Oltre la globalizzazione

Transizioni
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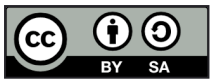

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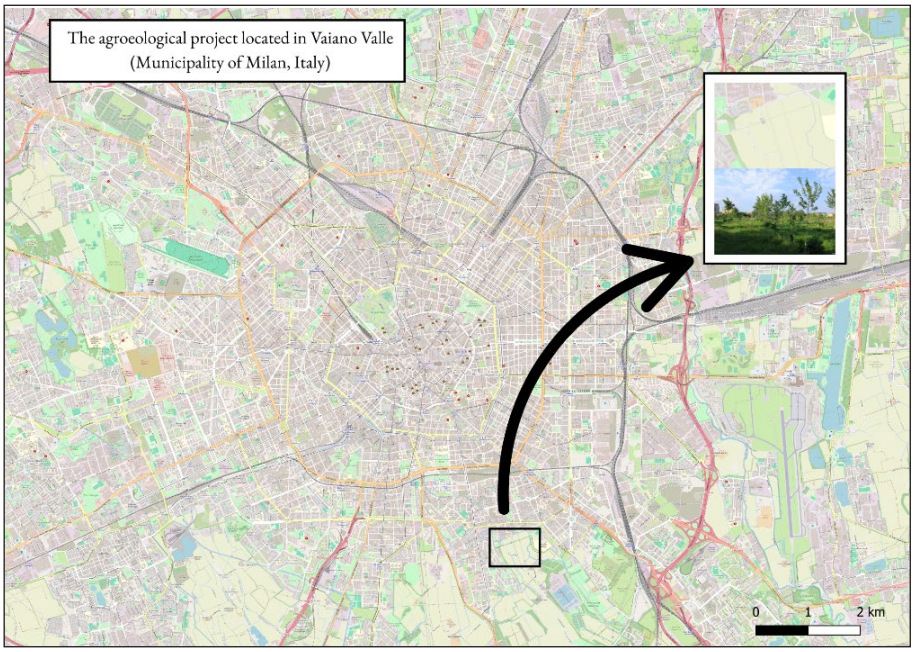
HOVERING BETWEEN THE NEED TO ASSESS AND THE WILLING TO COMPREHEND. POTENTIALS AND LIMITATIONS OF THE ECOSYSTEM SERVICES ANALYTICAL FRAMEWORK

1. Introduction. – This contribution stems from thoughts which have been shared among the authors during the international conference titled *Socio-ecological systems and agro-pastoral resources in the challenges of rural areas* (Italian Geographical Society, 3rd-4th October 2024). Two elements there emerged. On the one hand, the need to assess benefits provided by ecosystems and biodiversity to human beings in order to promote greater awareness about their protection and restoration. On the other hand, the difficulty of developing analytical frameworks that are both a) comprehensible and acceptable to a wide range of stakeholders and b) capable of ensuring environmental justice.

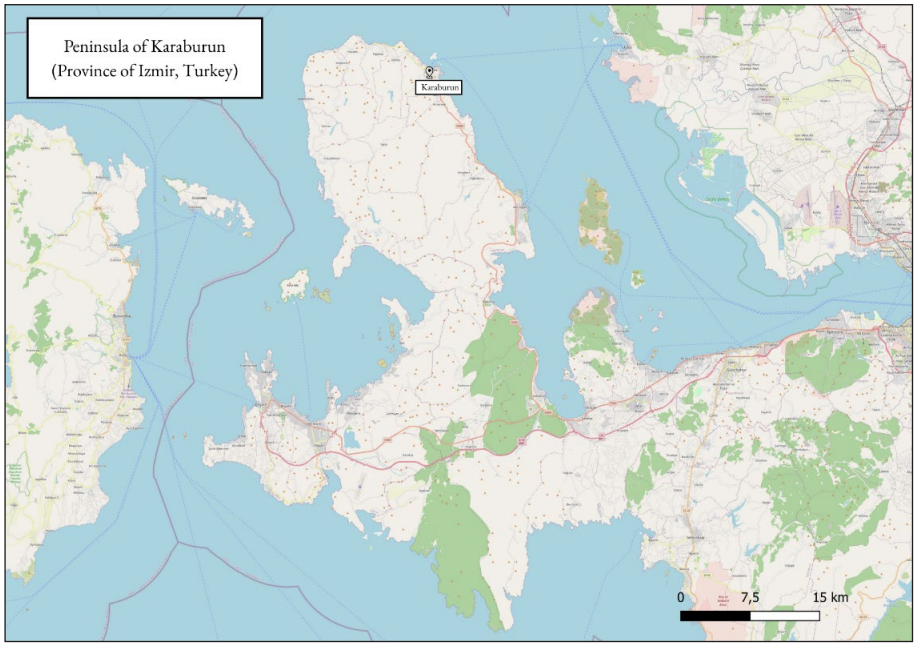
Given these premises, the comparative analysis here presented pursues two main aims. First, it briefly highlights the milestones of the ecosystem services (ES) analytical framework development and the controversial aspects which have emerged along almost four decades. Second, it shows how the consciousness of all these elements have influenced the researches conducted within an agroecological project located in Vaiano Valle (Municipality of Milan, Italy) (Fig. 1) and the Peninsula of Karaburun (Province of Izmir, Turkey) (Fig. 2). The latter has been conducted by Heval Yildirim, within her PhD research project under the scientific supervision of Mélanie Requier-Desjardins.

The final scope of this contribution is to fuel the national and international debates on scientists responsibility within socio-ecological studies, which directly involve local communities through different research methodologies and tools.



Source: author's elaboration with QGIS 3.34.13 based on OSM data.

Fig. 1 - The agroecological project located in Vaiano Valle within the metropolitan area of Milan



Source: author's elaboration with QGIS 3.34.13 based on OSM data.

Fig. 2 - The Peninsula of Karaburun (Province of Izmir, Turkey)

2. Potential and limitation of the ecosystem services analytical framework. – ES have a long history, which finds its deepest roots in the 1970s (Daily, 1997) and in the ecological economics movement (Costanza, 1991). These have been defined as:

- "the conditions and the processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life" (Daily, 1997, p. 3);
- "the benefits people obtain from ecosystems" (MEA, 2005, p. 27);
- "the benefits of nature to households, communities, and economies" (Boyd and Banzhaf, 2007, p. 616).

Until present days, ES have gradually emerged from ecological economics as an autonomous area of research. ES analytical framework consolidated particularly during the 1990s, through the efforts made by scholars such as de Groot (1992), Daily (Daily, 1997; 2000; Daily *et al.*, 1996) and Costanza (Costanza *et al.*, 1998). The need to efficiently assess ecosystems functions and goods (de Groot, 2002) and to attribute them an economic value (Daily *et al.*, 2007) later led to the publication of the reports *Ecosystems and Human Well-being* (MEA, 2005) and *The Economy of Ecosystems and Biodiversity* (TEEB) (Ring *et al.*, 2010; Sukhdev *et al.*, 2014). As is well known, four categories were identified: supporting ES, regulating ES, provisioning ES, and cultural ES. The purpose of scientists' efforts was to balance human and economic development, and in this context, to link economic development to the finitude of the planet resources and to envision society and culture as both a connected and universal element of the societies' ecology.

From a policy perspective, an explicit reference to the term "ecosystem services" appeared for the first time in chapter 15 of *Agenda 21* (United Nations, 1992) and the term has been diffused later among different international agencies (e.g. FAO, 2010).

Several limitations were detected within the ES analytical framework starting from the early 2000s. A fist critical area concerns the dominant role played by ecology and economy (Conti Puorger, 2022) and the development of carbon credits markets and Payments for Ecosystem Services (PES) schemes (Gómez-Baggethun, 2017). Although these elements played a pivotal role in the debate between 1990s and 2000s, geographers such as Dempsey and Robertson (2012) have highlighted a more complex scenario, where heterogeneous approaches and theories coexisted. Indeed, different ES definitions, indexes and assessment methodologies have been proposed along the time, although just some of them have reached a worldwide recognition by scientists and politicians.

A second critical area deals with three interrelated aspects: a) science neutrality; b) the geographical scale of the surveys conducted; c) the underestimation of social, cultural and political dynamics. All of them inquire the relationship between the terms "ecosystem services", "benefits" and "value/values" (Chan *et al.*,

2012). ES represent a scientific analytical interpretation of every-day life benefits experienced by people, who could not be familiar with the same social and cultural milieu which has generated them. This discordance has been particularly underlined by Ernstson and Sörlin (2013). The same has been highlighted by Norton (2005, p. 298):

> Values are not the kind of thing we find pre-packaged and countable; the way we think about values is thus deeply affected by the theory of value we assume or choose. So, I begin by questioning whether the topic at hand can be answered simply by reference to a few categories or types of environmental and natural values. When environmental values are identified and measured within the framework of a theory, using the technical vocabulary of that theory to express those values, it is inevitable that the assumptions of the theory will implicitly limit and shape our thinking about those values.

Given these fundamental premises, ES large-scale survey exclusively based on quantitative data cannot be representative of the complexity of the socio-ecological relationships which characterise a specific territorial context (which ties and embeds the social and the environmental dimensions). On the contrary, quantitative and qualitative research methodologies and tools can be used together to gain a deeper comprehension of them. The richness and complexity of social and cultural dynamics lead to a move from paying high attention mainly to the economic *value* of natural resources to paying high attention to the heterogeneity of *values* featuring socio-ecological relationships.

They can be summarised as follows:

- utilitarian (MEA, 2005) or instrumental values (Norton, 2005; Chan *et al.*, 2012) which refer to the use of natural resources by human beings;
- relational values, which 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);
- bequest values, which represent "the value attached to preserving a good or service for use by future generations, independent of one's own use of the good/service" (O'Garra, 2009, p. 179);
- transformative values, which describe "the value of a thing for the way it changes how we think" (Chan *et al.*, 2012, p. 10);
- intrinsic values, which refer to "inherent property of the entity (e.g., an organism), not ascribed by external valuing agents (such as human beings)" (Brondízio *et al.*, 2019, p. 73).

The latter can express for some local communities or individuals the recognition of a sacred ideal, which in the opinion of Martinez-Alier (2002) lacked in the ES analytical framework until the early 2000s. Martínez Alier (2002) have also stressed the issue of environmental justice, which has been later coupled with the ES analytical framework by Sykor (2013). Understanding whether critical reflections have been later co-opted or not is beyond the scope of this contribution. What is important to highlight here is how the scientific and political debates have focused increasingly on the needs of local communities and the urgency to meet them, bearing in mind the constraints of the current socio-ecological crisis (Rauschmayer and Omann, 2017).

3. Vaiano Valle (Municipality of Milan, Italy). – The ES analytical framework has been introduced in Italy in the early 2010, at the peak of its consolidation process in the international debate and in the international policy arena. The same has deeply affected the Law no. 221/2015, which rules green economy at the national scale (Capocefalo and Leuti, 2024).

The participative research conducted in Vaiano Valle, at the south-eastern edges of the Municipality of Milan, has been detailly described elsewhere (Dal Borgo and Capocefalo, 2023; 2024; Dal Borgo *et al.*, 2022; 2023). The area constitutes a key ecological and social spot, since it lies at the border between the South Milan Agricultural Park and the urbanised periphery of Milan. The research activities have been conducted starting from 2020 and they imply the use of participatory observation, questionnaires and community mapping. The research team members have been actively involved in the implementation of the 2 ha agroforestry system, which has been promoted by Soulfood Forestfarms and CasciNet. The latter has been allocated a total of approximately 9 ha within the same area by the Municipality of Milan. Therefore, the ownership of the wider area is public but its management is hybrid, since involves heterogeneous local actors.

The main objective of the project is to regenerate the overused agroecosystem here located through the application of agroecological and complex agroforestry principles and the implementation of related practices. Accordingly, high relevance is generally attributed to regulation ES by project developers as well as by the

other local actors engaged in it. At the same time, the organisation of several social and cultural initiatives (workshops on agroecology, artistic performances and cultural events) have permitted to generate cultural ES in this area, which are currently being investigated. Relational, bequest and transformative values have played a pivotal role in this regard. Indeed, they have characterised in a significant way both the experiences of respondents and researchers. The transdisciplinary analytical methodology developed by the group involves an initial phase of parallel study of ecological and cultural characteristics with reference to:

1. the agroecosystem components (flora-vegetation, human community);
2. their organization at the landscape level (eco-mosaic of the landscape, cultural landscape);
3. their socio-ecological functions and processes.

The analysis led to the identification of significant ecological and cultural functions associated with the main types of land use. This served as the starting point to translate the analytical results into a qualitative and explicit assessment of ecosystem services. The objective of the transdisciplinary analytical methodology is also to provide operational tools that guide and encourage public administrations, policies, and private initiatives toward the planning and implementation of agroecological actions, through substantial and coherent socio-ecological information.

A relevant turning point is represented by the implementation of the initiative "AdottaUnaGallina!" (*Adopt a hen!*) in 2022, which introduced mobile hen houses within the local agroforestry system. Hens health is monitored by researchers through a dedicated research project on sustainable feeding strategies based on hemp products according to agroecology farming principle[1]. This change permitted to enhance provisioning ES (feeding) in order to support the local community. Indeed, project keepers (i.e. individuals or families which have chosen to pay yearly a fee to support the project) have two choices: a) they can receive the eggs produced; b) they can donate them to local associations supporting individuals and families with economic difficulties. The project "AdottaUnaGallina!" has significantly transformed a section of the city by introducing mobile chicken coops at the southeastern fringe of Milan. The landscape, already extensively reshaped by the establishment of a stratified agroforestry system, gained further distinctiveness and attractiveness. Thanks to the project, Milan's first neighbourhood chicken coop was established, housing 120 chickens distributed across 6 mobile coops integrated within a complex agroforestry system aimed at producing fruits, fibers, and biomass. This system regenerates the area's environmental quality by providing essential ecosystem services such as microclimatic regulation, restoration of organic soil fertility, carbon sequestration, recovery of functional biodiversity, enhancement of landscape aesthetics, community bonding, and socio-territorial cohesion.

A community of 253 supporters was involved, raising awareness on topics such as circular resource management in regenerative production systems – both agronomically and economically – ethical animal production, and ethical and sustainable purchasing practices. This initiative led to the creation of Milan's first community of chicken keepers, inspired by Community Supported Agriculture (CSA), implementing an authentic and supportive socio-territorial regeneration model. Over 200 eggs per week are donated to other neighborhood associations assisting vulnerable populations. This hyper-local supply chain model allows citizens direct interaction with the coop managers, making it replicable in other contexts as well.

The complexity and significance of the "AdottaUnaGallina!" project make it a relevant and scientifically valuable case study for agroecological practices and regenerative agroforestry, demonstrating notable ecological as well as socio-territorial impacts. It has successfully addressed and overcome challenges related to structural and management requirements in terms of biosecurity and avian flu containment, as required for poultry farms exceeding 50 animals.

Nowadays the agroecological project located in Vaiano Valle generates a wide range of heterogeneous ES, which are constantly investigated by the researchers of the University of Milan from different disciplinary prospects. ES constitute a well-established analytical framework both among local institutions and project leaders. However, the geographers of the University of Milan pay increasing attention to split on the one hand, ES as an effective narrative and, on the other hand, benefits as they are concretely perceived by stakeholders according to the values they consider important.

[1] The research project is titled "HappyHens" and it has been implemented by an interdisciplinary research team of the University of Milan coordinated by Raffaella Rebucci (Department of Veterinary medicine and animal sciences). It was launched in 2024 and it is financed by the grant SoE-SEED – Line 3 of the same institution.

4. Peninsula of Karaburun (Turkey, province of Izmir). – In the majority of the world rural areas, ES concept has been imported and yet, at the beginning of the 2010s, it was even still unknown from the majority of national bodies in charge of sustainable development, except for those segments in charge of the follow up and monitoring of the Rio UN conventions, which have adopted the concept and mainstream it. As a top-down process, the notion of ES has progressively and widely been disseminated at centralised levels and through international cooperation projects.

Meanwhile, lots of scientific works have recognised that in most remote rural societies from developing countries still left aside from the globalised market, communities have developed specific links with nature and most often were living and acting as one part of the natural environment their survival was depending on. These studies indirectly question thus the relevance of ES notion and approach from the cultural and social contexts in which projects operate based on sustainability concept.

Following the international cooperation and related ES and sustainability approach, Yildirim (2016) has developed the concept of basket of ES (Yildirim *et al.*, 2023) to promote sustainable and territorial agricultural products in order to improve the living conditions of farmers in the Peninsula of Karaburun.

The assumption behind her work was to consider the notion of ES as relevant for designing concerted sustainable rural development objectives. Thus, the local perception of ES was first investigated, following two main stages:

1. An adaptation of the ES assessment (MEA, 2025) to the Karaburun Peninsula characteristics according to key actors, local scientist and international experts, and complemented by literature review[2].
2. A survey over 95 local stakeholders of the Karaburun Peninsula about their ES perceptions, through a multi-actor sample (Tab. 1). This survey was divided in two main parts: a) their three main concerns about the development issues of the Peninsula and the importance of environmental issues (ranking of priorities) in order to introduce the topic and their knowledge of the expressions "sustainable development" and "ecosystem services"; b) their perception over the importance (low, medium and high) of the ES as defined in the assessment[3] (Tab. 3).

Tab. 1 - Interviews sample

Stakeholder category	*Number of interviewees*	*In percentage of total*
Farmers	29	31
Merchants	19	20
Tourists	11	12
Village head (chief)	14	15
Associations	7	8
Cooperatives	6	6
Municipality	5	5
Chambre de commerce	1	1
Agriculture extension service	1	1
Political party	1	1
Total	100	100

Source: Yildirim *et al.*, 2017.

Priorities were selected based on an open question to the interviewees and classified according to their sustainability dimensions: social, economics, environment and the governance (Tab. 2). The results over the

[2] The notions of carbon sequestration and coastal protection and marine biodiversity (regulation ES) were not considered as relevant because the topic was directed towards agriculture, and because carbon sequestration was considered too abstract for the farmers to make an opinion.

[3] Before asking them to answer, they were provided with a short and similar explanation of what are ES and how it relates to human development according to the MEA definition (MEA, 2005).

Tab. 2 - Main concerns about the development in the Peninsula (I: investment)

	Social	*Economic*	*Governance*	*Environment*			
	Rural and youth exodus	*Lack of material*	*Lack of concerted development plan*	*Too much in wind turbines (pasture problem)*	*Destruction of natural spaces*	*Lack of protection of the area*	*Pollution*
Farmers	1	3	—	2	—	—	—
Inhabitants	3	2	1	—	—	—	—
Merchants	2	1	—	—	—	3	—
Tourists	3	2	1	—	—	—	—
Village heads (chiefs)	2	1	—	—	3	—	—
Associations	1	—	2	—	3	—	—
Cooperatives	2	—	—	1	—	—	3

Source: author's elaboration from Yildirim *et al.*, 2017.

priorities showed that although the environmental issues are predominant in terms of number of declared concerns, they are poorly ranked. None of the interviewees was aware of the notion of ES.

The results over the level of importance of ES show most of them are considered of medium importance, which is probably due to the sample little knowledge of this concept (Tab. 3). Still, it is worth noted that provisioning ES and cultural ES are the best ranked in general. Among provisioning ES, those that are contributing to food security and are commercial result as very important ES whereas water and medicinal plants are considered of little importance. This can be related to the fact that they are still abundant and part of common resources (Ostrom, 1990) with free access for farmers in particular. Among cultural ES, recreational spaces and landscapes are the highest ranked. For space for inspiration and cultural heritage services, merging cultural identity, cultural heritage, spiritual services and inspirational services (MEA, 2005), they have been ranked quite low probably because these notions remain usually abstract and especially in our case dealing specifically with farming and the environment.

Tab. 3 - The perception of Karaburun terrestrial ES (%)

Terrestrial ES of the Karaburun Peninsula	*Little importance*	*Medium importance*	*High importance*	*Total*
Provisioning ES				
Crop production for feeding	6	41	53	100
Ornamental plants	7	75	18	100
Medicinal plants	43	46	11	100
Water resources	53	39	8	100
Regulation ES				
Soil maintenance and erosion control	14	55	31	100
Nutritional cycles	16	55	29	100
Cultural ES				
Recreational spaces, including ecotourism	7	50	43	100
Space for inspiration and cultural heritage	41	34	45	100
Landscapes (scrubland and garrigue, forests and farmland/coastal areas, caves and beaches)	4	54	42	100

Source: Yildirim *et al.*, 2017.

From these results, it appears that ES that are non-merchant and less visible are generally not considered as important ones by stakeholders. Additionally, it shows that the concept of ES belongs to an expert's terminology more than acting fully as an operational notion. This is in return questioning the relevance of using it at local level with stakeholders[4]. Research experiences make possible to state that the regulation ES appears the most difficult ones to be understood and, therefore, recognised by stakeholders when they are not connected to direct human risks.

The notion of ecotourism, one of the cultural ES identified, was well ranked and was also underlined as a main direction for local development (Tab. 4). When the respondents were asked to answer how they would envision the future of the Peninsula (open question), ecotourism was mentioned as the second most promising sector after (beach) tourism. This result underlines thus the importance of working on cultural ES to enhance an improved understanding of this systemic notion among stakeholders.

Tab. 4 - Perspectives over the Karaburun Peninsula development (%)

Activities/sectors	*50 years before*	*Today*	*Future*
Agriculture	98	46	6
Fishing	2	—	—
Tourism	—	40	67
Ecotourism	—	—	25
Home vacation	—	2	1
Construction	—	7	1
Real estate	—	5	—
Total	100	100	100

Source: Yildirim, 2017.

5. Conclusions. – The ES analytical framework has a long and complex history, during which positionality, conceptual basis and terms adopted have been deeply questioned. The legitimacy of the criticism raised is confirmed by field research. Indeed, we have seen how ES paradigm is not uniformly recognised by all the stakeholders engaged in different areas of the world. Significant differences are also found with respect to the perception of specific benefit categories. Importance attribution is mainly linked in both areas to the consciousness of a direct benefit linkage between ecosystem's functions and goods and local communities. However, especially in the case of Vaiano Valle relational and transformative values play a relevant role in shaping the experience of people engaged in the agroecological project. This difference is clearly linked to the scope and the wider scenario featuring the study cases here shown.

The present contribution does not intend to state that ES do not represent at all a useful analytical tool to analyse socio-ecological relationships. The same has constituted for the authors a useful interpretative framework bridging different disciplinaries. However, ES should be adopted always with caution, keeping in mind their bias and their partiality.

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[4] Similar results have been collected during a study on the assessment of ES linked to land restauration conducted in Burkina Faso (Traoré and Requier-Desjardins, 2019). Here surveys showed that the differentiation between some provisioning and regulation ES resulting from the conservation of soil and water investments was locally hard to understand. In particular, under the regulation ES category, the assessment could not distinguish regarding water and soil benefits what was accountable for water regulation (which resulted in gains of water)/provisioning and for soil health improvement (which resulted in gain of straws)/soil useful direct production.

BIBLIOGRAPHY

Boyd J., Banzhaf S. (2007). What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics*, 63: 616-626.

Brondízio E.S., Settele J., Díaz S., Ngo H.T., eds. (2019). *Global Assessment Report of the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services*. Bonn: IPBES Secretariat.

Capocefalo V., Leuti F. (2024). The ecosystem services analytical framework in Italy. A human geography prospect. In: *Annali del Dipartimento di Metodi e Modelli per l'Economia, il Territorio e la Finanza dell'Università Sapienza di Roma*, pp. 161-172. DOI: 10.13133/2611-6634/1680

Chan K.M.A., Satterfield T., Goldstein J. (2012). Rethinking ecosystem services to better address and cultural values. *Ecological Economics*, 74: 8-18. DOI: 10.106/j.ecolecon.2011.11.011

Conti Pourger A. (2022). Sostenibilità verso recovery. Una lettura della narrazione del capitale naturale. In: *Annali del Dipartimento di Metodi e Modelli per l'Economia il Territorio e la Finanza*, pp. 89-105. DOI: 10.13133/2611-6634/1389

Costanza R., ed. (1991). *Ecological Economics: The Science and Management of Sustainability*. New York: Columbia University Press.

Costanza R. (1998). The value of world's ecosystem services and natural capital. *Ecological Economics*, 25: 3-15.

Daily G.C. (1997). Introduction: what are the ecosystem services? In: Daily G.C., ed., *Nature's Services: Societal Dependence on Natural Ecosystems*. Washington, DC: Island Press, pp. 1-10.

Daily G.C. (2000). The value of nature and the nature of value. *Science*, 289: 395-396.

Daily G.C., Ehrlich P.R., Alberti M. (1996). Managing earth's life support systems: The game, the players, and getting everyone to play. *Ecological Application*, 6: 19-21. DOI: 10.2307/2269542

Daily G.C., Polasky S., Goldstein J., Kareiva P.M., Mooney H.A., Pejchar L. *et al.* (2007). Ecosystem services in decision making: Time to deliver. *Frontiers in Ecology Environment*, 1(7): 21-28. DOI: 10.1890/080025

Dal Borgo A.G., Capocefalo V. (2023). Storie di territori, storie di comunità: pratiche di rigenerazione socio-territoriale ai margini di Milano. In: Albanese V., Muti G., eds., *Oltre la Globalizzazione – Narrazioni/Narratives*. *Memorie geografiche*, NS 23. Firenze: Società di Studi Geografici, pp. 137-144.

Dal Borgo A.G., Capocefalo V. (2024). Funzioni, valori, progetti: il contributo delle pratiche agroecologiche nei processi di rigenerazione socio-territoriale. In: Bini V., Capocefalo V., Rinauro S., eds., *Geografia e ecologia politica: teorie, pratiche, discorsi*. *Memorie geografiche*, NS 24. Firenze: Società di Studi Geografici, pp. 549-553.

Dal Borgo A.G., Capocefalo V., Chiaffarelli G. (2022). Il ruolo delle pratiche di agricoltura rigenerativa nella produzione di servizi ecosistemici e socio-territoriali nell'area sudest di Milano. In: Spadaro C., Toldo A., Dansero E., eds., *Geografia e cibo: ricerche, riflessioni e discipline a confronto*. *Memorie geografiche*, NS 20. Firenze: Società di Studi Geografici, pp. 253-262.

Dal Borgo A.G., Chiaffarelli G., Capocefalo V., Schievano A., Bocchi S., Vagge I. (2023). Agroforestry as a driver for the provisioning of peri-urban socio-ecological functions: A trans-disciplinary approach. *Sustainability*, 15: e11020. DOI: 10.3390/su151411020

de Groot R. (1992). *Functions of Nature. Evaluation of Nature in Environmental Planning, Management and Decision Making*. Groningen: Wolters-Noordhoff.

de Groot R., Wilson M.A., Boumans R.M.J. (2002). A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, 41: 393-408. DOI: 10.1016/S0921-8009(02)00089-7

Dempsey J., Robertson M.M. (2012). Ecosystem services: Tensions, impurities, and points of engagement within neoliberalism. *Progress in Human Geography*, 36(6): 758-779. DOI: 10.1177/0309132512437076

Ernstson H., Sörlin S. (2013). Ecosystem services as technology of globalization: On articulating values in urban nature. *Ecological Economics*, 86: 274-284. DOI: 10.1016/j.ecolecon.2012.09.012

Food and Agriculture Organization (FAO) of the United Nations (2010). *Global Forest Resources Assessment 2010*. Rome.

Gómez-Baggethun E. (2017). Ecosystem services. In: Spash C.L., ed., *Routledge Handbook of Ecological Economics. Nature and Society*. New York: Routledge, pp. 445-453.

Martínez-Alier J. (2002). *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Cheltenham: Edward Elgar.

Millennium Ecosystem Assessment – MEA (2005). *Ecosystems and Human Well-being*, Vol. 1. Washington, DC: Island Press.

Mooney H.A., Ehrlich P.R. (1997). Ecosystem services: A fragmented history. In: Daily G.G., a cura di, *Nature's Services. Societal Dependence on Natural Ecosystems*. Washington, DC: Island Press, pp. 11-19.

Norton B.G. (2005). Values in nature: A pluralistic approach. In: Cohen A.I., Wellman C.H., eds., *Contemporary Debates in Applied Ethics*. Oxford: Blackwell Publishing, pp. 298-309.

O'Garra T. (2008). Bequest values for marine resources: How important for indigenous communities in less-developed economies? *Environmental Resource Economics*, 44: 179-202. DOI: 10.1007/s10640-009-9279-3

Ostrom E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Rauschmayer F., Omann I. (2017). Needs as a central element of sustainable development. In: Spash C.L., ed., *Routledge Handbook of Ecological Economics. Nature and Society*. New York: Routledge, pp. 246-255.

Ring I., Hansjürgens B., Elmqvist T., Wittmer H., Sukhdev P. (2010). Challenges in framing the economics of ecosystems and biodiversity: The TEEB initiative. *Current Opinion in Environmental Sustainability*, 2: 15-26. DOI: 10.1016/j.cosust.2010.03.005

Sukhdev P., Wittmer H., Miller D. (2014). The Economics of Ecosystems and Biodiversity (TEEB): Challenges and responses. In: Helm D., Hepburn C., eds., *Nature in the Balance. The Economics of Biodiversity*. Oxford: Oxford University Press, pp. 136-150.

Sykor T. (2013). *The Justices and Injustices of Ecosystem Services*. New York: Routledge.

Traore S.A.A., Requier-Desjardins M. (2019). *Study of the Economics of Land Degradation in Burkina Faso*, Report for the project "Rehabilitation and protection of degraded land and the reinforcement of the local institutions in land issues in the rural areas of Burkina Faso" of the initiative "An only world without hunger" (SEWoH), implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). https://www.eld-initiative.org/fileadmin/ELD_Filter_Tool/Case_Study_Burkina_Faso_2019/Burkina_Faso_2019_SLM_ELD_Study_EN.pdf.

United Nations (1992). *Agenda 21*. Rio de Janerio: United Nations Conference on Environment & Development.
West S., Haider J.L., Masterson V., Enqvist J.P., Svedin U., Tengö M. (2018). Stewardship, care and relational values. *Current Opinion in Environmental Sustainability*, 35: 30-38. DOI: 10.1016/j.cosust.2018.10.008
Yildirim H. (2017). *Approche écosystémique et institutionnelle du développement durable territorial. Le panier de services écosystémiques dans la péninsule de Karaburun (Turquie)*. PhD thesis defenced at the Université de Montpellier. https://ged.scdi-montpellier.fr/florabium45/servlet/DocumentFileManager?recordId=theses:BIU_THESE:3462&document=ged:IDOCS:503726&X_CSRF_TOKENS=6PYnOM7C38fbKwpsoPpNDinAcbBtylWNgm0qVzAG9AqfAkug5eQfXVxn0irRR8eJ.
Yildirim H., Requier-Desjardins M., Rey-Valette H. (2017). Étudier la perception des services écosystémiques pour appréhender le capital environnemental d'un territoire et ses enjeux de développement, le cas de la péninsule de Karaburun en Turquie. *Développement durable et territoires,* 8(3): 1-19.
Yildirim H., Requier-Desjardins M., Rey-Valette H., Pecqueur B. (2023). Valuing ecosystem services within the territorial development approach: The ecosystem services basket in the Karaburun Peninsula (Turkey). *International Journal of Sustainable Development*, 26(1): 1-21.

SUMMARY: Nowadays ecosystem services (ES) represent a paradigm often adopted by national biodiversity and ecosystems conservation and restoration strategies especially within the European context. For several scholars ES constitute a clear and coherent framework, enabling dialogues among different scientific disciplines and with policy-makers. However, other critical studies have identified ES as controversial and ethically problematic. The elements highlighted relate in particular with the underestimation of power relations, carbon credits markets and Payments for Ecosystem Services schemes, which can generate strong territorial inequalities. Sometimes, critical elements also emerge on the technical-scientific side. For example, boundaries between different categories of ES are not evident to the members of the local communities engaged since in real life they are experienced in an unitarian way. Indeed, local socio-cultural systems can differ greatly from the one within which the same ES analytical framework has evolved and the ones within which researchers engaged in the analysis have been trained. Given these premises, the contribution aims to highlight how these limitations can be overcome and how it is possible to assess ES keeping social justice and environmental sustainability as goals. The reflection proposed is based on studies conducted over the years by the authors in Italy and Turkey. The final objective pursued is to understand how the paradigm can be applied in a reflexive manner, taking into account its notoriety and recognition by the scientific community both in the respective national contexts and in the international debate.

RIASSUNTO: I servizi ecosistemici (SE) rappresentano oggi un paradigma spesso adottato nell'ambito delle strategie nazionali di conservazione e ripristino della biodiversità e degli ecosistemi, soprattutto nel contesto europeo. Per diversi studiosi, i SE costituiscono un quadro analitico chiaro e coerente, che consente il dialogo interdisciplinare e con i decisori politici. Tuttavia, altri studi critici hanno descritto tale paradigma come controverso ed eticamente problematico. Gli elementi evidenziati riguardano in particolare la sottostima dei rapporti di potere, la creazione di mercati dei crediti di carbonio e di sistemi di pagamento per i servizi ecosistemici, che possono generare forti disuguaglianze territoriali. Inoltre, talvolta emergono elementi critici anche dal punto di vista tecnico-scientifico. Ad esempio, i confini tra le diverse categorie di SE non sono evidenti ai membri delle comunità locali coinvolte, poiché nella vita reale vengono vissuti in modo unitario. Infatti, i sistemi socio-culturali locali possono differire notevolmente da quello in cui si è evoluto lo stesso quadro analitico dei SE e da quelli in cui sono stati formati i ricercatori impegnati nell'analisi. Alla luce di queste premesse, il contributo intende evidenziare come tali limiti possano essere superati e come sia possibile valutare i SE mantenendo come obiettivi la giustizia sociale e la sostenibilità ambientale. La riflessione proposta si basa su studi condotti negli anni dalle autrici in Italia e in Turchia. L'obiettivo finale è comprendere come il paradigma possa essere applicato in modo riflessivo, tenendo conto della sua notorietà e del suo riconoscimento da parte della comunità scientifica sia nei rispettivi contesti nazionali che nel dibattito internazionale.

Keywords: ecosystem services, local communities, participative research methods, agriculture, ecosystems restoration
Parole chiave: servizi ecosistemici, comunità locali, metodi di ricerca partecipativi, agricoltura, ripristino ecologico

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