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Analysis of meanings of the concept of sustainability

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Abstract

The ambiguity and polysemy of the concept of sustainability is a problem often faced by researchers. The existence of definitions that are not operative, diverse and sometimes contradictory represents a difficulty for the election of a suitable concept of sustainability. Even most of the research works whose title includes the term sustainability do not define what it is, which eventually, constitutes a methodological error. This leads the researchers to avoid defining sustainability, or to study it indirectly through the study of social and ecological variables of certain systems. The present work analysed the meanings conveyed by the concept of sustainability according to researchers. The uses that researchers make of the term sustainability were employed to reveal such meanings. Four uses were identified, which allowed the identification of four meanings of the concept of sustainability. This concluded that the meanings of the concept of sustainability are neither many nor as ambiguous as other authors point out, and that this classification of uses and meanings could be employed to avoid frequent errors made by researchers.

KEYWORDS

concept, epistemology, operative concept, sustainability, sustainability science, sustainable development, theoretical research

1 | INTRODUCTION

The ambiguity and lack of clarity about the concept of sustainability is a recurring obstacle to sustainability research. In the last few decades, various works concerned with the analysis of the concept of sustainability have commented on the confusion it generates and on the reasons for its lack of clarity, namely, its variety of uses, its diverse and sometimes contradictory meanings, and its large number of definitions in response to the discipline or political context in which the term is used (Balaceanu & Apostol, 2014; Bolis, Morioka, & Sznelwar, 2014; Ciegis, Ramanauskiene, & Martinkus, 2009; Glavic & Lukman, 2007; Mebratu, 1998; Rassafi, Poorzahedy, & Vaziri, 2006). The variety of the concept is such that, at least with respect to the term *sustainable development*, Mebratu (1998) says that there are more than 80 different definitions while Ciegis et al. (2009), in the context of economics, state that there are over 100 definitions; neither study provides an account of such definitions.

The lack of clarity about the concept of sustainability entails certain problems for researchers since it can hinder the operationalization of the concept, generate contradictory discourses on the matter, and may affect the validity of the studies. For example, according to Ciegis et al. (2009), a significant number of books, articles and chapters that include the word *sustainability* or *sustainable* in their titles do not provide a definition of the concept. A similar conclusion was reached by Salas-Zapata, Rios-Osorio and Cardona-Arias (2017) who, after analysing scientific research works published in 2013, found that 91.3% of those that included the term *sustainability* in their title did not provide its definition. Especially in those studies whose purpose is to analyse the sustainability of a given system, this could generate a problem of construct validity, since studies with this shortcoming are unable to demonstrate that the variables and categories analysed are coherent with a given concept of sustainability. The absence of a definition may also lead the researcher into studying a topic other than sustainability.

The vagueness of the concept of sustainability hinders its application in research (Balaceanu & Apostol, 2014; Renn, Goble, & Kastenholz, 1998). In particular, when sustainability is the object of study, an imprecise definition of the concept or the employment of a

normative conception about it, makes it difficult for the researcher to define the set of categories and/or variables that enable the observation of sustainability in a certain system. If sustainability is the object of research, the use of a scientific concept of sustainability is required. That means the use of concepts, which allude to empirical referents, provide axiomatic systems or linguistics, and have explanatory techniques and modes of representation (Toulmin, 1977, p. 169). Normative concepts do not have these features. That is why this lack of clarity would also make it difficult to turn the discourse into action, decision-making and accurate interventions concerning problems of unsustainability (Bolis et al., 2014).

The lack of clarity about the concept of sustainability also generates contradictory discourse and actions. One of the most commonly reported contradictions is the understanding of *sustainability* as *sustainable development*. Daly (1993), Bolis et al. (2014), Mebratu (1998) and Redclift (2005) claim that the term is an oxymoron, since sustainable development is unsustainable from the perspective of economic growth. This is the reasoning behind the contrast between weak and strong sustainability. Weak sustainability supports the idea that natural capital can be substituted by technological or manufactured capital, whereas strong sustainability conceives such substitution as impossible, since an unlimited economic growth conflicts with the limits of nature (Balaceanu & Apostol, 2014; Redclift, 2005).

Salas-Zapata et al. (2017) show that the 59.9% of the works employ the terms *sustainability* and *sustainable development* interchangeably. These research works were approved in editorial peer review processes, which means that both students and researchers, as well as professors and journal editors, remain confused about the concept of sustainability. Such a background explains the need for an analysis of the diverse meanings of the concept.

The identification of various meanings of this concept and the realization of their differences would result in several advantages. First, it would benefit student training since it would provide theoretical foundations to delimit the study objects of research works. Second, it would help improve editorial peer review processes, since it would provide the reviewers with criteria to assess inaccurate uses of the term *sustainability*. And third, the conceptual, semantic, content and historical analyses of the concept of sustainability are necessary to start developing a theoretical body of knowledge about it (Glavic & Lukman, 2007; Mebratu, 1998).

In this regard, it is worth mentioning that diverse works about the concept of sustainability have been published in recent years (Balaceanu & Apostol, 2014; Ciegis et al., 2009; Glavic & Lukman, 2007; Mebratu, 1998; Redclift, 2005; Renn et al., 1998). Nevertheless, a limitation of these works is their attempt to identify its meaning by studying definitions of sustainability included in diverse types of documents, rather than by analysing the use that scholars and researchers have made of the term. When concepts have a certain degree of maturity in a science, definitions are an appropriate tool to express their meanings. However, in the case of immature ones, definitions are not the best source for understanding the meanings of concepts, since they do not reveal the intentions of people, and the ideas conveyed by the terms do not derive in actions. For this reason, it is difficult to understand what concepts mean without considering the use of the term.

Word meanings are established collectively. To date, publications dealing with the meanings of the concept of sustainability, through a study of the uses that researchers make of the term, have not been reported. That is why this work aimed to reveal the meanings of the concept of sustainability, through an analysis of uses of the term in scientific research. In this sense, it should be pointed out that these meanings reflect conceptions by academic actors such as students, professors, researchers, and journal editors, which are not necessarily representative of other actors such as policy-makers, decision-makers, businessmen and local communities. For that reason, the meanings analysed do not necessarily reflect the social construction of the concept of sustainability in these communities.

2 | THE CONCEPTS AND THE STUDY OF ITS MEANINGS

In general terms, concepts are constituent elements of thought (Margolis & Laurence, 2014). These are essential to perform psychological processes such as categorization, inference, memory, learning and decision-making. That is the reason why they are necessary for the development of knowledge.

Concepts can be understood in different ways. They are abstract objects, but they are also representations of the world that imply the human ability to differentiate one object from another (Margolis & Laurence, 2014). A concept is the significant content of certain words and involves two characteristics: content and extension. Content means that a concept relates to a given object, and extension means that the concept comprehends a set of objects that can be circumscribed to such a given object (Mora, 1965).

Concepts are units of meaning and, hence, they can be considered the building blocks of theories and scientific knowledge. However, the meaning of a concept is built from the way individuals use it, or from the consequences of its application to explain the causal relations between the things in the world (Hjørland, 2009).

Thus, the study of the meaning of a concept implies the identification of its place and role in the wider systems of thought it belongs to. Because of this, it is necessary to identify how individuals use a term, the conditions under which it is defined (Hjørland, 2009), its role in theories (when there are theories), the objects it covers (Mora, 1965), the system of statements that are employed to explain the concept, the conceptual networks that are built, and the resulting interpretations and conclusions (Foucault, 1997).

Concepts are not the same as definitions, and studying them by employing the latter as such is not correct (Chalmers, 1999; Hjørland, 2009). A definition is a set of terms employed to refer to an object. Definitions do not reveal the use of concepts, do not lead to a reflection, or communicate anything about it. Neither do definitions specify a way of acting in response to a concept. The ideas that concepts communicate and the practices such ideas entail give sense to the concept itself.

In this context, the analysis of the definitions of sustainability described in academic and scientific publications is insufficient to study the meanings of the concept of sustainability. It is necessary to study the use that researchers make of the term *sustainability*, the

systems of statements that are related to the term and communicate ideas about it and, if possible, the type and nature of the objects it refers to. However, it is worth mentioning that the constitution of concepts is a gradual process and the reference to objects may be, at the beginning, vague and unclear.

3 | USES AND MEANINGS OF THE CONCEPT OF SUSTAINABILITY IDENTIFIABLE AMONG RESEARCHERS

When the concept of sustainability is analysed according to the use that researchers make of the term, it loses ambiguity and its meanings become less diverse and numerous than those reported by other authors (Balaceanu & Apostol, 2014; Bolis et al., 2014; Ciegis et al., 2009; Glavic & Lukman, 2007; Mebratu, 1998). In general, when the system of statements that reveal the use of the term *sustainability* is examined, four meanings can be identified (Figure 1).

3.1 | Sustainability as a set of guiding criteria for human action

Scholars and researchers often employ the term *sustainability* to refer to the integration of a set of social-environmental criteria or qualities in human actions. These actions may be related to products or processes that, in any case, imply some type of relationship between human beings and ecosystems. For that reason, it can be said that these actions are part of social-ecological systems. Thus, from such a perspective, sustainability is understood as the integration or the application of social-ecological criteria or qualities to the planning, designing and/or functioning stages of certain reference systems.

This way to understand sustainability was derived from the kind of statements described in Table 1. Statements of this type are characterized by their allusion to a social and/or ecological action criterion that researchers use to define a system as sustainable. At the same time, all statements point to reference systems that belong to different contexts.

As shown above, the set of criteria, rather than the reference systems, is what reveals the meaning of the concept of sustainability in this system of statements. These criteria are the expression of an idea about the concept of sustainability, allow the construction of some type of interpretation about the concept and communicate some kind of practice that is consistent with such an idea. These statements are not definitions but the use of the term allows the reader to infer a meaning of this concept.

These researchers do not define what sustainability is, which does not mean that sustainability does not have any meaning for them. If they use the term, it is because it has a meaning for them. Even though these researchers base their work on different reference systems, there is an emerging pattern in this system of statements, which is the set of social-ecological criteria to guide human action.

3.2 | Sustainability as a goal of humankind

The term *sustainability* is also employed to refer to an aim of society. Scholars, researchers and professionals often claim that a system is sustainable since it has certain aims. Table 2 depicts a system of statements in which, similar to the case above, none of the statements defines what sustainability is but point at reference systems from different contexts. However, in this case, a common feature is their allusion to environmental, social and economic purposes, goals, values or objectives that certain human actions intend to reach. For that reason, from such a perspective, sustainability is an idealization of the relationship between nature and society inside certain reference systems.

In this system of statements, what reveals the meaning of sustainability is the reference made by these statements to such purposes or goals. The ideas and human actions related to sustainability derive directly from those purposes, goals or social expectations. For that reason, it can be said that this use reveals a teleological meaning of the concept of sustainability.

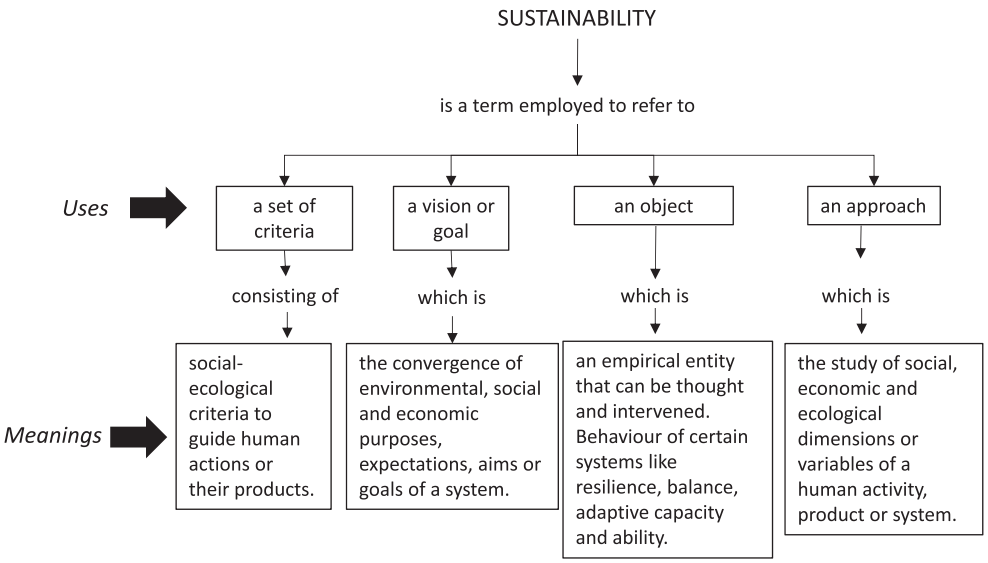

FIGURE 1 Uses and meanings of the concept of sustainability among the scientific community

TABLE 1 Statements supporting the meaning of sustainability as a set of social and ecological criteria

Reference system	Criteria	Reference (s)
Design of chemical products and processes that …	reduce or eliminate the use of dangerous substances – CO_2 emissions.	Boriani, Benfenati, Baderna, and Thomsen (2013)
Production of energy …	employing renewable sources that do not release greenhouse gas emissions.	Caliskan, Dincer, and Hepbasli (2013)
Agricultural production that …	minimizes environmental impacts and is economically viable and generates social benefits.	Pergola et al. (2013)Ochieng, Hughey, and Bigsby (2013)
Buildings whose construction and operation processes …	are environmentally friendly, responsible and energetically efficient.	Vatalis, Manoliadis, Charalampides, Platias, and Savvidis (2013)Bacarji, Toledo Filho, Koenders, Figueiredo, and Lopes (2013)
Capital investment …	guided by environmental and social criteria and values.	Cheung and Roca (2013)
Tourism that …	makes optimal use of natural resources, respects cultural authenticity and ensures economic viability.	Pérez, Guerrero, González, Pérez, and Caballero (2013)
Forest utilization that …	is efficient and is not the cause of deterioration.	Roy, Alam, and Gow (2013)
Economical development that …	improves the well-being of people, reduces energy consumption and preserves quality of the ecosystems.	Marull, Galletto, Domene, and Trullén (2013)
Companies that …	incorporate social and environmental aspects without compromising profit into their operations.	Nakai, Yamaguchi, and Takeuchi (2013)
Universities that …	incorporate concepts related to sustainable development into their lectures, research, extension courses and campuses.	De Castro and Jabbour (2013)
Fishing industry that …	avoids negative impacts upon ecosystems and generates social and economic benefits.	Tzanatos et al. (2013)

TABLE 2 Statements supporting the meaning of sustainability as goal of humankind

Reference system	Purpose, goal or ideal state	Reference
A system that …	achieves the best social, economic and environmental consequences.	Gerdessen and Pascucci (2013)
Urban processes that …	improve the health, safety and well-being of current and future generations.	Valdes-Vasquez and Klotz (2013)
Urban sustainable development is the transition towards an urban social-ecological system that …	promotes well-being, social, political and economic equity and, over the long term, ecological equilibrium.	Liu, Yang, Chen, and Zhang (2013)
[In relation to a society] sustainable development is an …	aim of development that integrates environmental, economic and social accounts.	Husgafvel, Watkins, Linkosalmi, and Dahl (2013)
In relation to bioenergy development…	sustainability is a goal that, in this case, is pursued by bioenergy developments; the efficient employment of bioenergy over the long term.	Kurka (2013)
Tourism that …	satisfies the needs of tourists and hosts while protecting and enhancing future opportunities. This involves the preservation of cultural integrity, the fulfilment of human needs, and the conservation of ecological and biological processes of the ecosystems.	Wan and Li (2013)
[In relation to protected natural areas] a sustainable land-use management entails …	incorporation of environmental goals into social-economic development processes. It implies conservation of cultural heritage and landscape.	Galindo-Pérez-de-Azpillaga, Foronda-Robles, and García-López (2013)
Development that …	can guarantee the protection of the environment and resources today and tomorrow. It is also one that is self-sustaining and meets the needs of present and future generations.	Adekeye and Niyi (2013)
Companies' operations that …	involve sustainable development goals, social equity, namely, economic efficiency and environmental performance.	Lourenço and Branco (2013)
Mining with …	environmental protection and generation of positive social-economic impacts.	Phillips (2013)

Because of its teleological character, in this case, the idea of sustainable development as a synonym of sustainability can also be included in this perspective. Sustainable development has been defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 54). This form of understanding sustainability reflects certain expectations about the development models of countries. Thus, when the

term sustainability is employed as a synonym of sustainable development, the researcher refers to an expectation or to the intended outcome of a reference system called model of development.

3.3 | Sustainability as an object

Objects are "referents" or "entities" that can be thought about, classified and represented (Mora, 1965). Therefore, sustainability as an object is an entity that exists, that can be represented, studied or intervened. For this reason, the debates on the study object of sustainability science are framed within this kind of meaning.

This meaning of sustainability stems from other uses that researchers and scholars make of the term. Particularly, they employ it to refer to the behaviour of certain reference systems. Table 3 shows the kind of statements that support this understanding of sustainability as an object.

This system of statements reveals a pattern, represented in the understanding of the term sustainability as the behaviour of a reference system. The terms employed to give an account of this behaviour are resilience, adaptive capacity, robustness, balance, equilibrium, ability or capacity to keep pace with disturbance, and maintenance of social-ecological systems. Although these terms are not synonyms, all of them make reference to the capacity of such systems to maintain certain characteristics, resources, processes or functions over the long term in spite of disturbances. Just as observed above, another characteristic of these statements is that they make reference to systems that belong to different fields.

3.4 | Sustainability as an approach of study

The term *sustainability* is also employed to refer to the study of social, economic and environmental variables of a reference system. It is often possible to find, among the scientific literature available, research works (Andersson & Lundberg, 2013; Antriyandarti, Ferichani, & Ani, 2013; Axelsson et al., 2013; Bergez, 2013; Etmannski & Darton, 2014; Ferguson et al., 2013; Keshtkar, Salajegheh, Sadoddin, & Allan, 2013; Kusumaningdyah, Eunike, & Yuniarti, 2013; Ziout, Azab, Altarazi, & ElMaraghy, 2013) which, despite including the term *sustainability* in their title, neither provide a definition of sustainability nor define a sustainable system of reference.

In this case, the pattern that seems to emerge is one characterized by the analysis of the social-ecological variables of a certain activity, product or human process as a system of reference (Table 4). Thus, it is inferred that the term *sustainability* is employed to indicate the researchers' intention to deal with variables to assess the environmental, social and ecological performance of a reference system. For that reason, sustainability can be understood, from this perspective, as an approach to study certain systems.

4 | DISCUSSION

As shown above, these four uses allow the identification of four clearly distinguishable meanings. These are not mutually exclusive, since the concept of sustainability simultaneously belongs to different philosophical fields. Such differences may have some implications for the research in sustainability, which are worthy of consideration and are explained below.

4.1 | The meanings of sustainability are neither many nor so diverse

The results of this work contrast with those of others that point at the numerous and confusing meanings of the concept of sustainability.

TABLE 3 Statements supporting the meaning of sustainability as object

Object	Reference system	Reference
Resilience/capacity to reach sufficient elevation to endure over the long term and deal with climate change	Wetland	Delgado, Hensel, Swarth, Ceroni, and Boumans (2013)
Resilience of social-ecological systems/capacity of adaptation	Marine system	Ernst et al. (2013)
Robustness/equilibrium of energy and fluxes in spite of disturbances	Network of economic sources	Kharrazi, Rovenskaya, Fath, Yarime, and Kraines (2013)
Capacity of preservation	Water supply to communities	Mandara, Butijn, and Niehof (2013)
Capacity to endure social development over the long term	Environmental system	Olayide, Popoola, Olaniyan, Dapilah, and Abudulai Issahaku (2013)
Guarantee water availability	Water supply for farming purposes	Montazar (2013)
Maintenance of a harmonic relationship between stakeholders	Mining industry	Murguía and Böhling (2013)
Capacity of the system to recover	Oyster production	Wouters et al. (2013)
Ability to coexist/balance between nature and economic well-being	Society	Masnavi (2013)
Availability of fish in spite of el Niño and la Niña phenomena	Fishing	Arias and Halliday (2013)
Maintenance of a safeguard programme against climate hazards	Programmes to safeguard agricultural activities	Bell et al. (2013)
Maintenance of ecosystem services	Energy production and consumption	Neupane, Halog, and Lilieholm (2013)
Maintenance of ecological conditions in the Baltic Sea in spite of eutrophication	Baltic Sea Bay	Lundberg (2013)
Maintenance of marine resources in spite of fishing activity originated in tourism	Fishing tourism	Solstrand (2013)

TABLE 4 Statements supporting the meaning of sustainability as approach of study

Study aim	Reference system	Reference
To develop, test and discuss a measurement model based on a sustainability approach, including social, cultural and environmental as well as economic perspectives.	Touristic events	Andersson and Lundberg (2013)
This study used a framework which analysed agro-ecological conditions (land, water, climate), socio-economic conditions, and markets.	The community on Mount Merapi	Antriyandarti et al. (2013)
To present an approach to make social and cultural values concrete in a planning context. We interpreted social and cultural criteria …	Natural resource systems	Axelsson et al. (2013)
To present a methodology based on a model that evaluate three attributes: Economic Sustainability, Social Sustainability and Environmental Sustainability.	Cropping system	Bergez (2013)
To use the process analysis method (PAM) to create triple-bottom line sustainability assessments, including economic, environmental and social factors.	Arsenic mitigation technology	Etmannski and Darton (2014)
To compare the sustainability of 18 ranches by using three sets of sustainability metrics (economic, social, technological, environmental).	Cattle ranching system	Ferguson et al. (2013)
To evaluate sustainability of a semi-arid river catchment by mean models that integrate social, economic, physical and ecological variables.	River basin	Keshtkar et al. (2013)
An assessment is made from the point of view of the three pillars of sustainability, namely, economic, environmental and societal.	Manufacturing system	Ziout et al. (2013)
To capture the trade-off between each sustainability aspect: environmental, social and economic issue.	Ship breaking industry	Kusumaningdyah et al. (2013)

Previous works (Balaceanu & Apostol, 2014; Bolis et al., 2014; Ciegis et al., 2009; Glavic & Lukman, 2007; Mebratu, 1998) state that the concept of sustainability is unclear due to its diverse, confusing, and sometimes contradictory meanings, in addition to the multiple forms of definitions that depend on the context in which the term is employed. This analysis found that, at least among researchers and scholars, there are four clearly differentiated meanings, instead of the large quantities suggested by Mebratu (1998) and Ciegis et al. (2009) regarding the term *sustainable development*.

There may be two reasons for our findings: first, the meanings of sustainability presented in this paper were not revealed through the description of definitions, but through the uses of the term; second, each meaning may have certain features that could represent different hints to the same concept. For example, when sustainability is understood as an object, sometimes it is possible to find terms such as balance, continuity and adaptive capacity, which despite not being synonyms, are related. These could eventually be understood as different in spite of belonging to the same axiomatic system, which means that different definitions could be connected to a sole concept.

On the other hand, works by Bolis et al. (2014) and Ciegis et al. (2009) suggest that the concept of sustainability has different interpretations depending on the disciplinary field in which the term is used. In this regard, different conclusions can be derived from this work, since it shows that the term *sustainability* has similar uses in different fields. Consequently, a single meaning may be under construction inside different disciplines. Tables 1–4 depict how a single meaning is applied to social-ecological systems that belong to different contexts.

4.2 | The theoretical basis of research and the distinction between teleological/normative and operative concepts of sustainability

A basic principle of academic and scientific writing is the definition of its own terms. This means each manuscript should define its own concepts. Definitions are statements that express clear and sufficient characteristics about an object so that the concept studied is not confused with another. In such a sense, it would be expected for the documents or papers that include the term *sustainability* in the title, or those whose study object is the sustainability of a given system, to specify the definition they take as the basis of the work. However, Ciegis et al. (2009) state that a substantial number of books, articles and chapters with the word *sustainability* or *sustainable* in their titles do not provide a definition of the concept. Similarly, Salas-Zapata et al. (2017) revealed that most of the research works with the term *sustainability* in their title do not define it in the text.

The comprehension of these four meanings, and their differences, could facilitate the work of researchers, professors, scholars, students and editors. If a researcher is aware of these meanings they will have criteria at their disposal to choose the right concept for their esearch. For instance, when analysing the sustainability of automobile production, a researcher could wonder which perspective to choose: sustainability as a set of criteria, vision, object or approach. However, because in this case sustainability is an object of study of a given system, the researcher would need a concept that allows them to focus their observation on empirical aspects of such a system: social-ecological interactions, institutions, adaptive capacity and ecosystem resilience (Berkes, Colding, & Folke, 2003). That is why in this kind of context operative concepts are more necessary than normative ones. In this regard, Renn et al. (1998) and Balaceanu and Apostol (2014) have stated that one of the difficulties that research in sustainability faces is that the concept of sustainability is normative rather than analytical and operative.

Operative concepts are scientific concepts, which means concepts that can be expressed through axiomatic and/or conceptual systems that provide an explanation, have representation techniques for the conceptual system, and procedures that allow the identification of empirical situations to which such conceptual systems can be applied (Toulmin, 1977).

Conversely, if the researcher assumes that sustainability is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs or the

satisfaction of human needs and aspirations in the major objective of development, then this election would be wrong. These ways to understand sustainability neither give the researcher categories or variables to observe sustainability nor explanations of it. Both ways of understanding sustainability give the actors values or purposes to pursue, not concepts to explain.

The concept of sustainable development originated in the Brundtland report was not presented with the intention of understanding the sustainability of the systems, but it has been important for the definition of the Agenda 21 as a means to redirect the development of societies. The concept of sustainable development does not provide axiomatic and/or conceptual systems that provide an explanation of how sustainability arises in a system. For that reason, studying the sustainability of a system while understanding sustainability as sustainable development or throughout a teleological concept, represents a misuse of a normative concept when a positive one is necessary. Regarding this, it is worth mentioning that the study by Salas-Zapata et al. (Salas-Zapata et al., 2017) showed that, out of all the publications of 2013 which employed both terms, 59.9% used them indistinctively.

Thus, normative concepts are useful to give an account of idealistic scenarios, views of the world, expectations of a given society or human organization, or to set aspirations of humankind regarding the relationship with the environment. That is why the concept of sustainable development—normative—is appropriate to express values and expectations of development, but not to explain the sustainability of systems. Therefore, applying this concept out of this context is an overestimation of its scope (Hansson, 2010).

From that point of view, this classification of meanings would also allow students to understand the several contexts in which debates on sustainability can take place that, in turn, may help them to select the right definitions according to their academic needs, communicative intentions and contexts.

This classification also gives journal editors a tool to evaluate the construct validity of research papers, and the coherence of the manuscripts submitted by authors. Construct validity refers to the "correspondence between a construct (conceptual definition of a variable) and the operational procedure to measure or manipulate that construct" (Schwab, 1980, p. 5–6, cited by Zhang, Gable & Rai, 2016). If the meaning of a concept of sustainability is not declared in the manuscript, reviewers cannot evaluate the adequacy of the methods used by the researcher.

5 | CONCLUSIONS

A current problem in sustainability research is the lack of clarity about the concept of sustainability, since there are several, diverse and confuse definitions and interpretations for it. However, such confusion may be due to the fact that the concept of sustainability has been usually studied on the basis of definitions.

Definitions are not necessarily the best input to reveal the meaning of concepts, which are more thoroughly clarified when the use that a community makes of them is studied. For that reason, the present work considered the meanings of the concept of sustainability, on the basis of the use of the term.

In this way, it was possible to find four uses and their respective meanings: (i) sustainability as a set of social-ecological criteria that guide human action, (ii) sustainability as a vision of humankind that is realized through the convergence of the social and ecological objectives of a particular reference system, (iii) sustainability as an object, thing or phenomenon that happens in certain social-ecological systems, and (iv) sustainability as an approach that entails the incorporation of social and ecological variables into the study of an activity, process or human product.

This classification may serve as a criterion that researchers, students, professors and journal editors may consider for their works, since they can take it into account to select a concept of sustainability that is coherent with the objectives of their endeavour, to avoid confusion between normative and operative concepts and to identify operative concepts of sustainability that can be applied to the study of the sustainability of a system.

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