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Critical Review

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THE ECOSYSTEM SERVICES ANALYTICAL FRAMEWORK IN ITALY. A HUMAN GEOGRAPHY PROSPECT

Abstract

This paper examines the ecosystem services (ES) analytical framework from a Human Geography perspective. It firstly aims to describe the development of the ES paradigm within international and Italian scientific debates. Although ES appeared in the international scientific debate in the early 1990s, they gained attention by Italian scholars later around 2011. During this period, the paradigm was harshly criticised and several controversial aspects emerged. Payments for ecosystem services (PES) schemes are one of the most frequently discussed topics. However, the limits highlighted by international literature have been rarely mentioned in the Italian debate. Furthermore, PES schemes were introduced through Law No. 221/2015. This output is the result of a social and cultural process that has shaped a strong utilitarian attitude toward ecosystems. For these reasons the paper focuses on the features of Law No. 221/2015 and on the other existing regulatory instruments, which can counterbalance its criticalities. In conclusion, the paper stresses the elements which should be considered in order to implement an effective ecosystems restoration.

Keywords: ecosystem services, cultural ecosystem services (SEC), co-benefits, social and cultural values, ecosystems restoration.

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Although the contribution is the result of a shared work, Valentina Capocefalo is the author of the sections 1-3 and 6, while Flaminia Leuti is the author of sections 4 and 5.

1 Introduction

Social sciences can significantly contribute to a robust understanding of the relationship between ecosystems and society (Pellizzoni, 2021). This is particularly the case because of the social matter of nature (Castree & Braun, 2001). The relevance of social sciences as well as humanities results even more true for the debate within a paradigm, that of ecosystem services (ES), which in Italy still sees ecologists and economists as principal interlocutors[1]. In particular, human geography can play a leading role in this perspective, given its theoretical origins in the study of relationships between ecosystems and human communities.

The ES analytical framework consolidated in the international scientific debate in the late 1990s. Subsequently, it was introduced in the Italian legislation through the Law No. 221/2015 titled "Environmental provisions to promote green economy measures and curb the excessive use of natural resources"[2].Therefore, this law clearly manifests the link between green economy and ES. The same relation has been underlined by Martin et al. (2024). In their study green economy represents one out of four comprehensive pathways to sustainability which have characterised the scientific debate in the last decades[3]. According to the authors, green economy uses payments for ecosystem services (PES)[4] schemes with the aim to highlight and valorise positive environmental externalities, which otherwise would be ignored.

The most recent ES scientific and political debate in Italy has been often focused on market-based solutions (Marino et al., 2024; ASviS, 2024). However, PES schemes have been harshly criticised from their earliest appearances (McCauley, 2006). Additionally, the international debate has produced both scientific publications and policy documents capable of incorporating demands from social and cultural scientific research fields.

Based on these premises, the contribution aims to: i) describe the development of the ES analytical framework within the international and Italian debates; ii) highlight the features of the Law No. 221/2015 and the other existing regulatory instruments, which can counterbalance its criticalities; iii) finally, stress the elements that should be considered in order to implement an effective ecosystems restoration. The paper focuses in particular on the socio-cultural factors and the heterogeneity of values, which constitute relevant issues within human geography studies.

This paper rests its foundation on the idea that the concept of nature is socially constructed (Bonati et al., 2021). Consequently, even the elaboration of the ES analytical framework and its introduction into the Italian legislation are not neutral processes.

The paper thoroughly examines legal aspects. However, it does not intend to place itself within the framework of legal geography for two main reasons. Firstly, this field of

1 The relevance of these disciplines for the development of the ES analytical framework has been underlined by Conti Pourger (2022).

2 The original title is: "Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali" (Law No. 221, approved on 28th of Decembre 2015).

3 The other three comprehensive pathways to sustainability are: i) nature protection; ii) degrowth; iii) earth stewardship and biocultural diversity. The latter is going to be presented later in the paper.

4 According to Marino and Palmieri (2018), PES can be described as "a transfer of resources between social actors that serves to create incentives to align individual and/or collective decisions with the management of NC [Natural Capital]".

research is difficult to define and circumscribe (Asoni, 2024). Secondly, laws are not the starting point of the analysis. Rather, they are seen here as the result of a social and cultural constructive process (Priel, 2019), which is analysed through a human geography prospect.

2 The ecosystem services analytical framework within the international scientific debate

The first references to terms and concepts similar to ES are contained into the studies conducted by Wilson & Mattews and by Westman in the 1970s (Lai, 2016). Although the term *ecosystem services* appeared for the first time in a contribution written by Ehrlich & Ehlich in the early 1980s (Pellizzoni, 2021), the ES analytical framework gained attention later starting from the early 1990s (Daily et al., 1996). Daily defined ES as "the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life" (Daily, 1997, p. 3). Some of the most important ES highlighted were air and water purification, fertile soil generation, pollination processes, seed dispersal and nutrients transportation. This initial non-structured listing of ES later led scholars to express the need of "describing, classifying and valuing ecosystem functions, goods and services in a clear and consistent manner" (de Groot et al., 2002, p. 393).

A well-known assessment of the ES globally produced was subsequently developed by the Millennium Ecosystem Assessment (MEA) within the report *Ecosystems and human well-being* (2005). ES are here defined as "the benefits people obtain from ecosystems" (MEA, 2005, p. 27). Additionally, the report identifies four different categories of ES: i) provisioning services (e.g. food provision); ii) regulating services (e.g. pollination processes); iii) supporting services (e.g. nutrient, air and water cycling); iv) cultural ecosystem services (CES) (non-material benefits, e.g. recreational benefits).

The study *The Economics of Ecosystems and Biodiversity* (TEEB) was later presented during the Conference of the Parties of the Convention on Biological Diversity held in Bonn (2008) (Sukhdev et al., 2014)[5]. It is here evident a passage from a mere scientific operation of cataloguing benefits as ES to expressing their value mainly through economic tools. This change was particularly encouraged by scholars how felt the need to elaborate practical instruments which could be used by policy-makers in order to implement environmental-friendly strategies and politics (Daily et al., 2007). In the following years ES analytical framework was adopted by several international organisations (Jax et al., 2013; Tomao et al., 2013).

Therefore, on the one hand the wide spreading of ES completed their consolidation process on a scientific and political level. On the other hand, it exposed them to much criticism. Noorgard (2010) notes how the reflections promoted by ES scholars discouraged them-selves from studying how to prevent anthropic pressure on ecosystems and how to relate with the ongoing environmental changes. He states that mainly compensatory logics and strategies were in that moment promoted. Ernstson and Sörlin (2013) highlight the few attentions given to the peculiar social and cultural dimensions of the territory investigated through the ES lens. In their opinion ES have to renounce to their global claims, given

5 The report has been preceded in 2003 by the Handbook of National Accounting: Integrated Environmental and Economic Accounting (Conti Pourger, 2022).

the social nature and consequently the positionality of any scientific analytical framework. Kolinjivadi (2019) stresses the use of the term *service*, which entails in his opinion an unbalanced power between humans and ecosystems. West et al. (2020) also highlight this aspect. The authors state that "language does not simply reflect the world but actively intervenes in and shapes it – it is 'performative' [...]. Language is therefore vital when it comes to understanding and responding to complex sustainability challenges" (West et al., 2020, p. 314).

While the term *value* was initially used implicitly meaning its instrumental and economic dimension, scientific literature later highlighted other relevant aspects. Relational values[6] emerged as a mediation between the most exploiting attitudes towards the ecosystems and the existence of an intrinsic value of nature, untied from any type of material and non-material use of the ecosystems (Chan et al., 2016). Additionally, bequest values (Swift, 2004; O'Garra, 2008) constitute a useful concept to understand caring for future generations.

Critics leaded the ES analytical framework in two main directions. On the one hand, they stimulated the emerging of a paradigm called *Nature's Contribution to People* (NCP) (Díaz et al., 2015), which includes and expands the ES one (Díaz et al., 2018). On the other hand, the critics made it possible to develop a greater awareness of the deep and complex relationship between society and ecosystems even within the ES analytical framework (Kenter et al., 2016). In the same period, more articulated categorisation of ES also emerged (Haines-Young & Potschin, 2018). As it is known, socio-ecological relationships have also been deeply studied by scholars outside the analytical frameworks already mentioned. In particular, Nicklay et al. (2020) highlight the concept of *co-benefit* between humans and the ecosystem. Likewise, West et al. (2020) stress the importance of care, which "is not simply an emotional sentiment in the individual human mind, but an embodied, collective and reciprocal practice involving humans and nonhumans" (West et al., 2020, p. 314).

NCP was in particular developed within the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The international organisation was created in 2012 as an independent body linked to the United Nations. IPBES aims to develop scientific knowledge on socio-environmental issues, empower governance strategies and promote communication and dissemination practices related to ecosystems and biodiversity (Washbourne et al., 2020). ES constitute one of the several ways to look at socio-ecological relationships within this framework. They do not constitute the exclusive one. Indeed, NCP recognises several ontologies and epistemologies of nature (West et al., 2020).

Both NCP and a part of ES scientific publications can nowadays be included into the earth stewardship and biocultural diversity comprehensive pathways to sustainability, which has been individuated by Martin et al. (2024). The interest today is generally no longer for top-down data collection at large geographical scales. On the contrary, there is a growing sensitivity to practices of knowledge co-creation through multi-, inter-, trans-disciplinary approaches at the local and sub-local scale (Zolyomi, 2022).

6 "Relational values refer to a normative human sense of connection or kinship with other living things, reflective and expressive of care, identity, belonging and responsibility, and congruent with notions of what it means to live a 'good life'" (West et al., 2018, p. 30).

3 The ecosystem services analytical framework in Italy

The international debate marginally influenced the Italian one, where only the ES analytical framework was assimilated. Although some studies highlight social and cultural aspects, the Italian scientific and especially political debates appear to be weakly influenced by these factors (Cerreta et al., 2020).

Two notable exceptions are worth mentioning. On the one hand, some authors deeply analyse the social and cultural features of ES analytical framework from a theoretical point of view (Poli, 2020; Longo & Parenti, 2022). On the other hand, some scholars focus their attention on CES detection practices at the local scale (Canedoli et al., 2017; Dal Borgo et al., 2023) and their relation with social equality and justice (Benetti & Langemeyer, 2021; Benati et al., 2024). Part of these studies emphasises the importance of qualitative survey methods and tools such as participatory mapping (Kenter et al., 2016; Ryfield et al., 2019). This research tool has been used by Italian geographers in order to study the values associated with socio-ecological relationships, even outside the ES debate (Mazza & Zanolin, 2023). However, "although the importance of CES is recognised, starting with the MEA itself, and as scholars' attempts to measure them grow, the role of CES is largely underestimated in land-use decisions, and it risks losing an important part of the relationship that binds ecosystems and humanity" (Borghini et al., 2021, p.26).

One element prevails within the Italian debate. This is the aforementioned idea that the only way to make evident and to valorise environmental positive externalities is to assign them a monetary value (de Groot et al., 2012; Poli, 2020)[7]. This idea originally stems from a similar one expressed by Goulder and Kennedy (1997). In contrast to more recent formulations, they assigned to the public sector an important role in enhancing the positive externalities generated by ecosystem functions and goods.

Nowadays the monetary value generally considered most appropriate is the exchange value. According to Ring et al. (2010), choosing PES schemes as priority tools allows to come to terms with the market rules which are dominant today, while waiting for more complex socio-economic changes to take place. Therefore, although PES schemes have been strongly criticised also by Italian scholars (Pellizzoni, 2021), the rationale which supports them was placed at the heart of the Law No. 221/2015. The attempts to imagine solutions aimed to triggering a long-term social and cultural transformation are rare.

4 The features of the Law No. 221/2015

Law No. 221 of 28th December 2015 addresses ES within Articles 67 and 70. Article 67 establishes the Natural Capital Committee, tasked with producing annual reports on the state of Italy's Natural Capital, using both physical and monetary indicators. Article 70 delegates authority to the government to introduce a Payment System for Ecosystem and

7 The same concept has been expressed also by Comandulli et al. (2022). Indeed, they state that "the idea which lies at the basis is that, by adopting a common unit of reference and system of measurement (one to which the various stakeholders are accustomed), the value of nature can be better understood and made to be understood, enabling it to be protected and conserved more effectively" (ivi, p. 26).

Environmental Services (PSEA)[8] . This article outlines ten guiding principles, envisioning a mechanism that remunerates added value derived from transforming ES into marketable products, while ensuring their long-term preservation[9] . The same law also provides that the public operator must recognize the role played by agriculture in relation to ES through incentive mechanisms for farmers who protect or provide such services. Additionally, it establishes that the final beneficiaries of the PSEA schemes are municipalities, municipalities unions, protected areas, integrated mountain basin foundations and collective management organizations of common goods, regardless their denomination. A similar provision is addressed to the Regions in relation to forest management activities[10] .

Law No. 221/2015 presents two critical features. Firstly, the guiding principles simultaneously treat ES as market products while acknowledging their public function, creating a conceptual ambiguity. Secondly, the law fails to introduce a clear legal definition of ES, which would help delineate the boundaries and scope of PSEA schemes. References to ES appear in the National Biodiversity Strategy (2011–2020) and its updated version (2030)[11] .

Despite the absence of a legal definition, the first Strategy highlights the role of PES as economic instruments capable of realigning public interest with the private ones. According to the text, adopting PES schemes implies "transforming the ecosystem service into a true market product". Additionally, it also means "recognizing the right of the service provider to demand economic compensation from the consumer of the good". Therefore, these documents reinforce a primarily economic perspective, emphasizing the transformation of ES into marketable goods based on supply and demand dynamics.

5 The Italian Constitution opens the way for social sciences within the legal system: constitutionally compliant interpretations of Law No. 221/2015

While a long-term social and cultural change is certainly desirable, relevant elements for a transformative approach toward ecosystems can already be found in the current Italian Legislation. Indeed, a constitutionally oriented interpretation of the Law No. 221/2015 could already allow human geography to provide a significant contribution to the understanding of the relationship between ecosystems and society. Moreover, it would pave the way for a radically different conceptual and normative approach. An analysis of the current legal context already reveals the possibility of overturning the model focused exclusively on the remunerative potential of ES. It would also permit to empower CES through placing the relationship that binds ecosystems and humanity back at the core. As is well known, with Constitutional Law No. 1 of 11th February 2022 a third paragraph was introduced to Article 9 of the Italian Constitution. This paragraph provides that the Republic "protects

8 The acronym refers to *Pagamento dei Servizi Ecosistemici e Ambientali.*

9 The description given by law is close to that given by literature for PES (see note 4). Therefore, the two are considered here equivalent.

10 See paragraph 8 of Article 7 of Legislative Decree No. 34 of 3rd April 2018, which refers to the Article 70 of the Law 221/2015.

11 The latter has been adopted by the Ministerial Decree No. 252 of 3rd August 2023.

the environment, biodiversity, and ecosystems, also in the interest of future generations[12]". Moreover, the amendment to Article 41 of the Constitution introduced by the same Constitutional Law imposes human health and environment protection as additional limits to private economic initiative. In particular, the amendment to the third paragraph of Article 9 established that the law may direct and coordinate economic activities not only for social reasons but also for environmental purposes. This means that private economic initiative cannot be conducted in a way that damages the constitutionally significant spheres of human health and environment. Therefore, ecosystems and biodiversity (included in the normative concept of environment) protection constitute a value it-self. Furthermore, it represents a primary value constitutionally protected and not merely a res that generates purely economic value.

Given the fact that ES are provided by the ecosystems, they too must be legally treated as components of constitutionally protected values. It implies the necessity to reverse the concept of economic value to that of constitutional value. These objectives can be achieved through interpretative means, given that Law No. 221/2015, as an ordinary law, must be interpreted in a constitutionally compliant manner according to the principle of the hierarchy of norms.

Article 9 of the Constitution, being one of the fundamental principles, ensures that the protection and promotion of the goods and values it references (the environment, including ecosystems and their biodiversity) simultaneously become: i) a directive for the legislator; ii) a prescriptive norm capable of determining the decisions of various subjects within the legal system; iii) a criterion of legitimacy for the Constitutional Court. These key legal elements permit the reinterpretation of the contents of the Law No. 221/2015. Only in the light of this legal interpretation, the same law would promote an approach that goes "beyond the minimization of harm, capable of producing in harmony with and in favor of the regeneration of ecosystems and human communities" (Dal Borgo, 2021, p.18). This implies a sort of Contribution of People to Nature (CPN), and not just Contributions of Nature to People (CNP). Ecosystems and biodiversity thus become objects of rights at the highest level of legal protection within the Italian legal system. This condition entails the fulfillment of duties, which are imposed both on public entities responsible for safeguarding and on each citizen. The latter are called to take it into account in any conduct-related decision (Nazzicone, 2022).

6 From services to co-benefits. Moving beyond the utilitarian approach

Although knowledge about socio-ecosystems has been the subject of a large scientific production over the past fifty years, environmental protection policies do not seem to have grown in effectiveness, either on the global scale or in many cases on the regional and local ones[13] . Their lack of success would account for the ineffectiveness of the persuasive power

12 The clause referring to the interest of future generations implies a dynamic, promotional perspective, which places responsibility on both the State and citizens.

13 The fifth report on the condition of the Italian Natural Capital states that "much progress has been achieved, but the actions implemented are still insufficient to effectively counteract the pressures acting on species

of economic instruments (Muradian & Gómez-Baggethun, 2021). Additionally, there is little awareness of environmental issues such as the depletion of ecosystems and biodiversity loss among citizens when compared to other issues such as climate change (Bekessy et al., 2018). This implies a lack of disseminated understanding of the strong relationships between different phenomena that occur within the ecosystems and the effects they all have on humans and non-human entities.

The social and cultural long-term transformative process which is required for a more balanced relationship between humans and the ecosystems could find its genesis in a normatively correct interpretation of current laws. This choice would allow for the inclusion of the many stimuli that emerged within the international and national scientific debate in the last decade. Indeed, it is increasingly urgent to start thinking no longer in terms of services, but in terms of co-benefits.

A rigorous legal interpretation of the constitutional amendment can promote effectively transformative approaches that are not merely confined to the commodification conceptualization of nature. This would lead to a deep redefinition of the contents of Law No. 211/2015. This change could be significantly enriched by inputs provided by human geography. Indeed, it can accompany and support the appropriate interpretation of the law through a sound knowledge base of socio- ecological relationship, both in terms of theory and research methodologies. In particular, human geography plays a key role in rebalancing the relationship between human communities and ecosystems, enhancing heterogeneous environmental values and promoting earth stewardship and biocultural diversity as leading path within both the scientific and political debates.

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and ecosystems. More incisive, integrated, assessable and effective actions are urgently needed to turn the tide over the next decade if national and European strategic targets are to be met" (MATTM, 2022, p. 20).

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