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ORIGINAL ARTICLE

Redefining ‘sustainability’: A systematic approach for defining and assessing ‘sustainability’ and ‘social sustainability’

Karl de Fine Licht¹  | Anna Folland² 

¹Science, Technology and Society, Chalmers University of Technology, Gothenburg, Sweden

²Department of Philosophy, Uppsala University, Uppsala, Sweden

Correspondence

Karl de Fine Licht, Chalmers University of Technology, Science, Technology, and Society, Vera Sanbergs Allé 8, 412 96 Gothenburg, Sweden.

Email: karl.definelicht@chalmers.se

Abstract

In recent years, the pursuit of social sustainability has intensified, especially in urban development. This has resulted in numerous definitions of ‘social sustainability’ from stakeholders including researchers, non-governmental organizations (NGOs) and both private and public sector entities. These definitions vary widely, encompassing values such as well-being, good governance, equality, trust, diversity, and accessibility. Despite extensive contributions, a universally accepted definition remains elusive, indicating the need for further conceptual work. The primary issue is the lack of explicit criteria for adequacy, leading to a stalemate in the literature. To address this issue, de Fine Licht and Folland, in 2019, proposed a framework with nine conditions of adequacy for evaluating definitions. Building on this framework, our paper systematically analyses and critiques existing definitions and proposes new, formal definitions for both ‘sustainability’ and ‘social sustainability’. Our approach identifies central challenges in existing definitions, demonstrates their inadequacy and presents an enhanced formal definition that avoids these pitfalls. Although our definitions do not specify particular values, they offer substantial results relevant to the sustainability discourse. The novelty of our work lies in our formal definition, engagement with the conditions of adequacy and systematic critique of existing definitions.

This paper has not been previously published in any form and is not under consideration for publication elsewhere either.

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KEYWORDS

conditions of adequacy, definitions, social sustainability, sustainability

1 | INTRODUCTION

In recent years, the push for social sustainability has gained momentum in various domains, particularly in urban development. This movement has prompted researchers, non-governmental organizations (NGOs) and private and public sector stakeholders to generate numerous definitions of ‘social sustainability’. These definitions span a wide spectrum, from vague (Yiftachel and Hedgcock 1993) to precise (Littig & Griessler, 2005), value-laden (Dempsey et al., 2009; McKenzie, 2004; Opp 2017; Vallance et al., 2011) to value-free (Beckerman 1994; Black 2004) and simple (Enyedi, 2002; Yiftachel and Hedgcock 1993) to complex (Barron and Gauntlett 2002; McKenzie, 2004; Vallance et al., 2011). The definitions encompass values such as well-being, good governance, equality, trust, diversity and accessibility.

Despite the extensive work and numerous contributions made, a universally accepted definition of ‘social sustainability’ remains elusive, indicating that substantial conceptual work is still required (see, e.g., de Fine Licht & Folland, 2019; Opp 2017; Shirazi and Kevani 2019). The primary issue in discussions about social sustainability is the tendency for the literature to present differing definitions without referencing an explicit set of criteria for adequacy (de Fine Licht & Folland, 2019). As a result, various accounts cannot be properly evaluated, leading to a stalemate that hinders meaningful progress. However, defining ‘social sustainability’ is not a futile endeavour. As the authors (de Fine Licht & Folland, 2019) recently proposed a framework for analysing and constructing definitions of ‘social sustainability’, emphasizing that definitions should meet the needs of policymakers in a broad democratic context and scientists examining the effectiveness of given procedures. With these purposes in mind, they suggested nine conditions of adequacy to evaluate competing definitions and identify a suitable one.

In this paper, we expand upon the existing framework and apply it to the discourse on social sustainability to analyse and critique existing definitions and develop new ones for both ‘social sustainability’ and ‘sustainability’. Specifically, we use conditions of adequacy to identify central challenges in definitions previously proposed in the debate. We demonstrate the inadequacy of previous definitions and generate an enhanced formal definition. Although our definition is not substantial in nature, that is, it does not specify what value sustainability contains, it avoids the challenges that undermine competing definitions. By doing so, our formal definition provides substantial results relevant to the sustainability discourse. Consequently, our paper’s novelty lies in our formal definitions, our active engagement with, and development of, a well-defended set of conditions of adequacy, and our systematic and transparently grounded critique of existing definitions utilizing these conditions.

This paper is structured as follows. In Section 2, we discuss the purpose of defining social sustainability and present the conditions of adequacy. In Section 3, we use them to highlight central challenges and rebuke the currently most prominent definitions of ‘social sustainability’. Section 4 outlines our own definitions of ‘sustainability’ and ‘social sustainability’. In Section 5, we present conclusions and propose avenues for further research.

2 | AIMS AND CONDITIONS OF ADEQUACY

There are several reasons to produce a definition of social sustainability,¹ both practical and theoretical in nature. For example, conceptualizing ‘sustainability’ and ‘social sustainability’ is

¹For a more thorough explanation and defence, see de Fine Licht and Folland (2019).

particularly important as sustainability is a topic of concern among researchers and policymakers from a wide range of fields. These researchers often have different aims with their research; because they come from different research areas, they often have different understandings of sustainability stemming from their research backgrounds and interests. This leads to varying definitions, which then hampers research progress (Purvis et al., 2019 or, e.g., Brandt and Jax 2007 when it comes to 'resilience'). Thus, the lack of a generally accepted definition is likely to impede nuanced and in-depth discussions on sustainability. The *lack* of a generally accepted and adequate definition is also *problematic* in that, for example, commercial entities can easily operate under whichever understanding of sustainability benefits them, rather than one that is objectively beneficial.

To conceptualize sustainability and social sustainability, we must fulfil at least nine conditions of adequacy (de Fine Licht & Folland, 2019, pp. 25–32). Each of these conditions should be understood as a *pro tanto* condition, meaning that if they are not fulfilled, it counts against the definitions, though not necessarily decisively. We should also be clear that while there are many cases where these conditions of adequacy are or are not fulfilled, there will still be plenty of room for judgement in many instances, as the conditions are not sharp enough to always provide a determinate answer.

The first set of these conditions concerns the evaluation of the various tools and programmes used to achieve social sustainability. We want to equip researchers to produce *cumulative research*; consequently, a definition should be *coherent* (not providing conflicting results), *precise* (measurable in principle), *reliable* (measurable in practice) and *comparable* (enabling comparisons of different levels of social sustainability) (de Fine Licht & Folland, 2019, p. 27). If a definition fails to satisfy these criteria, we cannot evaluate whether various tools, projects and programmes lead to socially sustainable outcomes, thereby rendering cumulative research difficult. All else equal, a *simple* definition is preferable to a complex one. For instance, simplicity facilitates the measuring of outcomes. Of course, as mentioned above, there are situations where it might be reasonable to have a definition that is not measurable. However, this would still count against the definition, especially if this is true at the formal level, which is the focus of this paper, and for a practical concept such as 'sustainability'.

Second, a definition should fulfil the *ordinary language condition* and the *value condition*. This means that it should capture what most people (after consideration) ordinarily mean by 'social sustainability', including what is desirable about it (de Fine Licht & Folland, 2019, pp. 25–27, 29), preventing the *exclusion* of important aspects of the concept from the definition and the *misinterpretation* of the term when it is used. A definition that strays from the ordinary understanding of social sustainability and its value risks hindering these projects in practice. For example, it might lead policymakers to make ill-founded decisions, and it might make it difficult for people to understand what is being discussed or the implications of those discussions.

To fully satisfy the ordinary language condition, a definition should accommodate (or enable explanation of) judgements regarding what counts as sustainability or unsustainability, as well as disagreement and uncertainty regarding specific instances of social sustainability. The ordinary language condition is fulfilled when a proposed definition yields correct verdicts about particular cases and align with how the concept is ordinarily used. A definition satisfying this condition will be largely uncontroversial; under normal circumstances, a definition is considered controversial *because* it deviates from ordinary language use. Furthermore, a definition of 'social sustainability' plausibly has the same formal structure as definitions of environmental or economic sustainability, as social sustainability is ordinarily conceived as tightly connected to other notions of sustainability. This close connection helps explain why we aim to define both 'sustainability' and 'social sustainability' in this paper.

A definition that satisfies the value condition entails that social sustainability is worth striving for. A definition suggesting that attaining social sustainability is either unfavourable or

TABLE 1 x is the definition of ‘sustainability’ and ‘social sustainability’.

Desiderata	Reasons for revising x
The coherence condition	x gives incoherent results
The precision condition	x cannot be determined in principle in categorical or dimensional terms
The reliability condition	x is not easily determined in practice in observational or in other terms
The comparability condition	x is not ordinally comparable in an intrapersonal—or interpersonal—sense
The simplicity conditions	x is a disjunction of different criteria, and the conceptual core of x is not identified
The ordinary language condition	x is not consistent with, nor does it give an explanation for, ordinary language use
The value condition	x fails to capture the values ordinarily associated with x
The condition of normative adequacy	x does not help us to promote the relevant values we aim to achieve
The amorality condition	x entails that it is always morally right to bring about social sustainability

neutral would thus fail to satisfy this condition. Furthermore, it is reasonable that, if something is socially sustainable, we have a pro tanto (and not necessarily an all-things-considered) moral reason to achieve it (de Fine Licht & Folland, 2019, p. 30). This is a very common assumption in the sustainability debate, and it is unclear to us whether it can be changed for the definition of ‘sustainability’ to be value-neutral, or what the reasons for this might be.

Of course, there are many questions related to sustainability that are purely factual and not value-laden. For example, the question ‘How much fish can we catch without depleting the seas?’ is purely factual. However, the slightly different question that concerns us in this paper, ‘Is depleting the seas unsustainable?’, is value-laden. Many people would probably answer yes and also assert that we have a pro tanto reason against it. The related *amorality condition* is that a definition should not imply that social sustainability is all-things-considered morally right.

Last, a definition should help us make better decisions in the light of our well-considered ethical and non-ethical judgements (de Fine Licht & Folland, 2019, p. 29). In other words, a definition should fulfil the *condition of normative adequacy*. A definition would fail to satisfy this condition if, for example, it stigmatized vulnerable groups, or if it contained the same extension as another concept, rendering it redundant or ineffective (for example if it induces partisanship). See Table 1 for an overview of the conditions of adequacy.

3 | CENTRAL CHALLENGES AND EXISTING DEFINITIONS

The discussion regarding the definitions of ‘sustainability’ and ‘sustainable development’ is vast (Pezzey, 1992; Purvis et al., 2019; Redclift, 2005; Robert et al., 2005). Proposed definitions diverge in *content* and in their *formal structure*. This is also true for definitions of environmental, economic and social sustainability.² Many definitions of ‘social sustainability’ have been offered. While we have learned much from these attempts, they also present a range of problems that must be amended.

The foremost problem with the current definitions is that they do not sufficiently fulfil the conditions of adequacy described in Section 2. In fact, all previous proposals fail to explicitly provide sufficient and necessary conditions for social sustainability. Consequently, although

²These three pillars are sometimes referred to as ‘people, profit, planet’, that is ‘the triple bottom line’. This approach is, however, heavily criticized in the research community (see, e.g., Purvis, Mao and Robinson 2019).

these definitions serve to enhance our understanding of the concept, they cannot be used straightforwardly to determine whether entities are socially sustainable or not. However, it is not clear whether all other proposals are strictly intended as definitions. Some merely attempt to capture certain features of the general discussion about social sustainability rather than actually defining it.³

Bearing this in mind, we discuss the merits and potential demerits of other prominent ideas present in the literature. The primary dividing lines are complex/simple and value-laden/value-free. Most definitions are complex and value-laden,⁴ although some definitions are simple and either value-laden or value-free. We have found no complex and value-free definitions. In this section, we discuss some of the most renowned examples of these different categories. We have identified some central challenges for presenting adequate definitions rooted in the conditions of adequacy. These challenges have to do with extension, content and its expiration date (its time limit) and thus the formal structure and not the substance of the concept. Interestingly, we find that today's definitions have a hard time meeting these challenges, and thus, even though we here only engage with the formal side of the issue, there are still effects for the practical debate on how to define 'sustainability' and 'social sustainability'.

3.1 | Challenges to definitions of 'social sustainability'

Beginning with the extension of the concept, sustainability (as well as unsustainability), if we follow ordinary language, can apply to multiple entities, such as systems, cities and neighbourhoods.⁵ Therefore, a definition should *not* be formulated such that it applies *only to one such category*—systems, for instance. In other words, the extension of the concept should not be arbitrarily limited to certain objects. Arguably, it is also crucial to assess different kinds of entities using the same definition so that various actors (such as municipality representatives and contractors) all speak the same language when discussing societies, systems or buildings. Thus, a definition that arbitrarily limits the extension of sustainability to a certain category satisfies the conditions of ordinary language and normative adequacy less than a definition that does not.

Second, the concept of sustainability pertains to containing, generating or maintaining *some amount of value* (or resources).⁶ The value constitutes *the currency* of sustainability. The relevant currency differs across discussions of environmental, social or economic sustainability and may concern ecological diversity, cultural heritage, human well-being, equality or other factors.⁷ Notably, the currency of sustainability is important for measurability. For a definition to fulfil the precision and reliability conditions, it must be possible to determine whether an entity is sustainable, in both principle and practice. Measures of sustainability largely measure the currency of sustainability, whatever the set of values or resources that may be. Sustainability is unlikely to be measurable if a definition is structured such that it fails to include a threshold for the currency—that is, it fails to specify the amount of value required. For instance, we have reason to object to a definition that appeals to the value *equal opportunities* but fails to tell us to what extent opportunities should be equal. It should be noted that whatever the currency is in

³Some explicitly state that they are not definitions but rather frameworks. For example, see Cuthill (2009).

⁴For an overview, see Murphy (2012), Ghahramanpouri et al. (2013) and Opp (2017).

⁵Notably, many also think that these objects can be sustainable on a variety of levels (e.g. macro, meso and micro).

⁶For clarification, we assert that sustainability primarily concerns 'containing' value, rather than, say, producing or maintaining value. Although we believe that an object's ability to produce and maintain value is relevant, containing value seems to be essential. Imagine, for instance, that an object could maintain value to a high degree but contained no value. In this case, the object's ability to maintain value does not seem to make the object sustainable. This strongly indicates that containing value is essential, while production and maintenance are instrumentally important.

⁷This way of thinking is compatible with both 'strong' and 'weak' sustainability (e.g. Ayres et al., 2001). Whether we should understand 'sustainability' as strong or weak has to do with the currency of sustainability, which is as of yet undecided.

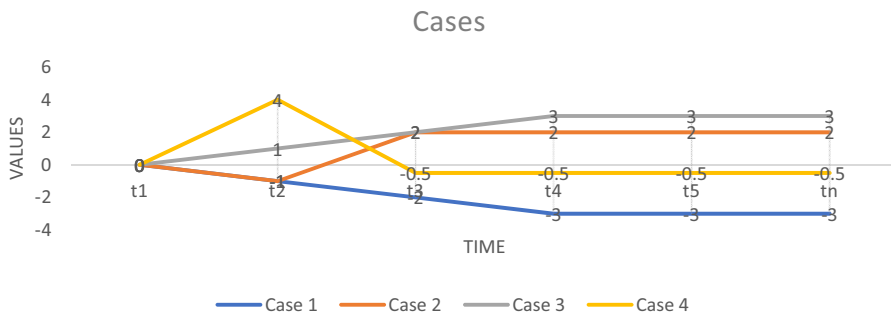


FIGURE 1 Cases 2 and 3 are sustainable; Cases 1 and 4 are not sustainable.

terms of sustainability, it is *not* meant to be the mechanism that upholds it. Even though mechanisms are necessary for the production of values (i.e. the currency), these two important aspects should be kept separate.

Third, when it comes to the location of value, we should adopt an *actualist* understanding of sustainability, as opposed to a *potentialist* (possibilist) understanding.⁸ According to a potentialist, x is sustainable if a sufficient amount of value *can* continue to be produced in the future. In contrast, we suggest that sustainability is an actualist notion, meaning that sustainability requires more than mere potential to contain values over time. Potentialist understandings are incapable of satisfying the ordinary language condition and are highly problematic vis-à-vis the measurability condition. For example, a poor and undemocratic city that has the potential to generate value over time but never actualizes that potential is no candidate for a sustainable city. A potentialist position would, however, imply that the city is sustainable; this position thus fails to satisfy the ordinary language condition. It also seems that we can more reliably measure (both in theory and in practice) the actual generation of values than the potential for generating value. Therefore, the actualist understanding is better equipped regarding the conditions related to measuring social sustainability.

Fourth, an entity that is sustainable produces, contains or maintains values *over time*, however it is measured (e.g., in means or averages).⁹ Although the time feature is undoubtedly central to the notion of sustainability, understandings of the temporal aspect of sustainability remain disputed. We believe that the time aspect is best understood as the reason for the value being unlimited, in the sense that there is no internal or external stopping mechanism, while we are not taking a firm stance on whether we should be concerned with mean or average values. In other words, 'over time' means that there are no stopping mechanisms halting the production of the positive value or resources, and x only temporarily fails to produce, contain or maintain value. This means that a sustainable entity can produce a negative net of final values *at* a time t , but this must be an exceptional occurrence. So, even if radical dips and fluctuations are allowed, these cannot be as radical for the total sum of value over time becomes negative in the end or that the negative spells are prolonged. Thus, the value production must rapidly return to a positive value at some time after t , that is $t1 + n$, and the negative value that was produced must be offset in the future by positive value production from $t1 + n$ and onwards. Figures 1 and 2 illustrate the implications of this feature. If x stops producing positive value without a

⁸There is a similar discussion in ethics and metaphysics about actualism and possibilism (Menzel 2021; Zimmerman & Cohen, 2020).

However, because we are interested in the definition and not a substantial issue, and the purposes for creating such a definition are practical and not theoretical, the question of whether to interpret 'sustainability' as an instance of possibilism or actualism is not as open a question as the question about possibilism and actualism in other areas.

⁹For a competing view, see Costanza and Patten (1995).

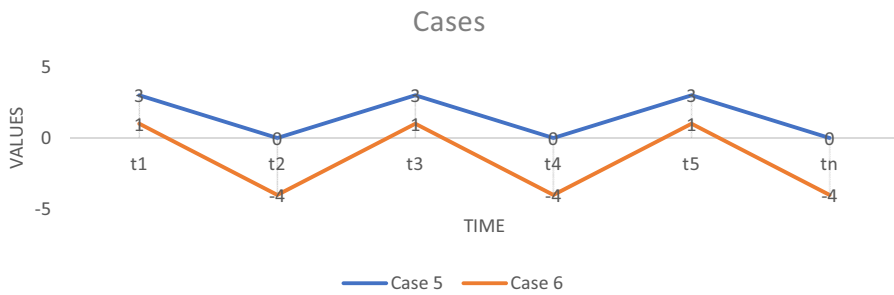


FIGURE 2 Case 5 is sustainable; Case 6 is not sustainable.

stopping mechanism in place, and this end in production is not met prematurely, x may nevertheless be sustainable.

The stopping mechanism can be understood as a factor (or factors) that makes (or will make) the production of value, *ceteris paribus*, negative or zero. Because its effects may be mitigated by producing more positive value—that is, all else *not* being equal—it is not always the case that a ‘stopping mechanism’ stops in our sense of the word; rather, it is a hindrance to a more sustainable x . Thus, a stopping mechanism effectively stops the production of positive values, whatever these may be. The above reasoning applies in reverse regarding ‘unsustainability’, to which *negative* values or decreases in value are significant. However, we have not precisely defined ‘prematurely’, ‘exceptional occurrences’ or ‘rapidly’, as we believe that these general ideas are clear enough for the aims and purposes at hand.

In assessing sustainability, we might be interested in using means or averages to evaluate long-term performance. There are benefits and problems with both of these ways of measuring. Means provide a straightforward way to summarize data, offering a single figure that represents the central tendency of sustainability metrics over time. This simplicity aligns well with the precision condition, as it provides a clear and measurable indicator. Additionally, using means can facilitate comparability by offering a standard metric across different entities or time periods. However, *relying solely on mean* values can obscure significant fluctuations and periods of unsustainability, potentially leading to incoherent results and failing to meet the coherence condition. Extreme values and short-term variations may be averaged out, potentially hiding critical issues that need attention. Thus, while means are useful for providing a general overview, they might not capture the full complexity and variability of sustainability performance, which is crucial for identifying risks and opportunities.

Using averages instead can smooth out short-term fluctuations, offering a stable view of sustainability by focusing on long-term trends. This approach can enhance the reliability condition by ensuring that the data remain consistent and reliable over time. However, the downside of using averages is that they can mask important details about variability and extreme events. Periods of significant underperformance or unsustainability might be hidden within the averaged data, leading to a false sense of stability and failing to meet the condition of normative adequacy, as it may not capture the true values and effectiveness of sustainability measures. While averages provide a valuable summary measure, they may not adequately reflect the dynamic and sometimes volatile nature of sustainability, which is essential for comprehensive risk assessment and management. Therefore, it is important to balance the use of mean or average values with other measures that capture variability and extremes.

As previously mentioned, we do not include stability or reliability in our definition, although these elements have been incorporated into other definitions (cf. Magis, 2010). While we agree that stability and reliability are often needed in practice for x to be sustainable, we do not believe that they should be included in the concept, as a highly chaotic technical or

vernacular sense, for example where the values differ from one time to the next, could still be sustainable if it continued eternally while containing the sufficient net value (see, e.g., Figure 2). Conversely, the production of positive social value is much more likely to occur if there are reliable causal features at play rather than mere coincidence. In the real world, for x to produce V over time, reliable causal mechanisms facilitating this must be in place, even though this need not be conceptually true. Therefore, we have a reason to exclude reliability, if possible, which we have done in our definition.

3.2 | Current prominent definitions

Let us now discuss some of the most prominent definitions of social sustainability, beginning with one of the most cited definitions.

Social sustainability is a life-enhancing condition within communities, and a process within communities that can achieve that condition (McKenzie, 2004). Social sustainability occurs when the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and livable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life. (McKenzie, 2004)

As the quote makes clear, this definition is *complex* and *value-laden*. Although we broadly agree with this definition, there are some problems with it. For one thing, it is not sufficiently precise. For instance, it is unclear whether McKenzie envisions social sustainability as a condition, a process or both. This definition also limits social sustainability to a certain kind of entity—namely communities. As we have argued, this is an unwarranted limitation. We use social sustainability to describe other entities too. Not only can communities be (or fail to be) socially sustainable, so can, for instance, systems and institutions. Thus, this definition is problematic because it fails to satisfy the ordinary language condition.

Furthermore, an essential feature of this understanding of social sustainability is that it is ‘life-enhancing’ or ‘livable’. However, these metrics are difficult to measure in both theory or practice; thus, this definition fails to meeting the conditions of precision and measurability—as well as, potentially, the value condition, as the idea that greater life expectancy equals healthier people (regardless of number), which equals greater sustainability, is not a plausible position.

There is also further debate about which values form *part of* ‘social sustainability’ versus being *conducive to* producing socially sustainable results, even though they do not form part of the concept. McKenzie’s (2004) understanding appeals to health, livability, equality, diversity, connectedness, democracy, quality of life and more. The question is which of these values we should include to fulfil the value condition, for example, and which values we should *exclude* satisfying the simplicity and measurability conditions. Appealing to all of the values mentioned by McKenzie renders the concept complicated and problematic in terms of measurability and simplicity. There may also be additional—or more reasonable—ideas regarding the values to be included, which problematizes the value condition and the condition of normative adequacy. An adequate definition will cohere with a well-considered view whenever possible.

Another complex and value-laden definition is the renowned definition by Vallance et al.:

...social sustainabilities comprising: (a) ‘development sustainability’ addressing basic needs, the creation of social capital, justice, equity and so on; (b) ‘bridge sustainability’ concerning changes in behaviour so as to achieve bio-physical environmental goals; and (c) ‘maintenance sustainability’ referring to the preservation – or

what can be sustained – of socio-cultural characteristics in the face of change, and the ways in which people actively embrace or resist those changes. (Vallance et al., 2011)

One reason to question the adequacy of this definition is that its complexity makes it ill positioned to satisfy not only the simplicity condition but also the measurability conditions. Of course, it is possible that only the ordinary language condition, value condition and condition of normative adequacy can be fulfilled if the definition achieves this level of complexity. While we are not convinced this is the case here, it is notable that Vallance et al. (2011) perhaps did not intend this as a definition but rather as a framework for working with social sustainability issues, or as a tool, according to de Fine Licht and Folland's (2019) conception of these matters. In this case, this framework may indeed be useful in sustainability work, in spite of the problems stemming from its application as a definition of social substantiality.

Thus, at least two of the most cited definitions fail to meet the conditions of adequacy. However, simple and value-laden definitions also exist that do not present the same problems as these two definitions. For example, consider the following definition:

A project is said to be socially sustainable when it creates harmonious living environment, reduces social inequality and cleavages, and improves quality of life in general. (Enyedi, 2002 cited in Chan & Lee, 2008, p. 245)

This definition has similarities to our own understanding of social sustainability, especially because it prioritizes the values of equality and quality of life. We agree that these are the two core values associated with social sustainability. However, the quote above cannot function as a reliable definition for distinguishing entities that are socially sustainable from those that are not.

First, it arbitrarily limits the extension of the concept to *projects*. Second, it does not specify how much of the mentioned value an object must produce to be socially sustainable. Although this definition fails to provide such a threshold, it could contribute to our understanding of dimensional sustainability—that is demonstrating that object *x* is more socially sustainable than object *y*. Nevertheless, it is unclear how we could use it to determine whether or not a specific entity is socially sustainable. Finally, and perhaps most problematically, this understanding of social sustainability does not capture the fact that sustainability pertains to sustaining value *over time*; this inadequacy is difficult to overlook.

Other proposals are simple and value-free. According to Yiftachel and Hedgcock, social sustainability in a city is characterized by 'the continuing ability of a city to function as a long-term viable setting for human interaction, communication and cultural development' (Yiftachel and Hedgcock 1993, p. 140). This definition does not satisfy the value condition and thereby fails to capture what is *good* about social sustainability or why we should seek to achieve it. It is perfectly conceivable that a society governed by a fascist dictator could be a long-term setting for interaction, communication and cultural development. Even so, we would be unwilling to categorize such a society as socially sustainable if it were also deeply unequal and its inhabitants had a very poor quality of life.

Other definitions also seem to allow for an object to be socially sustainable although it is neutral or even harmful overall. For example, Black (2004) defines social sustainability as 'the extent to which social values, social identities, social relationships, and social institutions can continue into the future'. If what matters is the continuation of all social values, not exclusively positive values, then social sustainability is compatible with *x* being harmful. Of course, social values are often thought of as inherently positive, but the continuation of social relationships and institutions can sometimes be both good and bad. Therefore, social sustainability might encompass negative values as well.

However, to satisfy the value condition, a definition must capture the values that are ordinarily associated with the term being defined. Most people consider social sustainability projects to be *improvements* and *admirable efforts* (see, e.g., Anand & Sen, 2000). In ordinary language use, social sustainability is inherently positive, as most people use the term to refer to the maintenance and production of some set of positive values. It is implausible to suggest that people believe the values connected to social sustainability could be negative in nature. Thus, the most charitable reading of Black's (2004) definition may be that social sustainability involves the continuation and production of something good.

Trying to make Black and colleagues' account be in accordance with the ordinary language and value condition, we could interpret their view instead as referring to *attitudes* regarding what is good or bad instead of *what constitutes* social goodness or badness. Yet, if one allows for the possibility that people can be mistaken about what is socially valuable, then people's attitudes about value and what constitutes value can come apart. We use the term in the second sense while, as we said, it is possible that Black et al. (2004) use this term in the first sense. However, if Black and colleagues are doing this, it seems incompatible with the ordinary language condition in another way. This is because people seem to think that we can be wrong in our sustainability judgements even though being socially sustainable in part is constituted by different sorts of attitudes.

In addition, Black's definition of social sustainability is potentialist in the sense that x can be socially sustainable if the production of certain goods *can* continue in the future. A natural interpretation of *can* is that it has the potential to continue. In contrast, we suggest a 'non-potentialist' (actualist) notion of sustainability: that it requires more than mere potential to contain values over time, which we argue above.

In summary, numerous proposals attempt to define 'social sustainability'. While these conceptualizations offer valuable insights, we argue that they ultimately fall short *as definitions* for several reasons. Although we only explored a few of the available definitions, we believe that similar critiques can be applied to others as well. This is because they share structural similarities with the definitions we discussed (for instance in being complex or value-free), and therefore, the identified issues are likely applicable to them too.

4 | OUR DEFINITIONS OF 'SUSTAINABILITY' AND 'SOCIAL SUSTAINABILITY'

In this section, we will first define 'sustainability' in Section 4.1 and then 'social sustainability' in Section 4.2. Because these definitions are intimately connected, the definitional work in Section 4.1 is highly relevant for the work that is done in Section 4.2.

4.1 | Defining 'sustainability'

What we need are definitions for 'sustainability' and 'social sustainability' that fulfil the desiderata for these concepts. Specifically, the definitions should (1) not impose arbitrary limitations, instead of limiting the extension to certain types of entities, utilize the variable x ; (2) incorporate a currency of sustainability, plausibly delineated in terms of net value, represented by the variable V ; (3) take actual value into account; and (4) ensure that V is instantiated in perpetuity.

If we can produce such a formal definition, we will produce a definition that is not without implications for the sustainability debate as the above discussed definitions do not meet these challenges. Considering this, we propose the following definitions of a sustainable entity and an unsustainable entity:

Definition 1. x is (un)sustainable if, and only if, x (does not) contains a sufficient level of net V over time.

We should also distinguish between *internal* and *external* sustainability, as well as between internal and external unsustainability, to address our interest in whether x is sustainable in itself and to better understand questions about entities that are not unlimited in time.

For x to be considered internally sustainable or unsustainable, factors that are internal to x must be responsible for the value or disvalue that x contains. Similarly, if x is externally sustainable, the value of x comes from external factors. An ecosystem can be made externally unsustainable due to the influence of external factors, such as human beings using more resources than the system can handle to continue producing a positive net value. An ecosystem can be internally unsustainable because it contains too many herbivores and no predators to hunt them. This leads to more vegetation being consumed than produced, which then causes a vicious negative cycle in which the animals and vegetation are destroyed.

Because we sometimes care about whether x in itself is sustainable, we can make sense of this interest by distinguishing between internal and external sustainability. For example, we may wish to state that a city was once sustainable even though it has been destroyed by an asteroid. With our vocabulary, we can say that the city was internally sustainable (perhaps in having great social institutions) even though it was not externally so—after all, it was destroyed. It is regrettable that the distinction between internal and external sustainability has been neglected in the literature so far; this has led to people (mistakenly) believing that we must set a ‘due date’ on sustainability for it to handle cases such as the asteroid scenario (cf. Costanza & Patten, 1995, p. 195).¹⁰

The internal/external distinction together with the actualist features also simplifies the definition of ‘sustainability’ because it removes the need of a reliability (or stability) condition, as we can explain away intuitions regarding reliability. The reason we judge a city, for example, to be more sustainable when the values are produced more reliably is that the values are more likely to be produced in the future. According to our actualist perspective, the city is sustainable only if it will produce value in the future; thus, the reliability condition becomes an operationalization of the definition but not a part of it. More reliable production of value is more likely to lead to actual value production over time. In addition, in judging that a city becomes more sustainable when it becomes more reliable in its production of value, one may implicitly or explicitly express a preference for *internal* sustainability over *external* sustainability.

Consequently, we need another definition that accounts for internal sustainability and external sustainability; hence, we offer the following definitions:

Definition 2. x is internally (un)sustainable if, and only if,

1. x (does not) contains a sufficient level of net V over time.
2. x fulfils (1) due to factors (external) internal to x .

Most people believe both that sustainability is categorical and that it exists in degrees (see, e.g., Boström, 2012). So far, we have described the categorical usage of sustainability. Because

¹⁰Of course, internal and external sustainability should not be conflated with *intrinsic* and *extrinsic* sustainability. These notions are similar but not identical, especially for extrinsic and external sustainability. For example, assume that project p leads to x becoming more sustainable at $t1$ (compared to $t0$, when p starts) and that this remains true for whatever time point after $t1$. In this scenario, p could be considered extrinsically sustainable in that it led to x becoming more sustainable by, for instance empowering the population of x . However, it seems wrong to say that p was externally sustainable, because p existed for a very brief period only and always had an expiry date. Thus, when practitioners discuss socially sustainable projects (which they often do, in our experience), they often refer exclusively to the extrinsic sense. This is useful to know when attempting to relate the concept of ‘social sustainability’ to methods used by practitioners to improve it.

this concept is categorical, it makes sense to say ' x is socially sustainable, and y is not'. This suggests a threshold that divides the realm of sustainability from the realm of entities that are either (i) neither sustainable nor unsustainable (including neutral entities and those for which the concept is unfit) or (ii) unsustainable. The definitions we have discussed are categorical conditions that place the threshold at a sufficient level of V over time.

Even though we so far have described the categorical usage of sustainability, our definition also allows for the analysis of degrees. We can comprehensibly say that ' x is more sustainable than z ' and ' x is more sustainable now than it previously was'. It is uncontroversial that the former statement makes sense when both x and z are sustainable, and x is more so. Perhaps, more controversially, this can be said even if neither is socially sustainable (categorically). Based on our understanding of sustainability, it is clear that an object becomes more (or less) sustainable if it contains a higher (or lower) net level of V over time. If a city, for instance, has become more socially sustainable, then it will produce more net value over time (i.e. in an actualist and not a potentialist account of sustainability).

Some people may imagine 'sustainability' differently, where we (for example) judge an ecosystem to be sustainable when it operates at peak performance or similarly. This implies that we should think differently about the threshold for sustainability. In other words, it may be that, for x to be sustainable, it must be higher up on the y -axis if we think this way about values than we suggest here. We believe instead that we should divide these cases into 'sustainable' and 'flourishing'; whereas 'sustainability' consists of steady success, 'flourishing' is distinct and often requires more than that.

Our distinction between 'sustainable' and 'flourishing' entities is much more consistent with ordinary language than merely using 'sustainability' for every case. Describing an ecosystem as flourishing plausibly means, roughly speaking, that it operates at peak performance. However, it seems strange to say that an ecosystem that is not at peak performance but that is producing sufficient value and is not at risk of producing less in the future is not sustainable. Furthermore, the concepts of 'sustainability' and 'flourishing' may even conflict with each other (cf. Anand & Sen, 2000, pp. 2040–2045). An ecosystem that is at peak performance may be more likely to crash. Thus, we separate our intuitions about 'sustainability' and 'flourishing' and adopt a more scaled-back view of 'sustainability' than 'flourishing'.

Last, when it comes to sustainable *development*, which is broadly discussed today, it has at least two areas of application: The development of x without hampering its capacity to produce V and the development of x making x more sustainable in the sense that x will produce more net V over time. For example, we may engage in sustainable development when adding green space to densely populated places, increasing the health and well-being of the population and thus causing x to produce more V . Similarly, when engaging in sustainable forestry management, the aim is often to engage with the forest so as not to destroy the conditions for its existence or harm its ability to function as it should, while still extracting resources such as wood. Thus, if successful, we develop x without hampering the production of V . This also explains why 'sustainable development' is *not* an oxymoron, as some involved in this debate have suggested (Brand, 2012; Johnston et al., 2007; Redclift, 2005).

4.2 | Defining social sustainability

When defining 'social sustainability', rather than 'sustainability' in general, it is necessary to specify what constitutes a social dimension—as opposed to another dimension—of sustainability. We also retain the basic structure of this concept in all of its dimensions to facilitate a comparison between the effects of a measure on the various dimensions of sustainability. The best way to achieve this is to understand that what differs between the dimensions are the values relevant to them. For example, environmental values are relevant to environmental sustainability;

similarly, social values are relevant to social sustainability. Consequently, we propose the following definitions of a socially sustainable object and a socially unsustainable object, where SV stands for social values:

Definition I. x is socially (un)sustainable if, and only if, x (does not) contains a sufficient level of net SV over time.

We also propose that the dimensional conditions for being *more* or *less* socially sustainable are the same as the dimensional conditions given above for sustainability in general, with the exception that V (value) is exchanged with SV (social value).

While numerous arguments favour our definition, one especially salient fact is that it is similar to previous definitions in its general notions of sustainability and unsustainability. Our definition thus adheres to the standard framework, in that social sustainability is a type of sustainability. What distinguishes our definitions of social sustainability is that the currency includes only *social values*, not all values.¹¹ Additionally, because our definition of social sustainability relates to other forms of sustainability, our concept of 'social sustainability' is sensitive to the other pillars. If we consider 'cultural sustainability', for instance, a separate and distinct dimension of sustainability, then some values may be included there that would otherwise be included under 'social sustainability'.

We are not going to discuss the content of SV here. But, irrespective of how SV should be understood, it must align with the ordinary language and value conditions such that what we mean by 'social sustainability' is conveyed. Thus, SV must be beneficial for people so that we have reason to promote it. Moreover, SV must be as precise and simple as possible so that it can be measured and produced in practice. We also want an account of social values to be as robust as possible so that we do not need to constantly change our views on what constitutes social values and so that we may obtain an account that is 'closer to the truth'. Furthermore, SV should ideally not produce any negative effects—as in the context of sustainable development, for example—and would preferably be considered non-partisan so that it may actually be useful.

Furthermore, the content of SV depends at least partially on whether the concept of sustainability is understood in hierarchical or non-hierarchical terms as well as on which other dimensions of sustainability are relevant.¹² According to hierarchical views of sustainability, one or more dimensions (e.g. environmental, economic and social sustainability) can trump or rule the others. For example, environmental sustainability could be proposed as the core of sustainability, with all other dimensions subsumed under it. If so, social sustainability would be whatever produces sufficient environmental values (EV). To define SV in this scenario, we would need to examine the sort of SV that produces sufficient EV . According to non-hierarchical accounts, SV should instead be understood independently of EV such that EV may even clash with SV . Indeed, there is much debate on how to deal with such conflicts (Purvis et al., 2019).

5 | CONCLUSION

In this paper, we have applied a robust set of conditions of adequacy pertaining to 'sustainability' and 'social sustainability'. Utilizing these conditions, we have identified four challenges related to the formal structure of these definitions that existing definitions need to address.

¹¹One common way to understand 'social values' is as 'a set of moral principles defined by society dynamics, institutions, traditions and cultural beliefs. These values are implicit guidelines that provide orientation to individuals and corporations to conduct themselves properly within a social system'. Of course, the inclusion of this understanding in our definition would violate the amorality condition, which is why we do not use it here.

¹²See, e.g. <https://www.kth.se/en/om/miljo-hallbar-utveckling/utbildning-miljo-hallbar-utveckling/verktygslada/sustainable-development/hallbar-utveckling-1.350579>.

Surprisingly, none of the current definitions of ‘social sustainability’ could meet these challenges while fulfilling the conditions of adequacy. Consequently, we have proposed new definitions to address these issues effectively. Although our definitions are purely formal in nature and do not engage in substantive issues such as the currency or the precise understanding of ‘over time’, they are not devoid of content. On the contrary, our work demonstrates that meaningful progress in the debate can be achieved by focusing on formal definitions without engaging in the substantive debate.

Nevertheless, considerable research still awaits exploration in the realm of ‘social sustainability’. Each condition of adequacy could be further developed and more rigorously defended. While we have initiated this work and de Fine Licht and Folland (2019) have made some contributions, there remains much to be done in this area. Future research should also address the substantial issues concerning values to be incorporated into ‘sustainability’ and ‘social sustainability’ definitions; clarify key terms such as ‘prematurely’, ‘exceptional occurrences’ and ‘rapidly’; and determine a precise threshold for social sustainability. This should be done by utilizing the desiderata in combination with demonstrating how the definitions meet the challenges discussed here. Another important step is to examine how the definitions emanating from these examinations can be used to evaluate sustainability tools, guidelines and quality systems of which there exist an abundance of today.

In conclusion, the transparency and depth of our approach hold the potential to revitalize the conversation surrounding ‘social sustainability’ and stimulate further research in related fields, ultimately expanding our understanding of this crucial concept. As philosophers, we are well poised to contribute to this discussion, making it more transparent and coherent. In addition to making contributions on the substantive side to the sustainability debate, we hope that many others will follow in the foundational conceptual debate as well, ensuring that the practical concept of sustainability is grounded in a well-founded theoretical and formal basis.

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ORCID

Karl de Fine Licht  <https://orcid.org/0000-0001-6972-4814>

Anna Folland  <https://orcid.org/0000-0002-7350-4010>

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