) the EU directive for establishing a framework for community action in the field of water policy (WFD).⁴ The respective agricultural policies, the US Farm Bill⁵ and EU Common Agricultural Policy (CAP),⁶ were not included in our stringent legal interpretation, as the laws do not mainly target environmental issues. However, due to their presumably strong impact on water and biodiversity protection, we discussed the corresponding agri-environmental parts within our qualitative interviews.

To find a systematic and logical way to interpret the legal documents, we utilized the German classical juridical interpretation methodology. The internal sense of the text is found (Kramer, 2010) using objective interpretation, including subjective elements (Rüthers and Birk, 2008). Four interpretational approaches, namely, literal, systematic, historical, and teleological (Kramer, 2010),⁷ could be used, but we confined our research to the literal and systematic approaches. Beyond jurisprudence, we could not use the interpretation methodology in a conventional way and therefore adapted it in a general manner as a research tool. We asked if the conditions of the defined ideal ES-driven policy could be subsumed under environmental laws. We looked at the preamble or introduction as the main expressional statement explaining the document’s purpose. We then determined if the following rules of the law aim to realize the ES framework ideas based on the preamble.

The qualitative data collection served mainly to assess the ongoing policy development and collect information on future policy implication, but it also aided in understanding the current

⁴ NEPA – Public Law 91-190, amended December 31, 2000; ESA – Public Law 93-205, amended through Public Law 107-136, January 24, 2002; CWA – amended through Public Law 107-303, November 27, 2002; BirdsD – 2009/147/EC; HabitatsD – 92/43/EEC; WFD – 2000/60/EC.

⁵ The Farm Bill is federal US legislation regarding the country’s agriculture and food policy (<http://www.usda.gov/wps/portal/usda/usdahome?navid=FARMBILL2008>).

⁶ The CAP is the EU’s agricultural policy, providing income support to farmers, furthering rural development, and supporting agriculture in its environmental and rural functions (http://ec.europa.eu/agriculture/cap-history/index_en.htm).

⁷ The “grammatical interpretation” looks at the wording and is generally the starting point of the interpretation. The literal sense results from the common linguistic usage, the legal linguistic usage, or the special linguistic usage of the rule as far as it is identifiable. The “systematic interpretation” assumes coherence in meaning among the different rules of a law. Contextual rules shall be construed as logically consistent. Thus, contradictions have to be avoided, and this approach provides a certain interpretation outcome. The “historic interpretation” is based on asking for the rule’s history of origins and the perceptions of the enacting persons, and the “teleological interpretation” looks at the understanding of the rule that best fits the aim of the law in an absolute and actual context, independently of time of origin (cf. Kramer, 2010; Zippelius, 2006).

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