Article

Normative Visions of Sustainability Professionals: A Case Study of Strong Sustainability and Doughnut Economics

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ABSTRACT

Background: The transition to a more sustainable society is, by its very nature, a normative process that involves contested understandings of sustainability and the values associated with it. It is thus important to explore and understand the normative dimensions of sustainability in order to navigate normative tensions that represent fundamental differences in what is considered desirable in a sustainable future. While theoretical work exists on sustainability conceptions, there is limited empirical research exploring the normative visions of sustainability professionals in the public and not-for-profit sectors, and more specifically those using recently emerged operational frameworks like Doughnut Economics. This article examines the normative visions and values of sustainability professionals in three organisations in the non-profit and public sectors in Switzerland and explores an in-depth case study of sustainability professionals using the Doughnut Economics framework.

Methods: This article combines data from semi-structured interviews, document analysis, and a focus group discussion. Thematic and content analyses were used to explore participants' sustainability visions, values, and conceptual frameworks. Finally, an interdisciplinary reflection with an environmental humanities expert explores the normative and practical implication of strong sustainability and Doughnut Economics.

Results: This research highlights that the values underpinning strong sustainability and the Doughnut Economics framework, specifically the value afforded to nature, are interpreted differently amongst practitioners. The case study suggests that the Doughnut Economics framework can be considered as an operational framework for strong sustainability and functions as a "moral compass" for professionals.

Conclusions: Drawing on key notions from ecological ethics and the work of J. Baird Callicott, we shed light on the significant normative and practical implications of integrating the intrinsic value of nature into the Doughnut Economics framework, notably the shift in the burden of proof.

Received: 17 Apr 2025
Accepted: 13 Jun 2025
Published: 19 Jun 2025

KEYWORDS: environmental ethics; nature; intrinsic value; strong sustainability; sustainability; doughnut economics

INTRODUCTION

The pursuit of sustainability in the face of wicked problems such as the climate change crisis, the sixth mass extinction, and growing social dichotomies, requires a comprehensive and nuanced consideration of the moral dimensions that inform societal responses [1]. This is particularly important as the pursuit of a sustainable future for humans and non-humans alike involves judgments about what is desirable or valuable and thus is an inherently normative topic. Furthermore, understanding the normative aspects of sustainability is important because underlying norms and values are increasingly recognised as integral to promoting transformational change to address sustainability issues [2,3]. For example, extensive empirical research in environmental psychology and behavioural sciences has demonstrated the pivotal role of values, norms, and morals in shaping pro-environmental behaviour [4–13] and action for public goods [14]. As such, ethics and normative values form an essential component of the ongoing conversation around sustainability [15,16].

While sustainability is widely recognized as a contested and inherently normative concept, much of the existing work has explored the evolution and diversity of sustainability conceptions, as well as their theoretical underpinnings. However, there is currently little empirical research examining how normative aspects of sustainability are understood and in practice across different contexts and professions. Empirical research is important to “unravel and critically reflect on the ethical values involved in sustainability” and “find common ground on what sustainability means for specific situations” by engaging in “deliberative learning processes with societal actors” [15], (p. 1593). It also has an important role in contributing to a deeper understanding of how sustainability is interpreted and enacted on a practical level in diverse contexts, and identifying and analysing normative tensions that arise in this process. This is particularly pertinent in the context of sustainability professionals considered as any “person who is explicitly responsible in a professional capacity for some aspect of their organization’s sustainability, or is tasked with developing and maintaining the sustainability of some other organization” [17], (p. 86).

Previous research shows that the roles of sustainability professionals are fraught with value tensions and at times contradictions, and that moral convictions play an important role in navigating decisions [17]. The empirical research that has been conducted to date has largely focused on the private sector and industry, for example, [18,19], and professionals employed in these contexts, for example, [20–22]. While there is some research in the public and not for profit sectors (such as [23]), there is little research which seeks to understand the experiences and perspectives of

professionals in these sectors which potentially differ from those in the private sector. More specifically, there is little research, that explores the normative visions and dimensions of sustainability professionals using recent operational frameworks. As frameworks such as the Planetary Boundaries and Doughnut Economics (DE) continue to gain traction [24], these frameworks will increasingly influence sustainability discourse and practice. Empirical research can help to shed light on the normative visions of professionals working with these frameworks and how they shape sustainability practices.

This research contributes to addressing these gaps by adopting a pluralist perspective to explore the normative visions of sustainability professionals working in the public and not for profit sectors in Switzerland. The first part of this article draws on interviews across three teams from different public and not for profit organisations in Switzerland. It then delves into a specific case study of one of the teams that has adopted the DE framework to explore the implicit normative visions held by these professionals using this framework and foster collective reflection on sustainability visions and values among team members. Finally, the discussion combines the empirical results with an interdisciplinary reflection with a philosopher from environmental humanities in order to critically engage with the normative and practical implications of the sustainability values and visions identified.

Diversity of Conceptions of Sustainability

Historically, the dominant definition of sustainable development is outlined in the Brundtland Report from the 1980s which stipulates that "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [25], (p. 37). While precursors to this dominant Western definition can be identified in the works of various authors such as Henry David Thoreau and Rachel Carson [26], and foundations of the definition can be traced back to Hanns Carl von Carlowitz in the forestry sector in Germany in 1713 [27], similar notions and concepts have existed throughout history in diverse contexts and cultures [28].

Despite the presence of this dominant definition, it is a common feature of interdisciplinary sustainability science literature that sustainability is a contested concept, with numerous definitions and diverse understandings [26,28–32]. Such definitions vary based on contexts, institutions and ideologies, among other factors [28]. Furthermore, within a single definition various concepts can be interpreted differently [31]. Some authors advocate for the need for a unified definition and attempt to synthesise diverse definitions, often in the hope to increase the credibility of the concept, operationalise it, and support its implementation [31–34]. Contrastingly, others advocate against the need to develop a singular definition, arguing that embracing the pluralism enables the examination of diversity and a better understanding of the normative basis of the

concept [29,31]. In line with such an approach, this research takes a pluralist perspective which assumes the coexistence of multiple interpretations, and definitions of sustainability.

To navigate and comprehend the plurality of sustainability definitions, numerous categorisations or typologies have been suggested. An increasingly common approach draws on concepts originating in economics literature, where sustainability is represented as a binary of 'weak sustainability' and 'strong sustainability', or on a scale from 'very weak sustainability' to 'very strong or deep sustainability' [35–45]. A central feature of weak sustainability is the belief that social, economic, and environmental 'capital' are interchangeable, and it is acceptable to replace one with the other. In contrast, strong sustainability aims to preserve natural capital, highlighting that natural capital, particularly critical natural capital, cannot be replaced by human sources of capital [46]. While the terms 'sustainability' and 'sustainable development' are often used interchangeably [43], numerous authors distinguish between the two on the grounds that international sustainable development discourse and policy are based on a weak sustainability approach which has been historically dominated by economic development [34,47–49]. In addition to the numerous conceptions of sustainability, there is also a plurality of operational frameworks.

In recent years various frameworks have emerged to support the implementation of sustainable development and sustainability. The dominant international framework for the operationalisation of sustainable development is the well-known Sustainable Development Goals (SDGs) which outline 17 internationally agreed upon goals adopted in 2015, the implementation progress of which continues to be systematically monitored until 2030. Other operational frameworks have recently gained prominence such as the Planetary Boundaries and DE. The Planetary Boundaries, developed by Johan Rockström and colleagues [50], describe the critical limits of the nine fundamental biological and chemical systems that enable the Earth system to support human life. The Planetary Boundaries include: climate change, biosphere integrity, ocean acidification, the depletion of the stratospheric ozone layer, the disruption of the biogeochemical cycles of nitrogen and phosphorus, freshwater use, land use changes, novel entities and the concentration of atmospheric aerosols [51]. Human activity has caused the crossing of six of these boundaries [52], the most recent being those related to freshwater and new entities [53,54]. The DE framework by Kate Raworth depicts an economic model that ensures social well-being while operating within the nine Planetary Boundaries [55,56] with the aim of simultaneously 'ending deprivation and degradation' [56], (p. 245). DE defines 12 elements of the social foundation that encompass basic human needs including: energy, water, food security, health, education, work, peace and justice, social equity, gender equality, housing, networks and political voice [56]. The framework promotes meeting the needs of all without exceeding

Planetary Boundaries by striving for a state where humanity exists within "the safe and just space for humanity" between the inner and outer rings [56], (p. 44). A shared and somewhat underexplored aspect of these diverse conceptualisations and operational frameworks of sustainability is that they all have important normative dimensions.

Normative Dimensions of Sustainability

Sustainability is widely recognised as a normative concept. In general, the term 'normative' is often surrounded by ambiguity [57], furthermore numerous understandings of sustainability as a normative concept exist. In the context of this research, normativity is understood as moral evaluations pertaining to what ought to be done in a given situation that draw on 'evaluative concepts' such as what is desirable or admirable, or what is undesirable or deplorable [57,58]. As such, normativity is inexorably intertwined with what is valued or considered valuable within a given context or society.

Several characteristics contribute to the normative nature of sustainability. The term alone is not sufficient to qualify sustainability as normative. Rather, the context within which the term sustainability is used makes it normative as it involves the social process of evaluating some actions and outcomes as desirable or permissible and others undesirable or impermissible [31,45,59,60]. More specifically, sustainability is used to indicate a desirable aim for society and a moral ideal of the current and future relationship between humans and the ecological and social systems they are a part of [34, 60–62]. This is directly related to notions of what humans value [63], including the moral value accorded to humans and to nature [40], as well as evaluative concepts such as imperative, obligation, justice, and responsibility. As such, ethics and sustainability are inherently interconnected [32]. Furthermore, sustainability, whether as a concept, a goal, an operational framework, or the subject of research, involves (often implicit) value judgements in value-laden contexts [63–65].

Though sustainability should not be exclusively defined in terms of its normative nature [62], it is important to explore and understand these normative dimensions for numerous reasons. Sustainability has an inevitable role in shaping public and political discourse and action, and in encouraging critical reflection on notions of current a desirable future [45]. The plurality of sustainability conceptions mentioned above gives rise to numerous normative tensions that represent fundamental differences in what is considered desirable in a sustainable future. Major centres of normative debate in sustainability, or 'fault lines' as Jacobs [30] calls them, include the degree of environmental protection that is deemed desirable or necessary, the place given to the notion of international equity and justice, and the extent to which participation in the development of sustainability policies is encouraged (or not). Other normative differences

between sustainability definitions include the values that motivate inter- and intra-generational justice, and the values assigned to nature [30].

A crucial aspect in the development and execution of sustainability initiatives is determining whose values will be expressed and prioritized, in both public or private domains [16]. For example, it has been suggested that an actor's ethics framework contributes greatly to which sustainability pathways they perceive as desirable [17]. Divergence in such beliefs can, for example, result in two sustainability professionals that work in similar fields opting for different paths of action [17,66]. Furthermore, diversity of values in the context of sustainability may present differences in environmental governance preferences [67], or the need to delicately balance tensions between diverging or conflicting values (for example, [68]). It has also been suggested that normative tensions around sustainability beliefs among members of groups and teams working towards sustainability transitions have the potential to impede progress towards sustainability on several levels [66,69].

Finally, values and worldviews are often considered in the sustainability literature as potential leverage points for transformation [66,70–72]. However, these dimensions of sustainability often remain implicit. This is particularly the case in contexts where those carrying out sustainability work are not necessarily familiar with reflecting on their own personal values associated with sustainability, and if and/or how their values are aligned (or not) with specific sustainability frameworks and discourses. Thus, it is important to explicitly consider these aspects in order to support transformative change [66] through critical reflection on, and coherence between, individual values, collective goals, and the sustainability frameworks that guide action.

There is vast theoretical research on differences between normative visions of sustainability. Furthermore, the research on values related to sustainability is steadily growing. However, there is currently limited empirical research that provides a deep understanding of normative visions and values of sustainability professionals working in non-profit and public sectors. In particular, there is limited research related to normative aspects of sustainability in the context of emerging operational frameworks such as DE. Therefore, this research aims to explore normative visions of sustainability professionals working in the public and not for profit sectors in Switzerland and examine in-depth the normative visions of sustainability professionals using the DE framework in their work.

METHODS

Study Design

The results presented in this article come from a larger research project, *'Implicit Ethics in Collective Sustainability Action: Case Studies in Switzerland'*. This study employed a multiple case study design to address

the research question: What are the implicit ethical motivations and frameworks of sustainability collectives in the context of the public and non-profit sectors in Switzerland? It examined in-depth how sustainability is defined, and the implicit values and ethics concepts that are mobilised by members of collectives involved in sustainability work.

Part one of the methods and results refer to the data collection and analysis of the interviews from the three teams involved as case studies in the research. It enabled the exploration of how participants across the three teams understand and define sustainability, as well as the normative notions and conceptual frameworks they use. The results for Part one highlighted that the DE framework was a key operational framework emerging from participants' interviews. Noting that the DE framework has been gaining significant traction in recent literature, evidenced by an increasing number of publications that explore its applications and implications [24], Part two builds on these findings by presenting an in-depth analysis of one case study, focusing on a team that uses the DE framework in their work.

Data collection for this research was carried out between May 2022 and July 2023. A combination of multiple methods was used to enable triangulation of results between semi-structured interviews, document analysis, Focus Group Discussion (FGD) and interdisciplinary philosophical reflection. This combination of data collection methods was designed to encourage participant reflexivity on both individual and collective levels, as well as enable a nuanced and in-depth elicitation and exploration of normative reasoning and moral postures. At the individual level, this was achieved through semi-structured interviews using vignette-based moral dilemmas and reflexive discussion. At a collective level, this was achieved through reflexive discussion and exercises during the FGD. This approach encouraged participants to reflect on and clarify their own values and normative frameworks related to sustainability. Finally, the interdisciplinary philosophical reflection articulated these empirical findings in relation to contemporary ethics theories, notably ecological ethics.

The case study that is the focus of this article was selected as it met the selection criteria of being either a not for profit or public institution in Switzerland which is engaged in sustainability action, it was accessible to the researcher, and the members of the team were available to dedicate the necessary time to the research. In accordance with requirements set out in the ethics approval issued by the Research Ethics Committee of the University of Lausanne (ID C_FTSR_032022_00010), informed written consent was received from all research participants and the name of the organisation that is the focus of the case study and any identifying information has been anonymised to prevent the potential identification of any participants. Furthermore, all data pertaining to this research has been anonymised and stored on a secure server.

Part 1—Across Case Interviews

A total of 15 semi-structured face-to-face interviews of approximately one hour were conducted (Appendix A) across the three teams involved in the research to understand the individual sustainability visions and values among members of each team. Interviewees were identified through a combination of purposeful and snowball sampling. The data used in this article pertains to a portion of the interview where the questions aimed to better understand the interviewee's role and nature of their involvement in the collective, their motivations for their involvement in sustainability action, and their conception of sustainability and its associated values. Following the interviews, the audio recordings were transcribed and analysed and a thematic analysis with an inductive approach identified themes emerging from the interviews [73]. This analysis was carried out across all of the 15 interviews from all three case studies in the larger research project in order to better understand how participants defined sustainability and in relation to which concepts and frameworks.

Part 2—Case Study Context and Methods

This case study focuses on a public institution in Switzerland in the domain of education. The team operates with approximately 15 individuals. The primary objective of the team is to integrate sustainability into all aspects of their organization. Strong sustainability is cited as the guiding framework for the team, revealed through the documents analysed (vision document). In particular, the document analysis highlighted that the DE framework is adopted by as a guiding framework for the work of the team and is used in either a conceptual or an operational capacity in more than one project. The interviews and FGD supported the notion that there is a shared vision of strong sustainability among the team, and that the team members often refer to the DE framework as a guiding conceptual framework for in their work. The team carries out the promotion and implementation of strong sustainability through diverse avenues of activities involving the oversight of participatory processes for the development of an organisation-wide sustainability plan, organizing events, fostering opportunities for building communities within the organisation, providing technical assistance, and undertaking both internal and external mandates.

The case study presented in this article draws on a combination of document analysis, interviews and to examine the normative sustainability concepts held by members of a team using the DE framework in their work.

Document Analysis

Document analysis was conducted on three sources including the website (all publicly available pages), a strategy document containing the vision and mission of the collective, and activity report of the collective (43

pages). This enabled the researcher to gain a broader understanding of the context of the team and their work, their vision of sustainability and how their activities relate to this vision. Additionally, documents relating to specific projects (two documents of 89 and 88 pages each) were made available to the researcher to provide examples of the mandates and activities of the collective. Each document was summarised and analysed using an analysis template designed specifically for this research to help capture important information about the case study, particularly the vision, mission and activities of the collective, as well as any normative elements relating to sustainability and the values that the collective associates with this concept.

Interviews

As part of the interviews mentioned above, the six interviewees belonging to the case study were presented with five vignettes containing contemporary and context-relevant moral dilemmas related to sustainability. Here a moral dilemma is defined as a situation where a moral agent ought to adopt two paths of action, but it is not possible to adopt both of these paths simultaneously [74]. Thus, the situation results in opposition of numerous moral values. In these situations, there is not one ultimate 'right' or 'correct' answer, but both paths of action are morally justifiable.

Vignettes are short stories about specific events or situations which are connected to important aspects of the research and place it in concrete contexts in order to encourage participants to react and express their opinions that the situation evokes [75]. Previous research has illustrated that the use of vignettes is an appropriate method to elicit individual values [76–81]. The vignettes were developed following established methods and designed based on current sustainability issues and culturally relevant situations [77,78,82,83].

The moral dilemmas at the centre of the five vignettes included: (1) if the use of fossil fuel cars by individuals should be allowed to continue or be banned in order to reduce greenhouse gas emissions. (2) If ski domains and bike parks for tourism should be allowed to be developed at the cost of the preservation of local forests and biodiversity. (3) The reemergence and protection of the wolf population in tension with the needs of farmers in relation to protecting their sheep through the population control of wolves. (4) How to address challenges surrounding the need for economic development to reduce poverty, the greenhouse gas emissions this will involve and international climate change injustices between the Global South and the Global North. (5) The need for development through economic growth and the relationship to environmental damage. Probing questions were used to elicit the moral reasoning they use to support their response to the moral dilemma. The design of these vignettes, for example the choice of topic and description of actors in the vignettes, as well as the probing questions asked to interviewees, were developed and tested to

specifically enable the emergence of underlying values and ethics notions related to sustainability.

In addition to the interview analysis outlined above, a short summary of two to three pages was created for each interview within the case study. Case study interviewees were invited to give feedback on the summary of their interview. This form of participant involvement served to check the researcher's understanding of what was said and to give the interviewee the opportunity to consider if they wish to participate in the FGD in accordance with informed consent procedures. Those interviewees that chose to participate in the FGD had the opportunity to communicate what information they were willing or not willing to share with their peers during the FGD. All interviewees chose to participate in the FGD, and no interviewees opted to censor any information.

The vignette portion of the interview transcripts were analysed using content analysis. Data from each vignette was analysed individually. The coding frame for the content analysis was developed based on a combined deductive and inductive approach. Established ethics theories were used to analyse and understand the different structures of moral reasonings which could appear when participants responded to the dilemma and probing questions presented in the vignette. The main categories related to overarching approaches found in ethics literature, and the sub-categories were based on ethical theories identified in interviewees' reasoning or justification for choices (described in Table 1). These categories and sub-categories were developed on the basis of numerous literature resources in ethics related to sustainability and the environment, and ethics more generally [84–89]. Additionally, recurrent themes or concepts that emerged through the analysis were coded, these themes were specific to each vignette. The coding framework was tested through a pilot phase [90], and the main phase of coding was carried out with the support of MAXQDA 2024 [91].

Table 1. Sub-categories used in coding framework for content analysis of vignette responses.

Coding	Main Category	Sub-Category	Description
Deductive coding	Teleological theories		Focuses on the consequences or outcomes of actions in determining their moral value.
		Consequentialism	Determines the morality of an action by the extent to which it achieves a desired end or good.
		Utilitarianism	Morality of an action determined through the maximisation of the intended good.
		Virtue ethics	Attitudes or dispositions which are oriented to the ultimate good of fulfilment or flourishing.
	Deontological theories		Judges moral action, not on the consequences or outcomes of those actions, but the inherent rightness (just) or wrongness (unjust) of actions themselves.
		Duty	A moral action is one that is driven by a good intention and that comes from a sense of duty to act.
		Contract	Moral actions are those which are based on the moral obligations and duties mutually imposed and accepted by members of a community.
		Discourse ethics	Importance placed on rational discourse and dialogue among individuals in order to establish a shared understanding, determine the morality of a decision or action, and come to an agreement accepted by all parties.
Inductive coding	Environmental ethics		Reflections concerning the relationship of humanity to non-human nature, including the value and moral status of non-human entities.
		Value of nature	The multitude of ways in which non-human nature is important for people and communities.
		Moral posture	Enable us to reflect on who or what matters from a moral perspective, particularly which entities (biotic or abiotic, human or non-human) are morally considerable, that is deserves ethical consideration in terms of its well-being. Moral postures include anthropocentrism, pathocentrism, biocentrism, and ecocentrism.

Focus Group Discussion

The FGD took place face to face on the 1st November 2022 for a duration of three hours with the six case study participants that were previously interviewed (N01–N06). The aim of the FGD was twofold. First it intended to share the preliminary findings from the interviews with the participants and engage in a form of collective member checking [92]. Second it sought to foster collective reflection on sustainability visions and values among team members through a discussion-based deliberative learning process [92]. The FDG was audio recorded and transcribed to facilitate data analysis. A thematic analysis based on an inductive approach was used to identify themes and sub-themes of discussions emerging from the FGD [73].

Following the analysis of interviews and the FGD, an interdisciplinary philosophical reflection was carried out with an environmental ethics and

environmental humanities expert to deepen philosophical and ethical reflections and analyses around the findings.

RESULTS

Part one of the results section presents the analysis of the interviews across the three teams involved in the larger research project. The results illustrate the similarities and differences identified in visions of sustainability among the interviewees, in particular the dominant concepts and frameworks that emerged. Part two of the results presents an in-depth analysis of the case study of the team that uses the DE framework in their work. This focuses on the responses to the vignettes, particularly the similarities and differences in terms of moral reasoning and values mobilized by the interviewees. Building on these results, a key difference in sustainability visions and values is identified, namely the value and moral consideration of non-human nature. Finally, the results of the FGD are presented, particularly discussions concerning the compatibility of the team's operational framework, the DE framework, with the moral consideration of non-human nature.

Part 1—Definitions of Sustainability from Cross-Case Interviews

When asked to define sustainability, all accept one of the interviewees made explicit references to established and well-known sustainability frameworks and concepts. This included the three pillars of sustainability, intra- and intergenerational justice, strong sustainability, Planetary Boundaries, DE and interdependence with nature. Participants often mobilized more than one of these concepts in order to fully describe their vision of sustainability.

Among the concepts and frameworks mentioned, strong sustainability was mentioned most frequently. This included explicit mentions of strong sustainability, or the notion of preservation of natural capital, by ten interviewees. DE, interdependence with nature and the necessity of fulfilment of fundamental human needs were all mentioned by half of the interviewees (seven out of 15). For example, one interviewee stated:

"*I like to see sustainability a bit as what Kate Raworth has done in DE. It's like taking into account the Planetary Boundaries, so looking at the resources we have, and making the best use of resources so that we can provide social benefits and also social justice, education, access to clean water and so on, to everyone so that we can bring minimum of a certain threshold of social values to everyone around the globe without compromising future generations. I think the notion of Planetary Boundaries also link with this notion of future generations.*" (N09)

Another interviewee mentioned:

"*I think the Doughnut expresses it quite well. In fact, my definition of sustainability at the moment is really to respect the Planetary Boundaries, to understand that there is a finiteness. That resources are finite. There are*

planetary limits and this has to be done while respecting a social foundation and access for all." (N05)

The Planetary Boundary framework was alluded to numerous times and explicitly referred to by four interviewees. However, it was never mentioned as the sole framework or concept when interviewees were defining sustainability. Interestingly, it was consistently mentioned in tandem with the notion of meeting fundamental human needs. This suggests that interviewees considered the Planetary Boundaries framework alone is incomplete for defining sustainability.

Of all of the interviewees, only one interviewee did not refer to one of the above listed concepts or frameworks when defining sustainability. Instead, they defined sustainability as a systemic problem from an engineering perspective:

"*It's like designing a system that is going to remain there forever without affecting wellbeing of people and that nature itself is going to work efficiently, always. Of course, maintenance is needed.*" (N08)

Of the ten participants who mobilized the concept of strong sustainability in their definitions, eight also mentioned other key concepts or frameworks. Half of these people mentioned the DE framework, while six mentioned the notion of interdependence between humans and nature. While these notions are not incompatible, this is the first indicator that highlights that the concept of strong sustainability is not interpreted uniformly between the sustainability professionals interviewed.

Within the case study that is the focus of this article, all interviewees except one mentioned strong sustainability in their definition of sustainability. Direct references included naming strong sustainability as their sustainability definition, whereas indirect references included mentions of the incommensurability of natural and human capital. Within this context the DE framework and its elements (the Planetary Boundaries and Social Foundation) were explicitly mentioned by four of the six interviewees. For example, one participant stated:

"*My current definition of sustainability is really to respect the Planetary Boundaries, to understand that there is a finiteness... Resources are finite. There are Planetary Boundaries. And this has to be done while respecting a social base and access for all... Sustainability is therefore about living well while respecting Planetary Boundaries... And the green of the Doughnut... is still not very clear to me. What's in the green?*" (N05)

Four out of six interviewees also mentioned elements of environmental ethics when asked how they define sustainability. These elements included the notion of balance or harmony with ecosystems, the interdependence of humans and nature, the relationship between humans and non-human nature (including abiotic elements of nature). Some interviewees also alluded to the need for movement away from utilitarian visions of nature and dualism where humans should no longer be considered as separate to nature or having the right of domination over non-human nature. For example, as one interviewee stated:

"I would say not to carry out human interventions that will damage the health and sustainability of ecosystems. The vision that I have is that this is the result of millions of years of evolution…to see the functioning of ecosystems as having found a certain balance, a certain harmony. The development of the human species has taken on such proportions that it's damaging this harmony and it's as if we've stepped outside a self-regulating system. By laying the philosophical foundations that we are different, we have placed ourselves outside this system." (N04)

The DE framework was mentioned by interviewees in relation to sustainability definitions, as well as a conceptual or operational framework for the projects that the interviewees were implementing. Thus, this framework stands out within this research as the primary, perhaps only, operational framework emerging from participants' definitions of sustainability. As mentioned above, the DE framework has been gaining significant traction in recent literature, thus the remainder of the results and discussion will adopt this focus.

Part 2—Results from the Case Study

Normative Reasoning in Sustainability Dilemmas

This section focuses on the responses to vignettes during interviews with the participants from the case study that is the focus of this article. This enabled an analysis of the differences and similarities in the moral reasoning and values that interviewees used to take decisions when they were confronted with moral dilemmas relating to sustainability. In particular, the comparison of the responses revealed interesting similarities in the use of moral reasoning in line with consequentialist, contract and discourse ethics. It also shed light on differences in terms of the values accorded to, and moral consideration of, non-human nature.

Consequentialist ethics—Planetary Boundaries. When confronted with moral dilemmas, interviewees most often mobilised reasoning that closely resembles consequentialism. They did so through references to reducing CO_2 emissions, not crossing Planetary Boundaries (in particular climate change or biospheric integrity) or reducing anthropogenic environmental impact more generally. As illustrated by an interviewee in response to the use of fossil fuel cars by individuals described above:

"*Even without considering carbon neutrality in what we imagine now, if we take the Planetary Boundaries which are not just carbon neutrality, individual fossil fuel cars, that's not part of this particular vision of society. And I don't believe that there is a vision of a sustainable society, a truly sustainable society, that remains within the Planetary Boundaries within which fossil-fueled cars exist, at least in Switzerland.*" (N02)

Often the environmental consequences were the first consideration by interviewees in response to vignettes. This is also seen in response to other vignettes such as the dilemma on international climate justice and responsibility in the face of the concurrent poverty and climate change

crises. Here, interviewees often responded by first sighting the need for the countries in the Global North to stop creating environmental harm and damage (in the form of CO_2 emissions, biodiversity loss and pollution) which has a significant impact on countries in the Global South:

"*I think that when we live in Northern countries, we have a responsibility, in the sense that we have the means to ensure that we reduce our impact on Planetary Boundaries.*" (N05)

Similarly, several interviewees recognized the need to move away from economic growth to minimize ecological destruction. As one interviewee mentioned:

"*Growth cannot, for me, be compatible with environmental protection… In my view, the current capitalist model is not the only way to meet human needs. On the contrary, it is clearly a means of destroying the resources and living beings that exist on this earth. That's for sure. So, we can invent a system that allows us to meet our needs… and… at the same time, allows a greater balance with other living species and other living beings.*" (N01)

Contract ethics—Social Foundation. Following the consequentialist justification centered on environmental impacts, issues of social inequalities and justice were evoked by interviewees, suggesting the notion of what is referred to here as contract ethics. Within the context of this case study, contracts relating to justice and ensuring that all humans were living above the limit of the 'social floor' (the social foundation of DE) were evoked across the five vignettes. Often this reasoning resembled a social contract with strong references to social justice, climate justice and intergenerational justice. In particular, interviewees emphasised that decisions should not exacerbate social inequalities, and that where possible these groups need to be accompanied to minimise the negative social impact of decisions taken. For example, in relation to banning the use of fossil fuel cars by individuals, references to a social contract included proposing alternative solution for vulnerable populations which are reliant on cars due to disabilities or mobility issues, those who cannot afford public transport, or live in rural areas and rely on their car to get to work. As one interviewee stated:

"*Today, if nothing is done in terms of measures to cushion the social impact of this environmental measure, then it's not morally right to do it. People who live in suburban areas, who work in the city, if they have no way of getting around and are on a low income, who can't afford to buy an alternative to combustion-powered cars like electric cars, or if they can't get to work by bike or electric bike because they're too far away or because they're not physically fit enough and don't have enough public transport, then I don't think it's fair.*" (N04)

In response to the vignette centered on international climate change justice, interviewees often evoked the notion of solidarity with the countries in the Global South and the need to share wealth to enable the social foundation to be reached, as one interviewee mentioned:

"Sharing this wealth would speed up this transition process. And, I'm not talking about development because that's not the right term, but it's this quest to satisfy basic human needs in a way that is eco-compatible in the countries of the South." (N02)

Discourse ethics—Participatory dialogue. In vignettes where the environmental and social considerations in a dilemma appeared to the interviewee to be of equal importance, interviewees often mobilised reasoning based on discourse ethics to support their choice. This was particularly used by interviewees in response to dilemmas on a local scale where groups of stakeholders were easily identifiable, and their respective interests were divergent. Such an approach resonates with the participatory approaches and methods often used by the collective in their work. In response to the vignette on the decision to develop a ski resort which would bring economic gain for the community but have important impacts on local forest ecosystems, one interviewee mentioned:

"If you explain things correctly to people... I have this belief that if the problem is properly posed and you give the right responsibility to the majority of the population, they will make the right decision... I think that the person will feel responsible... and if they have the right information, I think they'll make the right decisions. And there are experiments like the citizens' climate convention and the citizens' assemblies in France where I can see that it's going to work, so it reinforces this belief." (N04)

Similarly, in the response to the vignette on the decision to grant a hunting permit in the case of livestock lost to wolves, another participant said:

"*We're going to discuss so we can find a solution that satisfies everyone... in fact it's a territory that we share together and we're going to have to find the way to share it and find ways of getting along with each other... And so I'd be more in favour of getting these people together. Often it's very divisive, but I think that, by getting them to talk, we can find solutions through consultation... I would work, in my commune [local government area], with citizens around this issue and we work on a solution. And maybe the solution will end up being to kill a few wolves, but it was taken collectively with different interests etc. and with specialists. We will have discussed."* (N05).

Value and moral consideration of non-human nature. In interviewees' responses to the vignettes, differences were evident in the values they associated with non-human nature, and the consideration of non-human nature in their decisions from the moral standpoint. Key differences in responses to the vignettes centred around if non-human nature was morally considered in the hypothetical sustainability decision. Particularly, those who mentioned non-human nature often evoked the consideration of nature through non-anthropocentric postures, typically ecocentric and biocentric postures. In an emotional response, this participant said:

"I could very well raise goats... I wouldn't want my goats, which I love, to be eaten by wolves. But I wouldn't have any desire to kill a wolf. It has a right

to be here, it has an absolutely important ecological role. Plus, as individuals, they have a life. A life in a community and a family life that is so rich, such intelligent animals. I would never want to kill a wolf." (N03)

This extract illustrates the mobilisation of both biocentric and ecocentric reasoning for supporting the moral consideration of wolves in the interviewee's decision not to grant a permit to hunt wolves after the loss of livestock. To give another example, in the decision to develop a ski resort which would bring economic gain for the community but have important impacts on local forest ecosystems, two interviewees were both against the decision and mobilised ecocentric arguments to justify their decisions:

"*For me here, [the key thing to consider], it's really the interests of nature, of ecosystems, and I'm going to specify local ecosystems... of which humans are not necessarily outsiders... the people who are in close contact with these local ecosystems are also in fact part of these interests.*" (N02)

Here local ecosystems are considered to have interests of their own which merit moral consideration, such consideration is akin to affording nature intrinsic value. However, as acknowledged by the interviewee, these interests are not epistemically separated from human interests. Within this dilemma, interviewees also demonstrated opposition to the utilitarian consumption of nature for human pleasure through leisure and tourism.

"*Is it compatible with the ecological transition to do this? I don't think so... what we need instead is to develop tourism that is linked to much more environmental values and therefore change a bit what we call tourism... It shouldn't be about rapidity, or consumption... It's about adjusting our place, the place of humans within ecosystems, and saying what place we have the right to take. Do we have the right to consume a place?... It's really a question of our relationship with nature, our relationship with others, with living beings.*" (N01)

In particular, the vignette on the use or banning of fossil fuel cars by individuals highlighted a clear difference in interviewees' priority values in this area. Interviewees were asked to imagine they are voting in a federal election where they need to decide whether to support or oppose the proposed initiative which will ban individuals from using fossil fuel powered cars in order to reduce CO_2 emissions and contribute to achieving net-zero emissions in Switzerland by 2050. While all respondents chose to vote for banning individuals from using fossil fuel powered cars and agreed that reducing CO_2 emissions was the priority in this situation, differences were evident with regards to other factors that interviewees considered when taking their decisions. All interviewees prioritised the need to reduce CO_2 emissions. However, some emphasis on the potential social inequalities which would be important to consider if individuals were banned from using fossil fuel powered cars. While others emphasised that banning fossil fuel cars would bring added value for non-human nature and biodiversity. In these responses it was clear that, the

existence and flourishing of non-human nature has intrinsic value. For example, on interviewee suggested that voting to ban cars is important to show solidarity with other non-human entities as they are also impacted by climate change:

"*CO_2 emissions, car emissions, they have an effect, but not just on our health, on what we might call health, the health of the whole planet... deep down inside, it's this element that drives me, it's this question of respect and solidarity. I think I feel solidarity with other living beings on the one hand and with abiotic entities on the other.*" (N02)

Another interviewee mentioned that the reduced need for road infrastructure would have a positive impact for biodiversity:

"*The impact of the private car on the organisation of the land... It's enormous and it would allow, if we stop imagining roads everywhere, I think there's a huge amount of biodiversity that can redevelop and have much more space.*" (N01)

Here the differences in the priorities that interviewees used to justify their choices in relation to banning individuals from using fossil fuel cars illustrates important differences in values held by the members of the team. While some placed higher value and prioritisation on social inequalities, others considered the value of such a decision for non-human nature.

Doughnut Economics Framework as a Normative Basis for Sustainability Decisions

Three reasoning structures emerged from the vignettes during the interviews with case study participants, specifically consequentialism (ecological limits), contract (social foundation) and discourse ethics. When considered together, these reasoning structures resemble closely the DE framework, combined with their participatory approach (represented visually in Figure 1). However, these vignettes also highlighted important differences in terms of values associated with, and moral consideration of, non-human nature. This raised a question about the place for the consideration of non-human nature within the DE framework. These initial findings were taken back to the collective in an iterative process of deliberative learning and collective reflection in the form of a FGD.

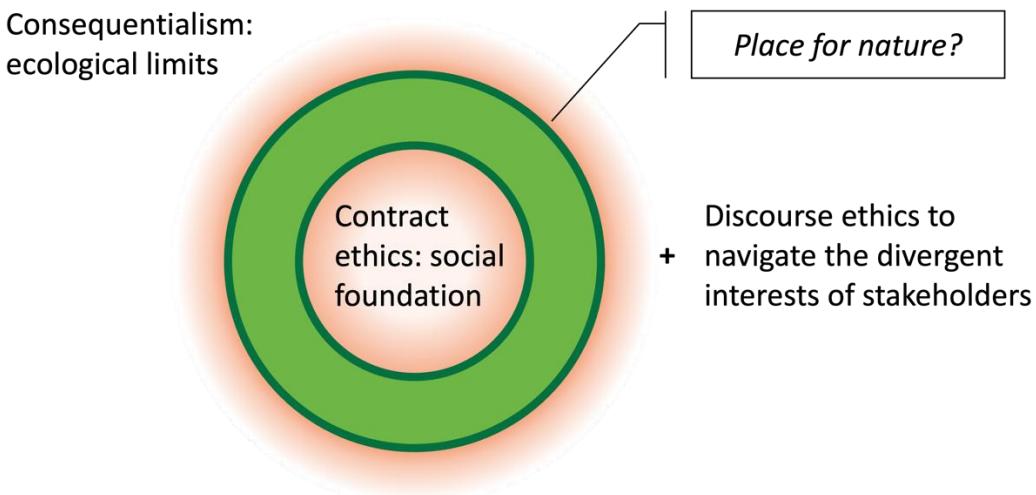

Figure 1. DE framework as the foundation for moral reasoning in sustainability dilemmas. Note: This figure was developed by the authors drawing on the original graphic elements of the DE framework, adapted from 'About Doughnut Economics' by the Doughnut Economics Action Lab, No Date, available at: https://doughnuteconomics.org/about-doughnut-economics. Copyright by Doughnut Economics Action Lab.

Collective Reflection through the FGD

The first part of the FGD consisted in a presentation of the results presented above. Following this, a collective reflection on the findings took place. This discussion was semi-structured, supported by probing questions from the researcher.

Some participants mentioned that they agreed with the normative representation of their work through the DE framework. More specifically, one participant mentioned that in their experience this framework and order of priorities (environmental consequentialism, social contract and ethics of discussion) is also reflected in the distribution and prioritisation of the team's work. They also mentioned that they see a lot more difficulty within the team to integrate questions relating to relationships and interdependence with non-human nature in their work when compared to work relating to the three areas of priority identified in the research. However, a more in-depth and objective examination would be necessary in order to confirm or deny this.

Through the discussion it emerged that the team members had different understandings and visions of the DE framework. In particular, some participants placed greater emphasis on the social foundation and ecological ceilings as quantifiable limits. While others understood the green 'safe and just space for humanity' in a more abstract manner as a conceptual space within which humanity can live with liberty. Some participants attributed this to the type of work they do and the role given to DE in their work. For example, for some participants the DE framework serves as a quantifiable compass for measuring sustainability in their projects. Contrastingly, for others it remains a guiding conceptual framework. This juxtaposes two fundamental epistemological differences in the use of the framework, as an object setting limits with negative

obligations, and as an abstract concept which highlights a positive ideal of meeting humanity's needs without infringing on planetary stability.

Within these discussions, participants also highlighted the advantages and disadvantages of quantification of such a framework. Participants emphasised that DE is a useful framework thanks to its quantifiability and rationalised indicator-based nature, which also contributes to its increasing success and uptake. Thus is a is a highly relevant tool for their projects on an institutional level and in their work with local government partners. However, several limitations of the DE framework were also highlighted. In particular, the process of definition, measurement and quantification of indicators which is required for operationalising the framework, in their experience, has a tendency for the framework to be both epistemically and morally anthropocentric. Some participants noted that this is perhaps greatly influenced by their work where members of the team are applying and quantifying the DE framework for concrete projects. In the opinion of some FGD participants, within the context of the quantifiable framework, the inclusion of non-human nature would be limited to the Planetary Boundary on biosphere integrity, thus approaching nature as an object.

Emerging from this conversation, participants questioned the place of nature and how this is considerd in their work on operationalising DE. In particular, participants highlighted that there is an implied human/nature duality in the DE framework, as intuitively, if we do try to consider nature there appears to be a graphical opposition between the social foundation relating to humans needs, and the ecological ceiling pertaining to those of nature. Participants commented that in general this limits the expression or recognition of the intrinsic value of nature. In this context, a concern raised by several participants was that nature could easily be forgotten in the daily work that they do while using the DE framework. For example, one participant expressed that concentrating fully on the DE model means that non-human nature might be left behind if one remains in an anthropocentric perspective, and that working on the DE model does not necessarily correspond to, nor include, their day-to-day vision of non-human nature.

Some participants expressed that the framework is not well suited for including the idea of nature as a relational entity as it focuses on quantification and objectification of nature. Within this context it was highlighted that it is unfortunate that the relational aspects of nature are not explicit in the DE framework. One participant expressed that often the framework is perceived as a prohibiting framework that has negative obligations, whereas the relationship with nature has many benefits for sustainability and human well-being. However, such benefits are not easily evident within the current context and use of the DE framework. Other participants disagreed that non-human nature as a relational entity was excluded from the DE framework, coming back to the potential for including non-human nature in the liberty and complexity which exists

within the ‘green’ space of the Doughnut. Others argued that the social contract relating to the elements of the social foundation (such as equality, democracy, health, etc) extends to non-human nature and ecosystems based on the recognition of the intrinsic value of nature. One participant argued for the moral considerability of nature based on the social contract of DE, referring to the social contract that was presented at the beginning of the FGD and extending this to non-human nature. However, others highlighted the risk of this approach as it does not render nature explicit in the social contract, and thus runs the risk of treating nature as it has been historically, as an invisible ‘other’. As a conclusion to this discussion, several members of the group brought to the fore the proposition to expand the ‘safe and just space for humanity’ to a ‘safe and just space for humanity and the rest of the living world’.

DISCUSSION

The results of this research suggest that the notion of strong sustainability is being employed by sustainability professionals in non-profit and public organisations in Switzerland and is thus applied outside of the context of sustainability debates in economics. While there was variation within the notion of strong sustainability, definitions among interviewees were most often associated with a mention of the interdependence between humans and nature or the DE framework. Since its apparition, the DE framework has been gaining popularity among sustainability actors [93]. In particular, this research provides empirical insights into the use of strong sustainability as a guiding concept for the work of a team charged with mainstreaming sustainability within a public institution in Switzerland. The results from this case study suggest that the DE framework can be employed as an operational framework for strong sustainability. However, as recent research shows, such an approach needs to be approached with caution to ensure DE maintains its strong sustainability characteristics [94]. Additionally, the results suggest that the DE framework contributes various dimensions as a ‘moral compass’ in the context of the case study. Here, four key aspects of the results are discussed: (1) the differing visions and values of sustainability, (2) the consideration of the DE framework as an operational framework for strong sustainability, (3) the normative implications of strong sustainability and DE, and (4) the place of nature in strong sustainability and DE and the practical implications that this entails.

Differing Visions and Values of Sustainability

This research reinforces the notion of sustainability as a contested concept. This finding supports similar findings of an array of existing research [16,26,28,29,31,32]. Diversity of views of sustainability has been confirmed by empirical research within numerous contexts and scales. This includes on a national level in Western democratic countries such as Denmark [40] and Germany [66]; within specific sectors or case studies

such as sustainable agriculture [68] and fisheries [21], sea ports [29] and climate change adaptation [67]; and within organisations and teams [17]. It is important to consider the nuances of differences of sustainability definitions and those which are chosen and promoted by sustainability professionals as "choosing which understanding of sustainability is most compelling is at least partially a political act" [95], (p. 311).

In addition to this established finding, the results of the interviews also reveal that the concept of strong sustainability is not interpreted uniformly among the sustainability professionals that participated in this research. In particular, the sustainability professionals in non-profit and public sectors interviewed for this research linked diverse concepts and operational frameworks to the idea of strong sustainability. While these concepts may not necessarily be contradictory or incompatible, this research demonstrates the somewhat fuzzy nature of the concept of strong sustainability when it comes to sustainability as a practice. Additionally, the case study demonstrates that various interpretations of DE exist, even within the same team that is employing DE in their work. Furthermore, there is a lack of clarity around what is included in the 'safe and just space' of the Doughnut. This demonstrates that even within a team of sustainability professionals that are united by a strong sustainability vision, there exist interpretive differences and associated values in strong sustainability and DE which have important normative implications. The key difference identified through this case study is the perspective each interviewee had on the relationship with non-human nature (discussed in more depth below).

Acknowledging the context of the sustainability profession as one filled with value tensions [17], it is not imperative that all team members share exactly the same definition or values [29,31]. In particular, diversity of values in the context of strong sustainability has the potential to encourage the evolution of sustainability debates and practice, and is important for leveraging the transformative potential of values [66]. From a practical standpoint, this highlights a need for sustainability professionals to strengthen the reflexivity and openness within their team in order to encourage deliberative learning [15]. While this case study did not highlight value tensions strong enough to be considered as sources of conflict within the team, existing literature suggests such conflicts can potentially arise [67]. Proactively engaging in such reflexive exercises and discussions thus can provide team members with tools and possibilities to foster joint learning and appreciation through self-reflection and open respectful discussions with team members if potential conflicts of this nature arise in the future.

Doughnut Economics as a Strong Sustainability Framework

Within the context of the case study, participants clearly associated the notion of strong sustainability with the DE framework, suggesting that DE could be considered as an operational framework for strong sustainability.

It is thus important to reflect on whether DE does indeed correspond to a strong sustainability approach. Recent scientific literature which employs DE to operationalise strong sustainability in a Swiss context considers that DE corresponds to a strong sustainability approach as DE builds its foundation on the Planetary Boundaries [94]. This is also supported by other research where the foundational component of DE, the Planetary Boundaries, are referred to as strong sustainability [37,59], and where DE itself is referred to as strong sustainability [96].

To further existing analyses on this subject, we refer to the key defining feature of strong sustainability, that is the non-commensurability of natural capital, more specifically critical natural capital, with other forms of capital. According to Ekins et al. [97], (p. 173), critical natural capital is the natural capital that serves vital ecosystem functions which cannot be substituted by other forms of capital (notably human or economic capital), and if this critical natural capital was to be lost, this would be irreversible and create the risk of excessive harms. In other words, critical natural capital emphasises the need to avoid the creation of excessive harms by ensuring complex ecological systems do not cross thresholds which cause them to irreversibly shift into critical zones where they are no longer able to ensure a safe minimum standard. Ekins et al. [97], (p. 175-6) specify four primary functions that constitute critical natural capital and thus need to be maintained through strong sustainability: “sink functions”, “source functions”, “life-support functions” and “other human health and welfare functions.”

Based on the various definitions of Ekins et al. outlined above, it is possible to identify that the very purpose of the Planetary Boundaries, to define a ‘safe operating space for humanity’ [50], corresponds with these critical functions, notably life-support functions. By extension, a number of the Planetary Boundaries are explicitly considered as fulfilling life-support functions (for example, limits relating to climate change, ozone depletion, biodiversity destruction, and soil and water pollution and depletion), sink functions (for example, ocean acidification) and source functions (for example, land-use change). As such, based on the definition of Ekins et al., the Planetary Boundaries framework can indeed be considered to indicate important components of critical natural capital. This does not necessarily capture all forms of critical natural capital, nor the nuances and specifics of what is considered critical. It does, however, reinforce existing arguments for the use of DE as a strong sustainability framework [37,59,94,96]. The strong sustainability characteristics of DE implies particular normative implications.

Normative Implications of Strong Sustainability and Doughnut Economics

In order to fully understand what strong sustainability operationalised through DE signifies, it is crucial to explore the normative implications of both strong sustainability and DE.

Strong Sustainability

The choice of a strong sustainability vision has important normative implications. To understand the normative implications, it is useful to contrast this with other frameworks. As strong and weak sustainability are often examined side by side, and weak sustainability is considered the marker of mainstream sustainable development approaches, we will take weak sustainability here as a comparison to illustrate the normative implications of strong sustainability. In this comparative approach, the normative differences of strong sustainability emerge from the pivotal difference at the crux of the weak and strong sustainability debate, namely if critical natural capital is commensurable with other types of capital.

From this basis stems several key normative aspects of strong sustainability, notably: An emphasis on preservation and the precautionary principle, differences in notions of intergenerational justice, and the prioritisation of needs over preferences. In contrast to a weak sustainability approach, strong sustainability espouses the incommensurability of ecosystems and life supporting functions of natural capital with other forms of human capital. This tends to thus place a moral imperative on the preservation of natural capital. Given the inherent uncertainty in complex socio-ecological systems, it is crucial to adopt the precautionary principle [43,98], which in this case would emphasize taking preventive action to avoid the depletion of natural capital, as is the case in the Planetary Boundaries framework [51,99]. Such a tendency can be identified in the moral reasoning of interviewees in the case study when they are confronted by dilemmas and respond by prioritising ecological limits in their decisions. This is not to say that social aspects do not carry weight, rather this illustrates that participants often placed stronger moral imperative on the preservation of natural capital.

Intergenerational justice is clearly a pivotal concept in both sustainable development and strong sustainability discourses [25,59]. However, the interpretation of this notion varies in strong and weak sustainability paradigms. Strong sustainability prioritizes ensuring that future generations have access to the same level of natural resources and ecosystem health [100]. In contrast, the modern notion of sustainable development does not prioritise the respect of ecological limits of the planet thus hinders future generations from fulfilling their needs [60]. Furthermore, evolution of the concept of sustainable development, has resulted in a shift in focus from guaranteeing the needs of future generations toward a focus on ensuring that they will have access to the same conditions as current generations [59]. Thus, this conception of sustainable development allows for a reduction in natural capital as long as this is offset by overall increases in human or economic capital. Finally, according to Oliveira [59], strong sustainability takes a sufficientarian approach which aims to ensure that all persons, current and future, have enough to meet their fundamental needs, as opposed to an welfare-based

egalitarian approach which is dominant in sustainable development discourse.

A central normative question that emerged from this research concerned the relationship of humans to non-human nature in the context of strong sustainability. While some interviewees explicitly mentioned the intrinsic value of nature in their definition of sustainability and mobilised this concept or similar concepts in response to the vignettes, others did not mention such concepts. This finding is somewhat logical, as an important aspect of the normative implications of strong sustainability pivot primarily on the relationship of humans to nature, particularly the conception of nature as 'natural capital' and its non-commensurability with other forms of goods or services. Within the weak sustainability framework, non-human nature is predominantly perceived from a technoscientific perspective as an artefact or machine, an object to be transformed, dominated and controlled by human activity in the name of human interests [84], (p. 45-55). Furthermore, it considers that non-human nature holds solely instrumental value, that is, natural objects are considered as means to human ends [42,84,101,102]. As Drury et al., [49] highlight, such approaches to sustainability have historically excluded non-human nature from moral considerability. However, the literature is much less clear on the type of value afforded to non-human nature in the context of strong sustainability. Some authors argue that within a strong sustainability paradigm the consideration of natural capital as irreplaceable is predominantly (though not always) based on the instrumental value of nature for achieving minimum standards for humans and non-human entities [48]. Contrastingly, other environmental philosophers advocate for a strong sustainability approach that is ecocentric and thus focuses on ecosystem integrity with an embedded notion of the intrinsic value of nature [103,104].

Doughnut Economics

The DE framework was highlighted by participants as an important tool for guiding their work and the implementation of projects and evaluation of sustainability. Here the DE framework can be considered as a value articulating institution which has important normative implications and reinforces the legitimacy of a particular worldview [105]. Participants highlighted particular normative challenges with regards to the focus on quantification of indicators and inherent duality within the framework. The prevalence of, and emphasis on, quantification through the measurement of the Planetary Boundaries and social foundation of the DE framework illustrates broader limitations which are common within sustainability. Specifically, overbearing focus on quantification can lead to reductionist thinking and oversimplification of complex interrelated social and ecological systems [28].

Archer [17] found that a sustainability professional's 'sustainability ethic' (the actors personal 'ethics framework') can partially account for the

decisions that they make when choosing between different possible options. Similarly, this case study identified a tendency for the participants' responses to the dilemmas to be influenced by their conception of sustainability. In particular, the case study results demonstrate that DE framework is not merely a conceptual idea, nor simply an operational tool used in projects, but for the members of this team has become somewhat of a moral compass for their reasoning when making choices in the face of sustainability dilemmas. As previously mentioned, the results show that often participants prioritised environmental consequences of decisions, in line with strong sustainability reasoning. For example, a central tenant of the DE framework is that it is growth agnostic, recognising the limits to economic growth on a planet with finite resources [56,106]. Interviewees responses were in line with this, prioritising minimizing environmental consequences by limiting economic growth.

Second to this, participants often mobilised logic based on contract ethics in reference to the social foundation of the DE framework. Drees et al. [107] raises concerns that the visual opposition of the social foundation and ecological ceiling of DE begs the question of if achieving these two goals are contradictory. However, participants' responses to the vignettes demonstrated that the interplay between staying within the ecological ceiling and achieving the social foundation are nuanced. Participants' responses suggest that navigating the 'green' of the DE framework requires understanding and taking social needs seriously and suggesting radical alternatives to proposed problems. For example, in response to the vignette on banning fossil fuel cars for individuals, participants would often suggest increasing modes of collective transport and making it cost-free to help to the ease social burdens of the suggested change. This demonstrates that living in the just and safe space requires navigation of interconnected responsibilities.

Finally, discourse ethics approaches were mobilised in decision-making situations where the environmental and social considerations in a moral dilemma are considered to be of equal importance. As mentioned in the introduction, participation is one of the 'fault lines' in sustainability [30]. A discourse ethics approach like that used in the case study aligns with what Jacobs [30] calls a radical and bottom-up approach to participation. These findings suggests that a strong sustainability approach mobilising the DE framework would require the use of bottom-up participative approaches where possible and appropriate. However, as Recordon et al [94] highlight, safeguards are necessary to preserve the strong sustainability nature of DE in such an approach.

The place for non-human nature within the DE framework was discussed at length in the FGD. One option that arose was that non-human nature and ecosystems are included in the biodiversity limit of the Planetary Boundaries. Such a suggestion can also be found in the literature [49]. However, FGD participants highlighted that using this approach contributes to a dualist logic. This is in line with Smith [108], (p. 23) who

suggests that the Planetary Boundaries represent a dualist philosophy that separates humans and nature raising key question of “for whom the approach provides a ‘safe operating space’ for?” In this same vein, and similarly to strong sustainability, DE and the Planetary Boundaries as the foundation of DE, have been criticised for being morally anthropocentric [106,109]. Some argue for greater moral consideration of non-human nature in DE. For example, Drury et al. [49] argue for the inclusion of animals as moral patients in DE, entailing that moral agents have moral obligations towards animals and that animals are the recipients of the benefits or harms which result from the decision of the moral agent.

However, several participants questioned the place for the intrinsic value of non-human nature in DE. The concluding discussion between participants during the FGD suggests that under the right conditions, it is possible to bring together actor’s differing opinions related to the place and value of non-human nature in strong sustainability and the DE framework. This is important as the recognition of the intrinsic value of nature amongst professionals working in areas related to sustainability is not new. For example, Butler and Acott [110] identified that professionals working in land use organisations commonly recognise the intrinsic value of nature, but that this is not usually reflected at the institutional level where they work. Empirical investigation has found that members of the public associate a plurality of values (instrumental, intrinsic and relational) with nature [86]. Research in western Europe has suggested that public values are predominantly non-anthropocentric, reject the mastery over nature, and endorse the intrinsic value of nature [111]. Using the DE as a framework in such cases would thus require creating space to integrate the intrinsic value of nature.

To truly integrated intrinsic value of non-human nature into DE, an ecological ethic would be necessary. An ecological ethic would demand broader moral consideration of non-human nature and adopt a posture of moral ecocentrism. From the perspective of moral ecocentrism a natural entity is considered as a part of a whole, a community, that cannot be reduced to its individual parts [84], (p. 302). Movement towards ecocentrism demands reaching beyond the anthropocentric conceptualisation of substitution of natural resources and redefining the discourse of the dominance of humans over nature towards the understanding of humans as beings-in-relation to nature and as members of ecological or biotic communities [37,112–114]. Building on the relational nature of human existence in the world, the quality of life of all entities becomes the primary focus [115], recognizing the deeply interdependent relationship between humans and their environment [116,117]. At the centre of this approach is the moral standing and intrinsic value of nature, which considers nature to be valuable as an end in and of itself [84,101,118]. Thus, integrating the intrinsic value of nature in DE would require a shift in focus towards the quality of life of all entities in a biotic community based on an ecological ethic. This would correspond with the

'safe and just space for humanity and the rest of the living world' suggested by participants in the FGD.

Practical Implications of Integrating the Intrinsic Value of Non-human Nature in Doughnut Economics.

Integrating intrinsic value of non-human nature in sustainability work would have important practical implications. To interpret these practical implications we combine top-down theoretical reflection with the bottom-up qualitative empirical investigation [101]. To do this we draw on ecological ethics theory, primarily, but not limited to, the work of J. Baird Callicott. This sheds lights on the importance of integrating the intrinsic value of nature into DE, and visions of strong sustainability more broadly. Such integration of the intrinsic value of nature has three practical implications.

First, integrating the intrinsic value of nature would require a conscious shift in focus away from excessive and sole focus on the quantification of indicators (the Planetary Boundaries and social foundations). It would require adequate space to be given to qualitative aspects of sustainability which cannot necessarily be measured. This includes, but is undoubtedly not limited to, the flourishing of non-human nature and nature as a relational entity. This represents an ontological shift towards the understanding of moral beings as nodes in complex webs of relationships as described by Callicott [112], (p. 290) when he mobilises the reflections of Carol Gilligan.

Second, integration of intrinsic value holds transformative potential for strong sustainability by reframing humans as members of ecological communities [114]. This has profound implications for how we understand and pursue sustainability action. Notably, it encourages the adoption of a long-term perspective where the goal becomes the preservation of the "integrity and stability of the biotic community" [112], (p. 65) and the promotion of ecosystem health [119]. As such the flourishing of non-human nature comes to be understood as interrelated with human flourishing.

Finally, integrating intrinsic value into sustainability visions has important practical implications through the ensued shift of the burden of proof [120]. Drawing on the work of Warwick Fox [121], J. Baird Callicott highlights that by conferring nature intrinsic value "the burden of proof world be lifted from the shoulders of conservationists and shifted onto the shoulders of those who, pursuing other values, are—intentionally or unintentionally, knowingly or inadvertently—destroying nature" [120], (p. 245). As Fox [121], (p. 101) describes:

"*If the nonhuman world is only considered to be instrumentally valuable then people are permitted to use and otherwise interfere with any aspect of it for whatever reasons they wish (i.e., no justification for interference is required). If anyone objects to such interference then, within this framework of reference, the onus is clearly on the person who objects to justify why it is*

more useful to humans to leave that aspect of the nonhuman world alone. If, however, the nonhuman world is considered to be intrinsically valuable then the onus shifts to the person who wants to interfere with it to justify why they should be allowed to do so; anyone who wants to interfere with any entity that is intrinsically valuable is morally obliged to be able to offer a sufficient justification for their actions."

In concrete terms this would mean that sufficient justification would be required for actions that exploit the instrumental value of nature and consequently cause environmental damage or harm. This justification would then be considered against the intrinsic value of nature [120,121]. Rather than painting a picture of intrinsic value as the mere antonym of instrumental value [101], which echoes the cartesian dualistic thinking [113] and could possibly lead it to be systematically devalued, this highlights the complexity and interrelatedness of intrinsic and instrumental values of nature while giving adequate space and consideration to intrinsic values. For example, Fox [121] refers to New Zealand environmental legislation to illustrate the recognition of the intrinsic value of nature. Since this time, Whanganui River in Aotearoa New Zealand has been assigned the status of legal personhood to recognise the special relationship between the River and Whanganui iwi Māori people which considers certain ecosystems as ancestors and thus grants them intrinsic value [122,123]. In this light, conferring intrinsic value to nature has great potential to drive political change [101]. Callicott [101] has likened these changes to the social changes facilitated by the adoption of the Universal Declaration on Human Rights which served as a key instrument for criticism and political reform.

Recommendations and Limitations

It is important to note that this article draws primarily on one singular case study with a small number of interviews, thus, in line with the case study approach, there are important limitations to generalisability of the findings. Nevertheless, drawing on these results, recommendations can be made at several levels.

At the practical level of teams of sustainability professionals, it can be valuable to encourage deliberative learning processes based on reflexive practices and tools to foster openness and discussion around values and differences between values in sustainability. Such discussions and exchanges in the context of strong sustainability carry transformative potential by touching on deep personal and collective leverage points, notably personal values and worldviews [66]. Integrating reflexivity on personal and collective values into the practices of sustainability professionals could take the form of value mapping, reflexive discussions, or collective decision-making based on concrete moral dilemmas that they face in their work. For example, if a team is confronted with the choice to work with specific partners or organisations that may not be aligned with their values, collective and reflexive decision-making processes such as

deliberation could be helpful to articulate important values, identify a common decision that is aligned with the team's collective values and thus supported by team members, and share the responsibility of the decision. The institutionalisation of such reflexive practices merits further investigation in future research.

At the organisational level it can be important to choose carefully and consultatively the sustainability vision and corresponding operational framework for an organisation. This is particularly the case as, if they are appropriated by employees, they can serve as a moral compass (in addition to employee's existing sustainability ethic) in their decision-making, thus impacting concrete decisions in the face of sustainability dilemmas at work.

Finally on both conceptual and operational levels, this case study poses an important moral question about the place of nature in strong sustainability. As pointed out by participants in the FGD, it is possible to 'miss out' on non-human nature as a relational entity with intrinsic value while working on the DE framework if conscious attention is not paid to this issue. The same remains true for a strong sustainability approach more generally. Thus, this research perhaps speaks to a wish of sustainability professionals to incorporate intrinsic value of nature in strong sustainability based on an ecological ethic. If such an undertaking is to be perused, sustainability professionals must critically assess how the intrinsic value of nature is excluded or represented in their work. Furthermore, they would need to adopt practical approaches that aim to promote the flourishing and quality of life of all members of a biotic community. Encouraging such a shift can help ground sustainability work in ethical principles which aim to foster more inclusive and long-term ecological practices.

CONCLUSIONS

This research demonstrates that despite having shared sustainability definitions and operational frameworks, conceptual and normative differences can still arise among a team of sustainability professionals. In particular, this research shows that sustainability professionals who subscribe to a strong sustainability vision do not necessarily define it in the same way. Nor do those using a specific operational framework necessarily understand it in the same way as seen in this case study in relation to DE. This case study underscores the importance of thoughtful and careful choice of an operational framework for sustainability, which can potentially serve as a moral compass and value articulating institution which guides sustainability professionals in their work. In this case study, participants often prioritized the incommensurability of natural capital in their moral reasoning. This emphasises why it is crucial to understand the implicit normative features of sustainability definitions and frameworks and ensure that these are coherent with the values necessary to guide the realisation of the envisaged sustainable future. In particular, the desire to

include intrinsic value of non-human nature in strong sustainability and DE, as discussed in this case study, demonstrates the importance of ensuring space within sustainability practice for deliberative learning processes in order to critically reflect on, and evolve, the values associated with sustainability visions and operational frameworks.

DATA AVAILABILITY

The dataset from the study is not available because this data is considered under Swiss Law as sensitive data. Thus, under the current context of the research project, the open sharing of this data is covered by data protection laws.

AUTHOR CONTRIBUTIONS

Conceptualization, NB and GH; Methodology, NB and GH; Formal Analysis, NB; Investigation, NB; Data Curation, NB; Philosophical analysis, GH; Writing—Original Draft Preparation, NB; Writing—Review & Editing, NB and GH; Visualization, NB; Supervision, GH.

CONFLICTS OF INTEREST

Ethics approval for this research was acquired through the Research Ethics Commission of the University of Lausanne (CER-UNIL; CER-FTSR; ID C_FTSR_032022_00010).

FUNDING

This research was funded by the University of Lausanne.

ACKNOWLEDGMENTS

The authors would like to extend their gratitude and appreciation to the Centre de compétences en durabilité (CCD) of the University of Lausanne for their immense contribution to this research. We would like to extend our sincerest thanks to all the participants of the case study, without whom this research would not be possible. Thank you for being an integral part of this journey, for giving your time, thoughtful reflections and invaluable contributions to this research.

APPENDIX A

Table A1. Interviewee characteristics.

#	Type of Organisation	Role	Age	Date	Length
N01	Public sector	Project manager	20-29	14/6/2022	1 h 7 mins
N02	Public sector	Project manager	20-29	21/6/2022	1 h 28 mins
N03	Public sector	Senior project manager	20-29	23/6/2022	47 mins
N04	Public sector	Project manager	20-29	8/7/2022	1 h 11 mins
N05	Public sector	Senior manager	30-45	8/7/2022	45 mins
N06	Public sector	Project manager	20-29	12/7/2022	1 h 24 mins
N07	Non-profit foundation	Senior manager	20-29	29/9/2022	57 mins
N08	Non-profit foundation	Project manager	20-29	20/10/2022	1 h
N09	Non-profit foundation	Project manager	30-45	2/11/2022	52 mins
N10	Non-profit foundation	Project manager	20-29	30/11/2022	1 h 27 mins
N11	Non-profit foundation	Senior manager	30-45	11/4/2023	1 h 13 mins
N12	Non-profit foundation	Communications specialist	30-45	11/4/2023	57 mins
N13	Non-profit foundation	Senior manager	30-45	11/4/2023	1 h 8 mins
N14	Non-profit foundation	Communications specialist	30-45	12/4/2023	58 mins
N15	Non-profit foundation	Senior manager	30-45	12/4/2023	1 h 12 mins

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How to cite this article:
Banwell N, Hess G. Normative visions of sustainability professionals: A case study of strong sustainability and Doughnut Economics. J Sustain Res. 2025;7(2):e250037. https://doi.org/10.20900/jsr20250037.