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## Strongly sustainable development goals: Overcoming distances constraining responsible action<sup>☆</sup>

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### ABSTRACT

Sustainable development has been an important policy goal for the international community for over three decades. Still, the state of the planet continues to worsen. This conceptual article considers the failure largely a result of structural obstacles and the so-called weak sustainability discourse, popularized by the Brundtland report and manifested today in The 2030 Agenda. The article adopts a strong sustainability perspective for examining structural distances between actors and the consequences of their acts. We argue that these impede responsible action and that policy should aim to reduce or eliminate distances in the four dimensions of space, time, functions and relations. The article concludes by suggesting Strongly Sustainable Development Goals, which could help transitioning humanity towards sustainability, lower the anthropogenic environmental impact on the planet, and enable the continuity of diverse life on Earth.

### 1. Introduction

The growth in human population and affluence, tied to the exploitation of Earth's resources, has engendered global warming, loss of biodiversity and other ecological challenges (Barnosky et al., 2011; Steffen et al., 2011; IPCC, 2014; Ceballos et al., 2015). While the domestication and transformation of the planet to meet human aspirations may appear rational in the short term (Gardiner, 2006), humankind now jeopardises its own long-term existence and wellbeing (Rockström et al., 2009; WWF et al., 2020; IPCC, 2018).

Since the Stockholm conference on the Human Environment (UN, 1972), international policy has made calls for respecting the planet. Most prominently articulated in the Brundtland report (WCED, 1987), *sustainable development* (SD) calls for a focus on human needs whilst recognizing the biophysical basis for those needs. The report notably begins by referring to a side-effect of one of the biggest technological and symbolic human achievements:

In the middle of the 20th century, we saw our planet from space for the first time [...], a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and

soils. Humanity's inability to fit its activities into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognized – and managed (WCED, 1987, Overview, §1).

Yet, neither the Brundtland report, nor subsequent high-level policy documents on SD, have elaborated consistently on how the biophysical setting should be taken into consideration when catering for human needs. Rather, the general position is one in which nature provides relative rather than absolute constraints. This is reflected in the notion of three 'interdependent and mutually reinforcing pillars' (UN, 2002, §5), and, in the United Nation's 2030 Agenda, a commitment to achieve SD 'in its three dimensions – economic, social and environmental – in a balanced and integrated manner' (UN, 2015, §2).

This notion of balance directs efforts in a specific way. It envisions transformative change amidst present social structures and continued pursuit of economic growth (Koehler, 2016; McAdam and Leonard, 2003; Jänicke, 2012). Economic growth is not only seen as an indicator of wealth, a capacity to produce, or as a means for enabling desired development, but as a goal in itself, as in 'sustainable, inclusive and

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sustained economic growth' (UN, 2015, §3), and in the increasing economic turnover made imperative by Sustainable Development Goal (SDG) number 8 (UN, 2015, Target 8.1). The Agenda even subscribes to the Gross Domestic Product (GDP), an economic indicator blind to environmental effects and social justice, instead of any more qualified economic performance indicator, such as net measures accounting for the depreciation of stocks, or, better, measures which consider social and ecological dimensions of development, such as the Genuine Progress Indicator (e.g. Costanza et al., 2014) or the Sustainable Development Index (Hickel, 2020).

The Agenda suggests that efficiency in production and consumption will help decouple economic growth from environmental degradation (UN, 2015, Target 8.4, see also UNEP, 2010; UN, 2012). Only absolute decoupling – that is GDP growth together with absolute reductions in emissions or resource use (Haberl et al., 2020) – is ecologically relevant, but evidence does not suggest that this is happening (Haberl et al., 2020; O'Neill et al., 2018; Parrique et al., 2019; Vadén et al., 2020; Wiedmann et al., 2015). UN reporting on progress towards the SDGs indicates that development has taken the opposite direction: natural resource extraction has accelerated since 2000, the global material footprint has increased faster than growth in population and economic output, and the per capita material footprint has a strong positive relationship with a country's income level (UN, 2019a, p. 46; Krausmann et al., 2018; UN, 2020a). Yet, The Agenda continues to endorse a new era of economic growth, just like the Brundtland report did.

Furthermore, if absolute decoupling would be possible, it would need a new ethical basis, as growth has been accompanied by increasing inequalities (Alvaredo et al., 2018; Chancel and Piketty, 2015; Oxfam, 2017; UN, 2020a). In spite of the principle of 'common but differentiated responsibilities' (UN, 1992a), the humanity is not on a 'great collective journey' with no one left behind (UN, 2015, §4; see also UN, 2020b). The unequal gains in affluence take place at the expense of a decreasing biophysical budget, and these *de facto* imbalances between environmental, economic and social dimensions of SD are left unresolved by The 2030 Agenda.

This article reasons why prevailing policy does not lead to responsible action on SD and suggests that strong sustainability and a structural approach to actor and action-outcome relations can offer new insights. Clearly, this means that we leave the realities of political negotiation, dealing with an endless number of interests, positions and obstacles (cf. Gardiner, 2006; Martens, 2017; Spash, 2016; Wainstein et al., 2019), to land in the relatively controlled environment of academic reflection. From here, a broad and rich literature on sustainability and sustainable development can be accessed (e.g. Ayres et al., 2001; Büchs and Koch, 2017; Daly, 2005; Ekins et al., 2003; Hamilton and Hartwick, 2014; Hopwood et al., 2005; Montabon et al., 2016), and The 2030 Agenda has also been studied from many angles (e.g. Brilha et al., 2018; Costanza et al., 2016; Bengtsson et al., 2018; Eisenmenger et al., 2020; Hickel, 2019; Koehler, 2016; Reid et al., 2017; Spaiser et al., 2017; Rammelt and Gupta, 2021). Benefitting from concepts and analyses by such fore-runners, we build our approach by first discussing key components of the UN led SD policy, weak versus strong perspectives, and limitations in policy's ability to minimize environmental impact. Next, we discuss the role of distances between actors, and between actors and consequences of their acts, as a source of lack of responsible action. The article concludes by proposing how a strongly sustainable policy could bridge such distances, to approach sustainability.

## 2. Ambitions in SD policy

Prevailing SD policy has three key ambitions which overlap with the social, environmental and economic dimensions, presumably balanced through the 'integrated and indivisible' SDGs (UN, 2015, §5): (1) *distribution* to meet needs among the present humans; (2) *stewardship* to safeguard planetary resources for future consumption; and (3) *efficient production* to satisfy human needs and aspirations (cf. Costanza et al.,

2016). Below, we examine these ambitions in turn. The article's focus on ecological balance as precondition for all human affairs means that other ambitions within SD, such as peace and human rights, are not addressed here.

More than three decades ago, the Brundtland report called for attention to present and future human needs (WCED, 1987). The first part refers to more equal distribution of the benefits of development. A sustainable society should be effective in meeting human needs, and not only efficient in an economic sense. However, what 'needs' include remains unclear. The Brundtland report declared:

The essential needs of vast numbers of people in developing countries for food, clothing, shelter, jobs - are not being met, and beyond their basic needs these people have legitimate aspirations for an improved quality of life. (WCED, 1987, Chapter 2, §4).

The beginning of the quote is uncontroversial in SD policy, but it is rather silent about 'legitimate aspirations' and their limits. The World Commission recognized that perceived needs are socially and culturally determined and that living standards 'beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability' (WCED, 1987, Chapter 2, §5). What this would imply was however left to existing economic and political systems to work out through innovation and reform, and The 2030 Agenda does not give guidance on legitimate vs. excessive aspirations. Certain SDGs are related to needs such as food, water and housing (SDG targets 2.1, 6.1 and 11.1) and others to broader social concerns such as equality (5.1 and 10.2), or support to aspirations related to infrastructure and cities (9.1 and 11.3). These goals and targets also provide very different challenges in different parts of the world.

While the focus of most goals is on present needs, future humans may benefit or lose from their short-term attainment: A more equal society would be a positive heritage; outdated infrastructure a burden. Most important, however, is that climate change and other transgressions of planetary boundaries are caused by expanding human activities (Steffen et al., 2015). This makes it problematic to focus on current 'needs' without questioning consumption beyond 'legitimate aspirations.' For the World Commission, SD *could* be consistent with continued expansion, 'provided the content of growth reflects the broad principles of sustainability and non-exploitation of others' (WCED, 1987, Chapter 2, §6). Such an understanding is, however, lacking in The 2030 Agenda, in which the stewardship ambition is mainly addressed by SDGs 13–15, focusing on the climate system, seas, and terrestrial ecosystems, but also 6.3 and 6.6 on water pollution (UN, 2015). These goals are closely linked to the international community's other quests for sustainable development, particularly climate change and biodiversity (e.g. IPCC, 2014, UN, 1992b; UNFCCC, 2015). A few of the Agenda's targets indicate a recognition of limits in nature (see next section), but the general perspective is one where nature contains resources that provide services for humans.

This instrumental view leads to the production ambitions of SD for which key SDGs are number 8 and some targets of SDG 9. SDG 12 (sustainable consumption and production) is also central due to its focus on inefficiencies and reduction of environmental *impact* of consumption and production (Bengtsson et al., 2018), while an increasing volume of output (SDG 8) is expected to benefit humanity over space and time. The 2030 Agenda is thus less progressive than the Brundtland report which concluded that 'economic development must take full account in its measurements of growth of the improvement or deterioration in the stock of natural resources' (WCED, 1987, Chapter 2, §36). The present trust in economic growth rests on a belief in decoupling, and substitutability between different types of capital (e.g. that a natural resource can be replaced by something manufactured by humans), despite an increasing overshoot (deterioration and liquidation of stocks of natural resources). Apart from being based in this 'fantasy' (Fletcher and Rammelt, 2017, p. 450), The 2030 Agenda prioritizes industrialization,

as [Hickel \(2019\)](#) importantly notes, and does not challenge markets as the main solution for distributing the benefits from production.

### 3. Weak and strong sustainability

A way to understand the rationale behind SD policies sketched above is predicated on human and technological advancement. The hope is that cultural capital – which via interaction with natural capital generates human-made capital ([Berkes and Folke, 1992](#)) – will enable absolute decoupling. In this vein, the Brundtland report suggested that ‘technology and social organization’ could be enhanced for a new era of economic growth ([WCED, 1987](#), Overview, §27). This is reflected in The Agenda’s ‘new approach’, which aligns with ecological modernization ([Hopwood et al., 2005](#); [Mol and Sonnenfeld, 2000](#)) and the weak sustainability premise that ‘economic development and environmental protection can be combined to a fruitful synergy’ ([Berger et al., 2001](#), p. 55).

As regards environmental protection, in some targets The 2030 Agenda recognizes the vulnerability of ecosystems in ways that are not consistent with full substitutability of capitals ([Ayres et al., 2001](#); [Ekins et al., 2003](#)). Examples are the aims at (absolute) reductions in marine pollution (14.1) and deforestation (15.2; cf. [Reid et al., 2017](#)). Yet it calls for continued economic growth, and, in the absence of absolute decoupling, the resulting amounts of human-made (physical and financial) capital must be assumed to substitute depleted natural capital such as shoals of fish, forests and fossil fuels ([Holland, 1997](#); [Neumayer, 2002](#)). This means that the ‘balanced and integrated manner’ ([UN, 2015](#), see above) of stewardship in practice allows for an efficient transformation of nature to meet the production and distribution ambitions. This approach is increasingly proven irrelevant and dangerous; with words from UN Secretary-General: ‘Humanity is waging war on nature’ ([UNEP, 2021](#), p. 4).

Regarding distribution, ambitions about eradication of poverty are failing according to the UN Special Rapporteur on extreme poverty and human rights ([UN, 2020b](#)). Further, present SD policy does not challenge global institutions, power structures and privileges, and interests of the more powerful among present humans are prioritised over those of future humans, and even more so over non-human values. A policy based on strong sustainability would be radically different in terms of inclusiveness and based in the need both to maintain stocks of natural capital ([Daly, 2005](#)) and to respect nature beyond its potential usefulness ([Bonnedahl and Heikkurinen, 2019](#)). In what follows, we will examine the implications of strong sustainability for SD policy in more detail.

### 4. Population, affluence, and technology

A strong SD policy begins by accepting biophysical restrictions to human activity ([Bonnedahl and Caramujo, 2019](#)). These can be approached and analysed using the classic IPAT equation which states that environmental impact (I) is a function of population (P), affluence (A) and technology (T) ([Alcott, 2010](#); [Chertow, 2001](#); [Ehrlich, 2014](#)). Despite a doubling of the global population since the Stockholm Conference in 1972, and a more than 50% increase since the publication of the Brundtland report in 1987 ([UN, 2019b](#)), the population factor is generally avoided. The Brundtland report did declare that ‘sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem’ ([WCED, 1987](#), overview, §29). It also discussed policy on lowering fertility rates. However, The 2030 Agenda only addresses population indirectly via reproductive health (under gender equality, SDG 5). More generally, lower *relative* population growth is at times considered progress but also a threat to economic development and welfare systems (e.g. [Michalski and Stepień, 2021](#)). To guide strong policy, the equation’s P and A recognizes the extremely unequal per capita contributions to the I, but specific consideration to historical impact (contributing to

today’s level of development) must be added to policy processes.

A basic problem in SD policy is that, by not directly addressing population (P), and by promoting affluence (A) through economic growth, it is left only with technology (T) to combat the human impact on the environment (I). Technology is understood broadly (cf. [Carroll, 2017](#)) to include ‘not only the technologies used to service the consumption (e.g. bikes vs. automobiles), but also the political, social, and economic arrangements (such as environmentally malign subsidies) involved.’ ([Ehrlich, 2014](#), p. 11; see also [Heikkurinen and Ruuska, 2021](#)). T thus encompasses both technology as artefacts and the social organization, two interdependent and overlapping categories which we also discuss as ‘hard’ and ‘soft’ T (cf. [Zhouying, 2004](#)).

Incremental reforms involving economic incentives and regulation are examples of measures seeking to induce changes in social organization. At the same time, however, expansion of economic activities is encouraged ([Schnaiberg et al., 2002](#)). SD policy thus becomes a cat that chases its own tail ([Sanne, 2000](#); see also [Alcott, 2008, 2010](#)). The focus is often on hard technologies such as fuels, energy systems or geo-engineering ([Rockström et al., 2017](#)): that is, stewardship strategies attempting to control the effects of economic activities rather than changing the activities per se ([Bonnedahl, 2021](#); [Zhouying, 2004](#)).

In sum, the belief that all negative impacts could be overcome by improving technology is misplaced ([Lawn, 2001](#); [Huesemann, 2003](#); [Hornborg, 2014](#)) and particularly problematic when expectations are set for product-centred hard technologies. In the absence of absolute decoupling, and a second law of thermodynamics telling us that a closed-loop economy is impossible, policy still expects giant leaps in the ‘new approach’; e.g. to achieve more than 7% annual decreases in carbon emissions for 2/3 probability to meet the 1.5°C warming target ([UNEP, 2019](#)).

A related problem was presented by Georgescu-Roegen, who discussed the exosomatic evolution of the human species via the large-scale introduction of ‘instruments produced by man but not belonging to his body’ ([Georgescu-Roegen, 1975](#), p. 369). The increasing dependence on exosomatic instruments adds two dimensions to the sustainability challenge: technological artefacts and systems distance humans from nature, and they are often developed to domesticate, exploit and transform nature and life in its diversity; aiming to control and turn natural objects into artefacts ([Bonnedahl and Caramujo, 2019](#); [Zhouying, 2004](#)). Examples date back to the transition from hunter-gatherer to agricultural communities ([Kluyver et al., 2017](#)), but this has intensified ([Krausmann, 2018](#); [Steffen et al., 2011](#)).

Also in philosophy, the estrangement of humans from nature, and from other humans, is claimed to be a cause of undesirable development. For example, ‘alienation’ in Marxian terms, or ‘deworlding’ in Martin Heidegger’s vocabulary, suggest that distance is a focal lens for the analysis of change. The notion of distance is also central in fields like ecological economics and in the degrowth movement, particularly in relation to globalization. But the concept of distance remains underutilized as entry point for analysing SD policy. We will therefore outline and alternative from the perspective of strong sustainability and through the notion of distance.

### 5. Distance

From a perspective of strong sustainability, a continued focus on hard technology ([Georgescu-Roegen, 1975](#); [Zhouying, 2004](#)) in SD policy is to avoid fundamental human and societal change, and to adapt problems to solutions already available in the current social and economic systems. A ‘strong’ alternative would match solutions with actual problems, through policies on population and consumption (the P and A of the IPAT), and on social change, the soft side of T, e.g., through norms, organization and legislation facilitating responsible action. This translates to the rapid cultural evolution required according to [Ehrlich \(2014\)](#) and to a development of cultural capital in a sustainable direction ([Berkes and Folke, 1992](#)). The concept of distance is useful for better

understanding the policy support such change could need. Due to the focus on social organization, our distance is not fully similar with that of psychological distance (e.g. Rickard et al., 2016).

We approach the concept of distance by distinguishing between two main dimensions of social organization: the physical and economic organization, respectively. The former is based in sustainability literature and relates to distances formed by the spatial and temporal separation of actors and action-outcomes (Gardiner, 2006; Rickard et al., 2016), with consequences manifested as unequal use of natural resources within and between generations, and related differences in benefits and problems from this use. The latter is based in economic literature and involves functional and relational separation between actors and action-outcomes, two characteristics of the market economy (Bonnedahl and Eriksson, 2007) which drives efficiency and globalisation but also emphasises a transaction perspective over (wider) responsibilities (Ghoshal, 2005).

Hence, we suggest that spatial, temporal, functional and relational distances, not mutually exclusive, obstruct responsible action for sustainability. These distances constitute impediments due to several factors of which we underscore information and knowledge (a focal actor not knowing about, e.g., exploitation or the needs of others), ethics and values (not caring about environmental degradation or the condition of others), and personal, organizational or institutional capacities (limitations in an actor's resources or in surrounding institutions).

*Spatial distance* undermines intragenerational responsibility by preventing actors from directly experiencing the needs of others, as manifested in north-south and rural-urban divides. Increased access to information has not led to sufficient action to address differences in wealth and resource use, related to not least SDG 10 and 12 (Oxfam, 2017; UN, 2019a; UN, 2020a). As an impediment to emotional connection and ethical commitment, it also denies actors full direct experience of environmental degradation which they contribute to, and exploitation of land, animals and labour in remote places. Some global organizations have the information and capacity to overcome this distance, but embeddedness into the mainstream economy obstructs change, and we get mismatches between organizational and systemic levels, and lock-ins (Hahn et al., 2015; Wainstein et al., 2019). However, in terms of capacities, individuals and the majority of firms have limited influence on competitive global markets, and policy-making on this global level has little decision-making authority in relation to states. The principle of common but differentiated responsibilities between states, as an attempt to address space in relation to environmental degradation and availability of technologies and financial resources (Principle 7 of the Rio Declaration; UN, 1992a; UNFCCC, 2015), has made limited difference to intragenerational maldistributions.

*Temporal distance* undermines intergenerational responsibility (Gardiner, 2006). Decisions on needs and aspirations, and implied production, distribution and stewardship, are made by present humans, companies and states. The physical absence of future generations gives precedence to values promoted by today's most capable economic and political actors – who do not experience future loss of resources and habitats or extinction of the species. Scientific projections of future states of affairs provide uncertain conjectures that seldom guide policy and planning as exemplified by the absence of relevant policy response, and the mobilisation of capacity, to meet climate change (Spash, 2016). The short-sightedness is accentuated by political decision making based on electoral cycles, and even shorter time horizon of corporate decision-making. Further, analytical decision-support tools, such as cost-benefit analysis based on discounting, devalue future losses and give priority to present resource use (Bromley, 2006).

SD policies should tackle spatial and temporal distances, but in the complex settings of policy practice SD competes with other goals, such as financial stability and international competitiveness. The voluntary approach to sustainability also limits the scope for sufficient measures. Apart from The 2030 Agenda's recognition of state sovereignty, and the Paris agreement's voluntary approach to responsibility (UNFCCC,

2015), the present global SD policy recognises and affirms 'different approaches, visions, models and tools available to each country, in accordance with its national circumstances and priorities' (UN, 2015, p. 11). Many governments have also delegated duties and ambitions to private actors through globalization, decentralization and deregulation. SD may thus now be more dependent on markets than it was at the time of the Brundtland report (Martens, 2017; Schnaiberg et al., 2002), which leads to the remaining two types of distance.

*Functional distance* emerges from specialization and division of labour and undermines sustainability by limiting the knowledge, understandings and perceived responsibilities of actors to their functional specializations. This is driven by a market discourse (Bonnedahl and Eriksson, 2007) which can be traced back to Adam Smith's (1776/1904) argument about the advantages of the specialisation of butchers, brewers and bakers. In developed economies, the functional separation also demarcates producers and consumers, firms and individuals. Prosumerism, peer production and sharing economy have challenged these divides, but their potential is constrained without clear ambitions to reduce matter-energy throughput (Robra et al., 2020). While present economic structures enable complex physical and monetary flows between actors, the capacity and scope of an actor's responsibilities are individualised and limited to a local understanding of a transaction and its value, e.g. a buyer's purchase of a specific good/service of a specified quality and quantity for a certain price from a specific seller. This narrow responsibility stands in contrast to the global and collective sustainability challenges (Bonnedahl and Caramujo, 2019). The extended consequences of 'local acts' are addressed through the notion of externalities, regulation, pricing as well as codes of conduct and product information disclosure. Yet, the basic structure of the economy remains unchallenged, and the functional distance limits the felt need of ethical deliberation (cf. Schnaiberg et al., 2002).

*Relational distance* signifies more value-based aspects of distance, as in how means and ends appear in relations which can be described as functional. Adam Smith told us not to be dependent on the good intention of others but on the self-interest of specialized economic actors with instrumental takes on acts and relations (Smith, 1776/1904). This perspective is imperative for how we seek information and develop capacities, and it characterizes mainstream business and markets (e.g., Montabon, 2016). It is given institutional support via laws which govern organizational forms, transactions and the financial system. The distancing between the user and the used, between the aim of production and its means is also manifested in the 'hard' parts of the T and at odds with the collective nature of sustainability problems (Hardin, 1968; Naess, 1989). Such imbalances are mounting as egoistic behaviour and opportunism underlie predominant economic theories, such as agency theory of the firm (Ghoshal, 2005). The debate on corporate responsibility elaborates on extended responsibilities (Heikkurinen and Mäkinen, 2018), but actions beyond economic and legal responsibilities are often add-ons to corporate strategy (Carroll, 1979; Hahn et al., 2015). While instrumental approaches and objectification are mainstream in relation to the non-human world, they also appear between humans. The market discourse extolls free exchange and relevant prices, also for people as labour, but a Marxist analysis is not needed to acknowledge that financial wealth improves the capacity to exploit resources to satisfy preferences. While the inter-human relations are on the SD agenda (e.g. SDG 10), the relational distance to the non-human world is left outside.

Subsequently, SD policies should also tackle functional and relational distances. In this quest, it must be recognized that markets with profit-oriented firms have generated economic wealth but have been far from ideal for addressing wellbeing (Max-Neef, 1995; Büchs and Koch, 2017). Demand, i.e. preferences manifested through the exercise of purchasing power, and not needs, is the steering mechanism of markets (Bonnedahl and Heikkurinen, 2019). This creates a systemic mismatch between production and need satisfaction: firms produce what is demanded but not necessarily needed. The mismatch is reflected in the

tenuous link between income and happiness (Easterlin et al., 2010), and unlimited consumption driven by positional competition (Hirsch, 1976; see also Rinkinen et al., 2020). While self-interested economic behaviour may drive innovation, nurtured in a structure with functional and relational distances, it has been counterproductive for the preservation of common resources (Hardin, 1968; Boltanski and Chiapello, 1999/2005).

To summarise: spatial, temporal, functional and relational distances (see Table 1) constitute barriers to responsible action which are not addressed successfully by existing SD policies. The next section examines how these barriers could be overcome using interventions informed by the notion of strong sustainability.

### 6. Discussion: Towards a strong Agenda

With some exceptions, particularly climate change, prevailing SD policies primarily concern *spatial distance*. The focus is on poverty-related problems and intragenerational responsibility, aiming at gains to ‘all parts of the world’ (UN, 2015, §18). Achievements are dependent on actions of states nationally (via social protection and equal opportunities programmes et cetera) and internationally (e.g., via development cooperation), but activities such as investment to meet SDG 1, 2 and 10 to achieve reduced poverty, hunger, and inequality also depend on international bodies and corporations. Some environmentally related initiatives, e.g. on access to clean water and energy (SDG 6 and 7) in developing countries, can also qualify in this category of reducing spatial differences. While some activities directly address sustainability challenges, such as public investment in schools or alternative energy, interventions often aim to create circumstances for responsible acts by other agents, particularly as fiscal incentives (UNCTAD, 2020).

Major flaws of present SD policy are the idea that three dimensions of sustainability could and should be balanced, and the goal of eternally growing economies. The latter also contradicts the first, as it prioritizes short-term flows (Eisenmenger et al., 2020; Bengtsson et al., 2018; Spaiser et al., 2017), denying the critical role of stocks in enabling current and future well-being (Hamilton and Hartwick, 2014). Ecological integrity and sustained biophysical stocks are starting points for strongly sustainable policy (e.g., Brilha et al., 2018; Daly, 2005; Reid et al., 2017) which should aim at a much more equal distribution of the long-term available total wealth and its products (Häyhä et al., 2016). Hence, environmental stewardship should form the core of policy: Strong SDG 2 (Table 2), and attempts to determine and safeguard the

**Table 1**  
Distances constraining responsible action.

Type of distance	Description	Constraints	Examples
Spatial	Actors and action-outcomes are distant in <b>space</b>	The focal actor is not exposed to others and outcomes	Hazardous waste and effects of climate change in remote geographical locations
Temporal	Actors and action-outcomes are distant in <b>time</b>	Future actors cannot present claims, and future outcomes of present acts are unclear due to temporal separation	Resources and habitats are degraded or made inaccessible to future generations
Functional	Actors and action-outcomes are distant in terms of <b>function</b>	Perceived responsibilities are limited to the specialized role of actors	Complex supply chains obscure environmental and ethical consequences of a purchase
Relational	Actors and action-outcomes are distant in terms of <b>means-ends relations</b>	Relations focus on the benefit of the focal actor, while others are subordinated or exploited in instrumental processes	Destruction of forests to breed and slaughter animals for meat consumption of the financially wealthier

**Table 2**  
Distances, proposed solutions and new goals.

Type of distance	General solution	Strong SDGs
All	Focussing on wealth as stocks and ensure ecological integrity	SSDG 1: Critical functions and entities in nature maintained SSDG 2: Environmental stewardship as base for sustainability
Spatial	Bridging space between actors and action-outcomes	SSDG 3: Well-being (for all) SSDG 4: Fair distribution of global wealth SSDG 5: Sufficiency SSDG 6: Democracy and stakeholder involvement in governance
Temporal	Bridging time between actors and action-outcomes	SSDG 3: Well-being (over time) SSDG 7: Low matter-energy throughput SSDG 8: Long planning horizons SSDG 9: Sustainable human population
Functional	Decreasing functional separateness between actors and action-outcomes	SSDG 6: Democracy and stakeholder involvement in governance SSDG 10: Responsible trade SSDG 11: Responsible information
Relational	Increasing non-instrumental relations between actors	SSDG 12: Holistic work SSDG 6: Democracy and stakeholder involvement in governance SSDG 10: Responsible trade SSDG 13: Needs as guiding principle SSDG 14: Plural values and inclusive rights

more critical natural functions and entities be the baseline of such stewardship: Strong SDG 1. This would require measures such as banning the extraction of fossil energy, new norms in international agreements (not least on trade) and substantial taxes or other imposed costs for the use of virgin materials and exploitation of land – while taxes on labour which saves the use of materials and energy should be relaxed.

SDGs could still be seen as ‘integrated and indivisible’ (UN, 2015), but to see them as balanced would contradict the ecological reality that social action is dependent on the ecosphere and its components. A strong agenda would also build on the social reality that the economy is dependent on functioning societies, and thus be subordinate to goals of a ‘social’ character (Montabon, 2016). A strong agenda would consider that economic activity should serve humans and other life on the planet aiming at needs and equality, not demand and efficiency. To direct such processes, Strong SDG 3 would guide social development towards well-being (Büchs and Koch, 2017; Helne and Hirvilammi, 2015), as something more multi-faceted and relevant than quantitative growth (Easterlin, 2010; Max-Neef, 1995). Some strong SD measures would resonate with existing SDGs on e.g. hunger, health, education and equality, and they would build upon existing initiatives (e.g., Canadian Index of Wellbeing, 2011; Stiglitz et al., 2009; The Treasury, 2018).

While SDG 17 emphasizes the importance of global partnerships, a strong Agenda would also involve redistribution based on, for example, taxes on carbon, financial transactions or virgin materials (Hickel, 2019; Hyder, 2008) and institutional reform (cf. Eisenmenger et al., 2020) that would foster fair use of global resources: Strong SDG 4. It would address the responsibility of the financially wealthiest, with very high ecological footprint (Chancel and Piketty, 2015; UN, 2020a) to compensate for the vulnerability and losses in poor nations due to climate change. The strong agenda would not only focus on basic needs but also aim at sufficiency (Koehler, 2016; Princen, 2005) and recognize the limits to legitimate material and financial aspirations (Buch-Hansen and Koch,

2019; Bengtsson et al., 2018; Rammelt and Gupta, 2021): Strong SDG 5. Normative influence via education systems, such as by incorporating reflexive ecocentric approaches to sustainability in curricula (Allen et al., 2019) and support to social innovation (Howaldt and Schwarz, 2017) would be among mechanisms aiming at bottom-up processes, but direct intervention and institutional reforms are also needed on, e.g., commercial advertising, company taxation and the way financial and labour markets distribute economic wealth.

Strong SDG 4 and 5 would promote new solutions for organization and distribution to complement and sometimes replace corporations, markets, and money (Seyfang and Longhurst, 2013), which prioritise financial wealth over basic needs, and transformation and accumulation over preservation and satisfaction. New solutions would meet the difficult challenges of defining basic needs and bridging space between actors and outcomes. Democratic participation in production and distribution and direct stakeholder relations (Koehler, 2016; Marchetti et al., 2020) would characterise novel forms of organization and distribution: Strong SDG 6. This would not deny the role of governance at other levels (Häyhä et al., 2016; Ostrom, 2010), but when actors engage in proximity, and the visibility and experience of the consequences of actions increase, more responsible action would be facilitated. In economic terms, some productivity (operative efficiency) would be sacrificed in order to better meet relevant social goals (effectiveness).

By establishing a clear hierarchy between systems and categories of goals (traditionally expressed as environmental, social and economic), also the *temporal distance* would become addressed. One side of preserving critical natural functions, habitats and entities is through direct protection (SSDG 1). Stewardship strategies must however also target natural elements and species which are not ‘critical’, through, e.g., the broader application of costs and caps (SSDG2; Scherer et al., 2018). Another way of preserving nature is by influencing value systems, including the view that growth in human-made capital could compensate for the loss of values in nature. An important step is to abandon GDP as societal goal and indicator of performance. As alternative, apart from a focus on inclusive and long-term well-being (Strong SDG 3), a strong agenda would entail absolute reduction of the matter-energy throughput (biophysical dimensions of degrowth): Strong SDG 7 (cf. Daly, 1985; Hickel, 2019; Rammelt and Gupta, 2021).

To further address temporal distance, major decisions and organizational frameworks (e.g., corporate law) would need to consider effects in the long run. Regulation and reporting standards would require organizations to adopt long time horizons in strategic decision making: Strong SDG 8. A particular dimension in need of different norms is human reproduction and total population. SSDG 9 relates to existing ambitions in education, equality and empowerment of girls and women, but goes further, by e.g. changing economic incentives beyond the second child per family. In the long run, the goal would be as in Georgescu-Roegen (1975) bioeconomic program, to a level which can be adequately fed by organic agriculture. The practical ramifications are conservation of resources and habitats to remain available to future generations and, together with SSDG 3, enable a good life for all instead of various qualities of life for as many humans as possible.

Moving to the economic dimensions of social organization, the *functional separation* between types of labour, actors and processes are not addressed by mainstream SD policy which relies on technologies for the improvement of efficiency in networks and supply chains (The 2030 Agenda mentions ‘technolog\*’ 41% more often than ‘environmen\*’; UN, 2015). Here, three Strong SDGs would complement the organizational reforms of SSDG 6. First, SSDG 10 addresses the vertical distribution of labour and responsibilities in the global trading system, calling for a regime based on social responsibility and environmental protection. Trade should build on more equal relations between rich and poor, and between individuals and corporations. Social goals would supersede economic gains, and socially fair transactions should meet criteria of ecological soundness (in line with SSDG 1 and 2). Sustainability-relevant regulation and socially and environmentally more true costs would

contribute to the phasing out of the use of critical resources, and non-essential production and much of the long-distance trade will be exchanged by local production and bioregional principles (Rajeswar, 2002; Scott Cato, 2011).

The functional separation between buyers and sellers would be eased by emphasising communication which is of fair and equal value to all stakeholders (Montabon, 2016): Strong SDG 11. Marketing and company reporting follow sustainability standards, building on existing initiatives (such as the GRI). As a sustainable society would give a smaller role for commercial transactions, traditional advertising will diminish. As transition in general, these processes must be supported by changes in norms and voluntary commitment by organizations, such as regarding sustainable supply chain management and ethical codes of conduct (Montabon et al., 2016; Ndubisi and Nygaard, 2018). Labour would be less of a market activity and more an integrated part of community relations. Hence, Strong SDG 12 would promote more holistic work and de-specialization. Both the products of work and work itself should target human needs. In relation to the work-part of the present SDG 8, this implies progressive ambitions regarding human development, and SSDG 12 incorporates elements such as health, equality and lifelong learning, now addressed separately from work.

Finally, the *relational distance*, particularly the markets’ emphasis on each actor’s self-interest and objectification of its environment as resources for production, commercialization and use, is untouched by current SD policy. When implicitly addressed, as in the decent work and reduced inequalities of SDG 8 and 11, ambitions do not go far. A strong agenda would build on the participation and relational proximity aimed at through SSDG 6 and the responsible long-distance relations targeted by SSDG 10. To further change markets is necessary to meet the collective nature of sustainability problems. An important part of this is change of the financial system, currently made to fit not the human in a broad sense but the ‘economic man’, supporting speculative investment and the build-up of economic inequalities. Adding financial dimensions to SSDG 6 and 10 would entail transformative changes from, e.g., the present global financial system and dominant commercial banks to fair finance or banking on values, and to local currencies and demonetization (Niven, 2014).

Another change related to the power of financial capital would be a move away from an economy directed by demand to an economy geared towards needs: SSDG 13 (Bonnedahl and Heikkurinen, 2019). This would require multiple alterations in social organization. One measure is to reduce differences in economic wealth through more socially and environmentally relevant wage policies and taxation (Buch-Hansen and Koch, 2019). It would help translate real needs into demand and curb excessive demand. The area of ownership also requires reform. Some of this is found under SSDG 6, via cooperative types of organizations allowing new bases for work and the exchange of goods and services (Hiteva and Sovacool, 2017). While reform in legislation and taxation must facilitate such change, bottom-up initiatives and social innovation are necessary to make new solutions meet actual needs and capacities (van der Schoor et al., 2016).

As a strong agenda postulates that an instrumental focus on relations do not lead to sustainability, the needs approach must not only be given a (scientific) biophysical frame (SSDG 1 and 2). It must also accommodate a more inclusive ethics and attribute intrinsic value to actors and entities of the natural world. Hence, strategic decision-making cannot be purely anthropocentric. Policy must recognize a plurality of values (Punzo et al., 2019) and create institutions more inclusive in terms of rights: SSDG 14. In practice, corporate rights to own assets with common properties, like forests and genetic material, and to make profits from the harvesting of land and seas, will be limited. On the other hand, the rights of communities, animals and nature should be elevated, which includes legislation and trade agreements (Ezra, 2017). Engagement according to a Kantian maxim of never treating others as mere means is a challenge (particularly when extended to non-humans), but easier to operationalise once shone light at.

## 7. Conclusions

Considering ecological balance as the foundation of sustainable development, this article has explained the failure of present SD policy by its rootedness in assumptions and values of weak sustainability. Those are demonstrated in the idea of three mutually reinforcing dimensions, and in the approach in relation to components of the IPAT equation. Present policy disregards the size of *Population*, promotes a general and perpetual rise in *Affluence*, and embraces *Technology* with the aim to control the effects of human action. In contrast, we have argued for a strong policy, based on ecological limits and ethical inclusiveness, which tackles all parts of IPAT.

The article's focus has been on four types of distances, as impediments to responsible action, and on change in social organization as an overall approach to bridge such distances. Emphasizing the social sides of the T in IPAT, this approach is not only more complete in model terms. It also implies a shift from present attempts to limit environmental impact to a focus on the causes. It announces a cultural evolution rather than, in the narrow sense commonly promoted, a technological one. Key components in this is the recognition of environmental stewardship as the foundation for human and social development, and that the dimensions of human societies and aspirations must be adapted accordingly. Within these frames, the distribution of society's production should be radically more fair and directed towards fundamental needs, and the economy as well as technological instruments should serve as means, and not as goals.

We have argued that the physical categories of space and time, and the economic categories of functions and relations, constitute distances which impede responsible action and sustainable development. As the variety of causes include knowledge, values and capacities, measures in many policy areas, such as education, labour market, taxation, association and property, are needed. On this basis, we drafted a Strongly Sustainable Agenda consisting of 14 strong SDGs to bridge distances and thus lower the human environmental impact and enable the continuity of diverse life on Earth with a focus on equality and well-being.

A limitation of our work is the general approach which does not consider differences between contexts and living conditions. We discuss the global level policy without much attention to how regional or national application could look like. However, as environmental impact as well as responsibilities and economic resources correlate with levels of traditional, unsustainable, development, the wealthiest states must take the lead in the operationalisation of strong policies. A related limitation concerns the broad scope of our approach, which does not allow any in-depth discussions on specific areas of measures, such as alternatives to GDP and new types of organizations. We recognize that most of these areas which we touch upon display rich and interesting research, and propositions for change which we have not been able to credit.

Our focus on the ecological predicament of humans, arguing that it is decisive for social and economic ambitions, has also limited our discussion on the latter, where we are likely to find reasons behind human action: reasons to stay on the unsustainable track, and reasons for change. We also acknowledge the messy political realities of international agreements. The 2030 Agenda was an outcome of a negotiation process between UN member states, with features similar to those of the Conference of the Parties, which annually have failed to deliver climate policy in line with climate science. Certainly, the difference between 'sustainability' and 'politically feasible sustainable development' must be recognized to avoid political and social naivety. Nevertheless, the painful realization is that the current political realities are not matching with the ecological reality. In other words, modern 'developed' societies and mainstream policies are based on ecological nativity. Putting forward an alternative list of goals for development, which we argue to be more ecologically realistic and ethically inclusive (Bonnedahl and Caramujo, 2019), we hope that strong sustainability could find its way to actual policy-making and that future research can both elaborate further on our propositions and delve into some of the limitations of this work.

## CRediT authorship contribution statement

Bonnedahl: Main role in conceptualization and analysis. Equal role with Heikkurinen regarding original draft. Main role in writing and editing, Heikkurinen: Important role in conceptualization and analysis. Equal role with Bonnedahl regarding original draft. Important role in writing and editing, Paavola: Supporting role role in conceptualization, analysis, writing and editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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