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Sustainable development goals as accountability mechanism? A case study of Dutch infrastructure agencies

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ABSTRACT

The UN sustainable development goals (SDGs) were adopted by the United Nations as a "universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity." These goals prove to have a strong appeal to managers in both public and private sectors. Despite the popularity of the goals, little is known about the consequences (intended and unintended, desired and undesired) of organisations adopting SDGs in their management practices. Therefore, our research question is: "What is the potential role of SDGs as an accountability mechanism?" The following article will study how organisations responsible for technological infrastructures in the Netherlands use the SDGs as an accountability mechanism. To do this, the authors will first provide an overview of the SDGs and how we conceptualize accountability. We will then present our case study methodology before looking at a single case study based on interviews with employees from three organizations running infrastructure in the Netherlands. Based on this case study, we will provide a broader analysis of the key tensions that are becoming apparent when using the SDGs as an accountability mechanism. In conclusion, we will argue that the SDGs may provide a valuable tool to make organizations more accountable to societal needs, however further shifts are needed in the way the accountability mechanisms are designed in order to ensure meaningful accountability.

1. Introduction

The UN sustainable development goals (SDGs) were adopted by the United Nations as a "universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity".[1] These goals prove to have a strong appeal to managers in both public and private sectors. For instance, many organisations start to report how they contribute to which goals in their formal communication to stakeholders like annual reports (Pizzi et al., 2021; Rosati & Faria, 2019). Although originally not designed for that purpose, SDGs seem to obtain a role as an accountability mechanism. However, using the SDGs as an accountability mechanism is not without challenges. One concern is that organisations may intentionally or not report only those activities that contribute to a small selection of goals, which would not provide enough information for SDGs to effectively function as an accountability mechanism (Emma & Jennifer 2021). Despite the popularity of the goals, little is known about the consequences (intended and unintended, desired and undesired) of organisations adopting SDGs in their management practices. Therefore, our research question is: "What is the potential role of SDGs as an accountability mechanism?"

There are a few studies that studied antecedents and consequences of SDG reporting but so far, these studies have been of a quantitative nature (Emma & Jennifer, 2021; Pizzi et al., 2021; Rosati & Faria, 2019). To better understand the potential of SDGs as an accountability mechanism, qualitative research is needed because this allows the depth and flexibility required to explore new phenomena inductively, i. e. without imposing an existing scheme of concepts and definitions. To explore the potential role of SDGs as an accountability mechanism we turn to one sector that is characterised by many organisations adopting the SDGs and reporting on them: the Dutch infrastructure sector. This sector is particularly interesting because of both its relevance and its context. The infrastructure sector provides critical services without which society would not function (e.g. electricity, heating, mobility, drinking water). Because of this relevance to society, infrastructure agencies find

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themselves in a heavily regulated context. Infrastructure agencies relevance in society also does pose an important question: How can effective accountability for societal needs be created among organisations who are responsible for key technological infrastructure? Shifting the perspectives of organisations responsible for key technological systems used in society such as electricity grids, water pumps or rail track management systems is key to ensuring broader accountability. Yet at the same time these organisations struggle with how the implement their technologies in society. They would like to do more but are limited by legal constraints and the expectations of their shareholders.

The following article will study how organisations responsible for technological infrastructures in the Netherlands use the SDGs as an accountability mechanism. To do this, the authors will first provide an overview of the SDGs and how we conceptualize accountability. We will then present our case study methodology before looking at a single case study based on interviews with employees from three organizations running infrastructure in the Netherlands. Based on this case study, we will provide a broader analysis of the key tensions that are becoming apparent when using the SDGs as an accountability mechanism. In conclusion, we will argue that the SDGs may provide a valuable tool to make organizations more accountable to societal needs, however further shifts are needed in the way the accountability mechanisms are designed in order to ensure meaningful accountability.

1.1. Accountability and the UN Sustainable Development Goals (SDGs)

In 2015 the United Nations General Assembly committed to pursue a 15-year plan to achieve a total of 17 overarching Sustainable Development Goals until 2030 (Biermann et al. 2017). The following graph provides an overview of all 17 goals:

Each of the 17 goals is broken down into targets, leading to a total of 169 targets in total. The following graph provides an overview of all 169 targets:

The goals and targets cover a broad set of issues from Peace and Justice to Life on Land. However, the approach of the SDGs is also interesting from a conceptual perspective. Rather than govern through typical command and control regulation, the "Sustainable Development Goals (SDGs) of the United Nations present a novel approach to global governance where goal-setting features as a key strategy." (Biermann et al. 2017) This goal focused approach has led to numerous challenges in terms of accountability.

While the SDGs include a 'Voluntary National Review' process, the „national monitoring efforts are largely left to the discretion of individual countries, with the possibility for them to present voluntary reviews at meetings of the High-level Political Forum on Sustainable Development (HLPF) held each year at United Nations headquarters in New York." (Montero and Le Blanc 2019) This poses considerable challenges both in terms of achieving the SDGs themselves and accountability for their achievement. As noted by Engebretsen et al. (2017) "should we even come close to achieving the SDGs, we must be able to hold specific agents to account […] If everyone is accountable in theory, no one is accountable in practice." As such it should be unsurprising that a significant body of literature argues that accountability for the SDGs is one of the central challenges in achieving the SDGs (Bowen et al. 2017; Breuer &Leininger 2021; Donald & Way 2016; Friedman 2016; Galli et al. 2018; Janus & Keijzer 2014; Karlsson-Vinkhuyzen et al., 2018; Mansell et al., 2020; Mhlanga et al., 2018; Montero& Le Blanc 2019; Ocampo & Gómez-Arteaga 2016; Pillai et al. 2017).

There are a variety of attempts to increase the accountability for the SDGs discussed in the literature (Bowen et al. 2017; Janus & Keijzer 2014). One approach has been to legally organize accountability at an international level through either a new international treaty (Friedman 2016) or binding international reporting mechanisms (Donald & Way 2016). Another approach has been to propose creating stronger SDG accountability mechanisms at a national level (Abhayawansa et al., 2021; Breuer & Leininger 2021; Galli et al. 2018). Central to all of these approaches is to "ensure that actions are fulfilled and targets are met." (Bowen et al. 2017:92)

At the same time one of the key innovations in the SDGs is that they are addressed to all states and also to non-state actors (Donald & Way 2016). This all-encompassing approach to including non-state actors provides a space for business and civil society actors to define their own targets independently of states. Moreover the goal-focuses approach is particularly amenable to the involvement of other stakeholders beyond the state (Phillips 2007), most notably businesses who can also subscribe to the SDGs and measure their progress against them (van Tulder 2018). Notably states "call upon companies to help achieve these goals [which] makes aligning with the SDGs, by improving positive and reducing negative impacts, a key strategic sustainability challenge for companies." (van Zanten & van Tulder 2021:23) If the SDGs are a metric that companies are externally being evaluated against, it also makes sense for companies to evaluate their own projects against the SDGs. As note noted by van Zanten and van Tulder, the "global adoption of the SDGs in 2015 presents a major change in the institutional environment in which companies operate." (2021:22)

Due to this "neglect of accountability" (Breuer & Leininger 2021:2) it is unsurprising that „national accountability systems for the SDGs will be very diverse and involve different actors." (Montero & Le Blanc 2019) In consequence, both state and non-state actors find themselves developing their own targets, as well as their own accountability frameworks (Breuer & Leininger 2021; Pillai et al. 2017). As such the development of accountability mechanisms for the SDGs provides an interesting space for the development of new governance mechanisms and processes. While some international standards such as the OECD "guidelines for the private sector" (Pillai et al. 2017:85) exist, there is still great diversity in terms of integration of the SDGs into organization and the ways in which accountability mechanisms are implemented. Private sector organizations display a high degree of diversity in the ways in which they implement the SDGs and the extent to which they implement accountability mechanisms for achieving the SDGs.

Despite or perhaps because of the diversity of SDG implementations, an increasing number of businesses are beginning to engage with the SDGs. While businesses goals and targets are increasingly mentioned within existing company reporting mechanisms such as annual reports, (Pillai et al. 2017) these goals and targets seldom offer any "real accountability" (Redman 2018:236) for their achievement. Following Mark Bovens (2010), real accountability would mean businesses would be responsible to a specific forum for achieving their clearly defined SDG targets and would face sanctions if these were not achieved. As this is not typically the case, it has been suggested that the "interest of businesses in the SDGs is yet to be matched by commitment to transparency and accountability."(Agarwal et al., 2017)

Within the literature on sustainable development, it is frequently argued that technological infrastructure plays a key role in achieving the SDGs (Adshead et al. 2019; Cumming et al. 2017; Delanka-Pedige et al. 2021; Thacker et al. 2019). This is particularly the case due to the long-term nature of infrastructure investments (Adshead et al. 2019), which create path dependencies and lock in key political decisions (Driscoll 2014). Thus, the effective achievement of the SDGs by technological infrastructure companies is a key component of the overall achievement of the SDGs.

Yet at the same time as argued above, the SDGs can only be achieved through ensuring greater accountability. This leads to a key gap in the literature in terms of the accountability of organizations managing technological infrastructure for achieving the SDGs. We believe that this paper can respond to this gap, going beyond just commitments to SDGs but looking at the accountability of technological infrastructure organizations.

1.2. Conceptualizing accountability for technological infrastructures

Technological infrastructure systems are socio-technical systems that

connect the world, by asphalt, steel, water, copper, glass, electromagnetic waves and more (Rowland & Passoth 2015). The starting point to delineate infrastructure systems is the infrastructure itself: the artifacts that facilitate the flow of people, commodities, energy, or information from one place to the other (like a pipeline), one place to many places (like radio), many places to one (like a sewer system) or many places to many places (like a road system). Understanding the infrastructure from a societal perspective and not as a pure technical endeavor, the inclusion of these actors, their interactions and transactions is required. Hence our focus here on socio-technical infrastructure systems (Bijker et al. 2012).

How should accountability for technological infrastructures be conceptualized? In order to conceptualize accountability in the context of infrastructures, we use the work of Mark Bovens (2010) to structure our argument. Bovens differentiates two types of accountability, accountability as a process and accountability as a virtue. Given the highly process-driven nature of the governance and management of technological infrastructures, we argue that a procedural approach is most effective at analyzing the concept of accountability in this area.

Mark Bovens argues that at the core of procedural accountability lies "a relationship between an actor and a forum, in which the actor has an obligation to explain and to justify his or her conduct, the forum can pose questions and pass judgement, and the actor may face consequences" (2010:951) When the concept of accountability applied to the technological infrastructure sector, it is clear that we need to look at infrastructure providers who manage the infrastructure and potentially also companies within their supply chain (Gualandris et al. 2015; Parmigiani et al. 2011).

However, the appropriate forum is less clear, as there are several different entities which could be considered relevant fora: a variety of government regulators who are responsible for ensuring the organizations fulfill their mandates, users of the services provided by the infrastructure organizations, as well as the public in the countries where the infrastructure is based. This is particularly important as with many accountability relationships related to climate change and sustainability, infrastructure providers play a significant role in any kind of environmental transformation. In this article, we decided to look at a variety of different potential forums, from the broadest possible forum, the general public, as well as other forums such as other regulators, other businesses, and other business units within the same organization.

Having defined the actor who is accountable (infrastructure providers) while looking at different potential fora, it is also important to define the relationship between the actor and the forum. Bovens (2010) argued for a definition of accountability as:

1 "First […] it is crucial that the actor is, or feels, obliged to inform the forum about his or her conduct, by providing various types of data about the performance of tasks, about outcomes, or about procedures […]
2 Secondly, there needs to be a possibility for the forum to interrogate the actor […]
3 Thirdly, the forum may pass judgement on the conduct of the actor […] [and] frequently imposes sanctions of some kind on the actor." (Bovens 2010:952)

We believe that only a combination of these three elements allows for a meaningful accountability relationship. We will thus look at these three elements of accountability to understand the degree to which meaningful accountability exists between infrastructure providers and the public.

2. Methods

Our research question is "What is the potential role of SDGs as an accountability mechanism?" To study the potential role of SDGs as an accountability mechanism in practice we adopted a case study approach (Yin 2009). So far, research on SDG reporting has mainly relied on statistical analysis of large-scale databases (e.g. Emma & Jennifer, 2021; Pizzi et al., 2021; Rosati & Faria, 2019). Those quantitative studies have as the advantage that they allow for reliable claims about the extent of SDG reporting across organisations and the characteristics of organizations that engage in SDG reporting. However, through their design such studies have to rely on the conceptualizations and definitions as given by the databases they use. For our research question, because of its reflexive nature on the role of SDGs more broadly, a more flexible research design is required that allows including implications of SDGs as an accountability mechanism that are not intended, and not yet known from earlier studies, and not captured in the framework of databases used in quantitative studies. Therefore, we use an inductive research design relying on interviews and document analysis. The richness of the qualitative data we collect provides the depth that helps us explore this new territory. Of course, this approach comes with limitations as well. By design, we will not be able to make any claims about how often certain mechanisms around SDGs as accountability mechanisms materialize in practice. Accordingly, our exploration of the topic should be seen more as a first reflection, with a case study to illustrate our reflections in practice, meant to inspire further research of both qualitative and quantitative design.

We conducted a single case study of the Dutch infrastructure sector, through interviews and document analyses of three Dutch public infrastructure agencies. The infrastructure sector is relevant because it is vital for society, it touches the daily lives of citizens in numerous respects, and it has a crucial role in achieving the SDGs (Thacker et al., 2019). Because of it highly developed and densely populated nature, the Netherlands provides a setting where dilemmas and trade-offs around SDG progress are likely to emerge (Ricciolini et al. 2022). Because of their critical role in the provision of societal services, we expected infrastructure agencies to be highly amenable to long-term goal-oriented planning and highly likely to support and promote public values (de Gooyert 2020).

This case study relies on three infrastructure agencies: Vitens, a drinking water provider; Alliander, a distribution system operator responsible for distributing electricity and gas; and ProRail, the Dutch railway track operator. More information on these organizations can be found in Section 3 'analysis'. We analyzed annual reports to investigate how SDGs played a role in reporting to external stakeholders. The second and third author of this article conducted interviews with senior managers from all three infrastructure agencies. These interviews allowed to hear more about the process that led up to reporting on SDGs in the annual reports, and to find out what role the SDGs had in management discussions within the organizations internally. All three interviewees were involved in the process of implementing SDGs in their organizations, so we consider them reliable sources for information on this topic, although relying on just three interviewees also presents a limitation of our study as we have no means to corroborate their statements about the role that SDGs have had in their organizations. Throughout the remainder of this article the three interviewees are referred to as 'interviewee 1' (senior manager Vitens), 'interviewee 2' (senior manager Alliander) and 'interviewee 3' (senior manager ProRail). The interviews took place on 30 August 2021, 8 September 2021, and 4 October 2021 consecutively. Brief interview notes were taken to facilitate the analysis, but no formal coding scheme which reflects the exploratory stage of this research.

3. Overview of case study

3.1. Vitens

Vitens is a Dutch infrastructure agency responsible for producing and distributing water in about one third of the Netherlands. It is a joint stock company with local and regional governments as shareholders. In 2020, Vitens formulated a new strategy called "elke druppel duurzaam" (every drop sustainable). The SDGs played an important source of

inspiration for this new strategy. As a part of the process that led up to the new strategy, Vitens' top management held a two-day long meeting away from the office, that ended with the decision to have the SDGs play a prominent role in management.

When asked why SDGs were chosen as a framework, and not alternative frameworks, Vitens' business developer answers that a main reason is that SDGs happened to be at a focal point of different discussions within the organization (interviewee 1). Strategists and policy officers were already considering using SDGs. Executives also indicated their enthusiasm for SDGs, amongst others based on a visit from a drinking water company from abroad which shared positive experiences with SDGs. During the strategy formulation, when it appeared that there was a shared enthusiasm about SDGs, it was decided to give SDGs a more prominent role in Vitens' strategy and management.

Because not all SDGs are relevant for a drinking water company in The Netherlands, Vitens decided to focus on 6 SDGs: 6, 7, 8, 9, 11, and 12. These are goals for the areas of clean water and sanitation (SDG6), affordable and clean energy (SDG7), decent work and economic growth (SDG8), industry, innovation and infrastructure (SDG8), sustainable cities and communities (SDG11) and responsible consumption and production (SDG 12). The SDGs appear in the annual report – similarly to other businesses around the world (Pizzi et al. 2021; Rosati & Faria 2019) - and help show how Vitens contributes to societal goals (Vitens, 2021). At this point, there is no quantitative measurement of progress on the contributions on these SDGs, but this is an ambition for the future.

What is interesting about Vitens choices is that they chose not to include SDG Goal 15. Goal 15 focuses on life on land, including ensuring terrestrial and freshwater ecosystems. This would seem relevant to the work that Vitens does, which makes it interesting that they chose not to include it. The choice reemphasizes that the decision to focus on certain SDGs over others is inevitably a subjective choice that must continually be justified in order to ensure accountability. At the same time Vitens have received no external questions or pressure about their choice of SDGs, raising questions about the efficacy of publishing SDG commitments in annual reports and the role of the general public as a forum for SDG accountability. While this conclusion is in line with much of the literature which questions SDG accountability (Breuer & Leininger 2021; Donald & Way 2016), it also shows the limitations of studying annual reports to understand conformity with the SDGs as is often the case (Pizzi et al. 2021; Rosati & Faria 2019).

3.2. Alliander

Alliander is a Dutch distribution system operator, responsible for distributing electricity and gas in about one third of the Netherlands. It is a joint stock company with local and regional governments as shareholders. In its latest annual report, Alliander describes how it contributors to various SDGs: numbers 7, 8, 9, 11, 12, and 13 (Alliander 2021). These are goals for affordable and clean energy (SDG7), decent work and economic growth (SDG8), industry, innovation and infrastructure (SDG8), Industry Innovation and Infrastructure (SDG9) sustainable cities and communities (SDG11) and responsible consumption and production (SDG 12) and climate action (SDG13). Currently SDGs are used to show how Alliander contributes to societal goals, but the ambition, as formulated in the annual report, is to use SDGs as a 'navigational tool' and to make further steps in measuring, monitoring, and reporting progress on SDGS (Alliander 2021:92).

When asked why SDGs were chosen as a framework, an Energy Architect concerned with operationalizing SDGs answered that this is the consequence of general trend that stakeholders would like to see more about the impact that organizations have on societal goals. Although reporting on SDGs is not an explicit request from a stakeholder, the general pressure to be more transparent on impact is felt within Alliander.

Besides using SDGs in its communication to the outside word, SDGs are also used internally at Alliander. Internal reports show how the Netherlands is making progress on SDG 7: clean and affordable energy. These reports have proven valuable in internal discussions about the Alliander's role in the transition towards a more sustainable energy system (interviewee 2).

3.3. ProRail

ProRail is the Dutch rail network manager, responsible for providing capacity on track for the entire country. It is currently in transition from a limited company to an agency of the national government. In its 2020 annual report, it mentions energy and circularity, related to SDG 11, 12 and 13. These are goals for sustainable cities and communities (SDG11) and responsible consumption and production (SDG 12) and climate action (SDG13). In addition, it mentions action on biodiversity, related to SDG 15, the SDG for life on land. The SDGs did not play a major role in choosing the goals.

ProRail has developed its own framework in the form of a roadmap on sustainability aimed at those issues that ProRail can mostly contribute on for main "tracks" on mobility, energy, materials, and nature, with ambitions in 2030 on those tracks with explicit goals. These play a major role in having the conversation in the organization of what potential there is and to create commitment in the organization.

There is a regional approach in which these goals are highly operationalized and play a major role. In the departments on procurement and on projects, the development of these tracks is under development to play a stronger role in buying decisions and in project selection. In the field of asset management, the role of these tracks is currently under first development. The organization is setting up dashboards together with these departments to have them self-monitor, with access in the wider organization (interviewee 3). SDGs have a broad "inspiring" role, but the organization has made its own choices and found it its own way to operationalize the SDGs.

On materials (circularity and re-use), energy (CO_2 emissions) and nature, the organization seems to be responsive the strategic challenges on the four tracks. Some other SDGs did not strategic priority, but still are relevant for ProRail. Implementation of the goals in the field of inclusion have already become common practice in HR processes. For real sector wide change of the production chain, ProRail is taking for now a wait-and-see approach, to in a later stage deal with the larger complexity of that challenge. There is clear responsibility and accountability issue in that field requiring further co-creation on how to do that.

4. Discussion: key tensions and broader trends

In this section we reflect on some of the tensions we observed when infrastructure agencies navigate the complex challenge of realigning infrastructures with the SDGs. Based on the case studies above as well as our experience working with Dutch infrastructure organizations, we will attempt to provide an overview of key tensions that can be expected when trying to realign infrastructures with the SDGs in practice.

4.1. Selecting the appropriate accountability mechanisms

A first tension revolves around the selection of appropriate accountability mechanisms. The representatives of infrastructure agencies generally share the conviction that it is desirable to move from infrastructure governance on flow capacity to a broader set of the SDGs. However, there are different frameworks that could be used to support such a move, which comes with questions around how to select the right framework, and how to justify that selection. To name just a few possibilities: societal needs can be said to be reflected in the triple bottom line of people, planet, and prosperity (Norman & MacDonald 2004), the six capitals of the integrated reporting framework (De Villiers et al. 2014), the nine planetary boundaries (Rockström et al. 2009), the 'doughnut' (Raworth 2012), and the seventeen SDGs (van Tulder 2018). Infrastructure representatives report that the simultaneous existence of

competing frameworks can be a barrier rather than an enabler for realigning infrastructure governance.

If an initiative is started within an infrastructure agency to adopt one of the frameworks to realign their infrastructure with societal needs, and higher management is asked to sponsor the initiative, this may strand if the initiators cannot convincingly argue why the selected framework is more appropriate than the alternatives. A major concern here, besides the substantial fit between the societal values that the infrastructure seeks to align with and the framework, is the legitimacy of the framework (Deegan et al. 2002). If an infrastructure agency is to decide on a framework, it wants to make sure that external stakeholders support this decision.

Some frameworks are more 'popular' than others, and this is relevant, because speaking to external stakeholders in a language that they understand is crucial for ensuring support for change in infrastructure governance. This was clearly present in the interviews we conducted, with several organizations acknowledging that they picked SDGs to galvanize support for certain types of issues, both inside and outside of the organization. At the same time various frameworks are very different in content and background, and it requires substantial expertise to assess whether there is an appropriate fit or not between societal values and the governance framework. Some frameworks cannot be selected because they lack the appropriate fit despite their popularity, other frameworks cannot be selected because they lack the external legitimacy despite the substantial fit. This can lead to the situation where no framework suffices, despite the many developments in this direction.

All three of the interviewed infrastructure agencies are strongly regulated. There is a tension between their intent to use external frameworks to drive change and the frameworks that their regulators choose to apply and put into contracts and law. We see a more limited and operational set of sustainability related values provided in the institutional backdrops of these organizations, while in the discussions the value of the broader set of values is acknowledged. The question is, who decides on the framework to use, which ties into our next section on conflicts between value frameworks.

4.2. Conflicts between value frameworks

A second tension relates to conflicting value frameworks, both within sectors and between them. To provide just one example, while some infrastructure providers push to reducing the carbon footprint as part of the SDGs, others infrastructure providers which act as market regulators, see preventing unfair competition as a key goal. As these different frameworks come into competition, the different frameworks clash, leading to an interesting set of challenges.

One area where this is most prominent are the setting of internal CO_2 prices as a mechanism to factor in harms to the environment. This CO_2 price was meant to be set at 50€ per ton of CO_2 produced and increase every year. The CO_2 price would also be coordinated between different infrastructure providers within the same sector, to prevent unfair competition. By factoring in CO_2 pricing and forcing other organizations in the supply chain to also provide CO_2 amount and price estimates as part of their bids, infrastructure providers can create considerable incentives to reduce the carbon footprint of infrastructure projects. Infrastructure providers created these prices, pre-empting additional regulatory steps within the ETS scheme which will likely make these prices mandatory in the not-too-distant future. For now, they agreed with the other distribution operators to create a level playing field

However, the Netherlands competition authority ACM has repeatedly informed infrastructure providers both formally and informally that such internal CO_2 prices prevent fair competition and that the ACM will not accept them. The conflict between different value frameworks attempting to achieve positive outcomes for society is thus evident. The conflict was mentioned several times during the interviews with infrastructure providers as one of the key impediments to creating accountability via the SDGs.

These conflicts between value frameworks were also evident within individual infrastructure providers. One infrastructure provider repeatedly mentioned push back within their organization, with staff emphasizing that the new goals set by the SDGs were not their responsibility or what they believe was their purpose within the organisation. This vibrant internal debate was particularly strong when the organisations were taking responsibility in their SDG driven strategies for goals that they could not fully control themselves. While this demonstrates commitment to the SDGs, some staff members felt uncomfortable taking responsibility for things they could not control.

The tensions between value frameworks also make manifest the difficulty of creating accountability in an environment in which there are conflicts between different value frameworks. The competition between these frameworks actively impedes accountability in a systematic and meaningful way. But multiplying the frameworks against which an organisation should be accountable to, the accountability relationship also suffers in the process. Better understanding of how accountability frameworks and organizational mandates collide could assist in improving the overall accountability of organizations. Organizational mandates and the frameworks they use to create accountability need to be designed in a manner which acknowledges value multiplicity and competing value frameworks and allows for it, rather than de facto limiting the types of accountability relationships that are possible.

4.3. Politics of counting

Another third tension that became evident during the interviews are the conflicts around how success or failure in achieving the goals of an organisation is 'counted.' Far from just an objective and abstract bookkeeping exercise, the process of deciding what counts involves numerous highly subjective decisions that are heavily influenced by political decisions (Mügge 2011, 2020). This is particularly the case in relation to the 'impact' an organisation can legitimately claim on the SDGs and how this is accounted for. Similarly to debates about Scope 1, Scope 2 and Scope 3 carbon emissions, how counting takes place what is considered 'in scope' of any counting heavily influences the resulting outcomes (Hertwich & Wood 2018; Mytton 2020; Wei et al. 2020). If an infrastructure provider pushes an actor in its supply chain to consider implement changes based on its SDG strategy, should the operationalised benefit to the SDGs be accounted for with the infrastructure provider or the supply chain actor?

For Alliander much of the focus within the SDGs is on SDG7, which is about meeting climate agreement goals. When trying to achieve this goal, there is an ongoing question of whether they should count gains of organisations they are connected to, only those who are under their control, or only those gains they make themselves. Within these types of arrangements, there is quickly a danger of double counting gains made to the SDGs in several different places simultaneously.

Another challenge for Alliander relates to the way in which infrastructure only becomes visible when there is a problem. By signing up to a goal-based framework around the SDGs on a topic they don't fully control, Alliander are putting themselves at risk of becoming unnecessarily visible as an infrastructure provider if things go wrong. This is a challenge to the existing corporate culture, which prefers to act as an infrastructure provider in the background.

At ProRail the use of SDGs in tendering out construction works to the market or selecting projects in their portfolio is under challenge, as the choice for specific indicators and operationalisations of those indicators has deep ramifications for the projects chosen and the possible success of competitors to win bids. This has led to an easing of the use of the framework in those competitive environments, while more general use for directing the organisation itself is embraced.

In consequence, much of the change created by the SDGs within infrastructure providers seems challenging to measure. What is certainly happening is that 'softer' factors such as internal culture or the interest and focus of employees is shifting slowly. There are also clear changes in

relation to partners in the supply chain. However hard investment decisions made by the infrastructure providers are similar to those that existed before. This suggests that the shift created by the SDGs in infrastructure providers might be less that of an accountability relationship and more of a cultural shift within organisations.

At the same time, all the infrastructure providers we spoke to intend to create effective accountability mechanisms, albeit at different levels. Both Vitens and Alliander publish information about their contribution to the SDGs in their annual report. Alliander also goes a step further and integrates the SDGs into the relationship with its partners, heavily influencing its supply chain. Both Vitens and Alliander want to more effectively operationalize and account for the SDGs and their impact on them more systematically, but this process is not yet completed and remains ongoing.

4.4. Finding the right forum

When working on earlier stages of this article, we had initially focussed on the role of SDGs as an accountability mechanism towards the general public. Our expectation was that SDGs are used by infrastructure agencies to communicate on the impact that they have made to other stakeholders. However, we also found instances where SDGs were used by infrastructure agencies to hold their organizational departments and other organizations accountable, by including elements of the SDGs in tendering processes. Infrastructure agencies, like other organizations, depend on other parts of the value chain to deliver societal value. For example, to make progress on SDG7 (affordable and clean energy), Alliander needs to adapt the electricity grid, but the renewable electricity production, transportation, and demand side changes like energy conservation that are also necessary to make progress on SDG7 are beyond Alliander's control. At ProRail, the SDGs play a role in changing the focus of parts of the organization. We found that SDGs are not primarily used be organizations to hold themselves accountable, but in two other ways: (1) to hold other parts of the organization accountable to create meaningful internal change and (2) to hold other organizations they work with accountable for shared responsibilities that require coordinated action across organizations.

This type of inter-organizational accountability in which one large infrastructure provider is the forum and another actor in their supply chain is the agent demonstrates the potential of the SDGs as an accountability mechanism. It is a framework with a strong basis across the actors related to infrastructures. By implementing accountability agreements based on the SDGs at scale it would be possible to implement a kind of *web of accountability* between different private sector organizations. This private sector form of governance provides interesting incentives to more whole sectors forward rapidly, if it is done in a transparency and fair manner.

In order to do this however, a coordinated approach between different infrastructure providers would be helpful to ensure common standards and common operationalization of the SDGs being implemented across the board. Sadly, other value frameworks implemented by the Netherlands competition authority ACM hamper this kind of coordination, even though this would be highly valuable for consumers and society alike. Rather absurdly, this prevention of systematic coordination forces private sector actors who want to innovate in this area to either do it alone, or to wait for government regulation. This is puzzling as government regulators typically are a key forum to ensure the accountability of infrastructure providers (Jordana 2017). In the organizations we looked at, the inflexibility of existing regulatory frameworks actively hindered rather the promoted the emergence of nascent accountability relationships based on the SDGs.

In conclusion, while multiple forums could be considered reasonable, those that play the most prominent role in the literature (the general public and government regulators) did not play a central role in enabling accountability through the SDGs and in some cases even hindered it. By contrast, we found instances where the SDGs were used opportunistically to hold other inner-organizational units or business partners to account, with the potential to create a *web of accountability* between private sector organizations. Both *opportunistic accountability relationships* and the creation of a web of accountability seem to be a promising area that should further be explored, as it goes beyond existing types of ways in which accountability around the SDGs is typically conceptualized (Bowen et al. 2017; Janus & Keijzer 2014; Pizzi et al. 2021). Rather than pushing for a new international treaty or stronger accountability at a national level (Abhayawansa et al. 2021; Friedman 2016), our findings suggest nascent opportunities for creating accountability relationships that have not yet been sufficiently explored.

5. Conclusion

What is the potential role of SDGs as an accountability mechanism? Simultaneous debates among these infrastructure providers about how to implement the SDGs demonstrate the challenges of seeing the SDGs as an accountability mechanism. While they certainly can be considered an accountability mechanism, SDG implementation is still very much in development. Dutch infrastructure agencies are currently trying to use the SDGs to realign infrastructure management with societal goals, often without clear accountability relationships.

Fig. 1. Overview of sustainable development goals.[21]

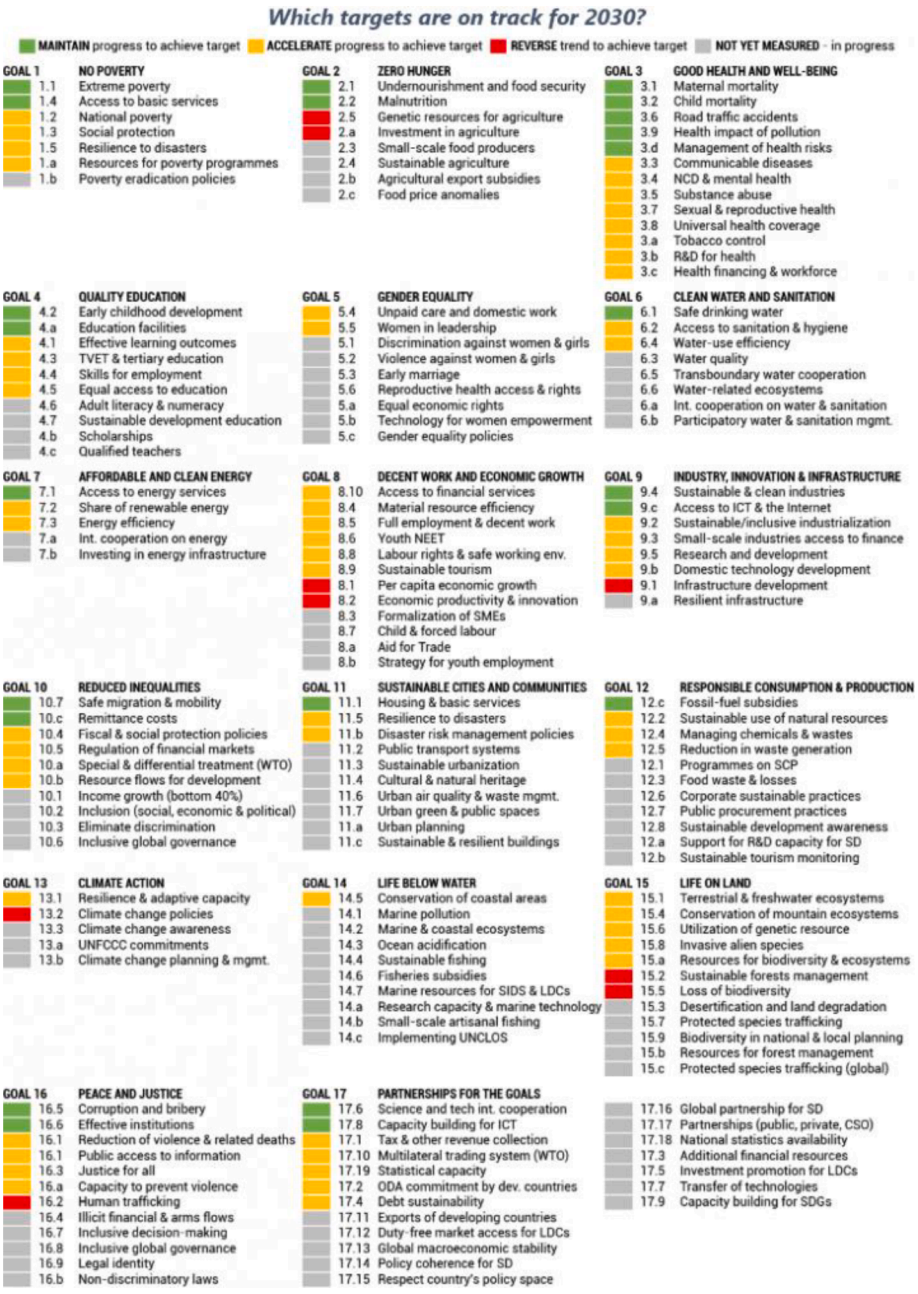

Fig. 2. Overview of SDG targets.[31]

In line with the literature, accountability through SDGs is used to support organizational legitimacy (Deegan et al. 2002). An important reason for infrastructure agencies to choose the SDG framework for their accountability, and not other frameworks, is that the framework 'resonates' both internally and with external stakeholders. In some instances, SDGs are used to 'relabel' existing contributions to societal goals. However, this does not mean that the adoption of SDGs is superficial and decoupled from actual working practices (Fernando & Lawrence 2014), because we also see the SDGs as a force within internal discussions on 'the role of the infrastructure agency in society' as well as discussions with regulators on the regulatory framework that would be appropriate for a changed role of the infrastructure agency. This force is particularly potent when opportunistic accountability mechanisms are implemented internally across organizations or between business partners

When seen in this context, the SDGs create a potential for accountability relationships that are worthy of further research. They also raise the possibility of a web of accountability between organizations, particularly when the SDGs are integrating into tendering processes. This seems to be in line with the idea of accountability as a process (Bovens, 2010): adopting SDGs is not used so much to justify decisions in the past, but to spark debates on how the organization can renew its 'social contract' through developing in a direction that is in line with expectations from stakeholders. For infrastructure agencies the social contract plays an important role, due to their monopolistic nature and the critical societal services they provide.

In conclusion, while the SDGs to provide opportunities for greater accountability for Dutch infrastructure agencies, accountability for the SDGs is not systematically implemented. As the SDGs constitute one of the central frameworks within which societal pressure for greater transparency and accountability is channeled, it would be valuable to

[2] Figure from https://www.un.org/sustainabledevelopment/blog/2015/12/sustainable-development-goals-kick-off-with-start-of-new-year/

look more closely at how such the SDG and accountability for them is implemented in practice. The main challenge is that in many of these accountability relationships, the roles of the actor and the forum ae not yet sufficiently clear. Thus, while accountability mechanisms are discussed, they are not sufficiently developed yet within the organizations in which they are implemented to create effective accountability relationships. However, nascent accountability relationships do exist that are worthy of further exploration, to better understand how accountability relationships for the SDGs are implemented in practice.

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.

References

Abhayawansa, Subhash, Adams, Carol A., & Neesham, Cristina (2021). Accountability and governance in pursuit of sustainable development goals: conceptualising how governments create value. *Accounting, Auditing & Accountability Journal*.

Adshead, Daniel, Thacker, Scott, Fuldauer, Lena I., & Hall, Jim W. (2019). Delivering on the sustainable development goals through long-term infrastructure planning. *Global Environmental Change, 59*, Article 101975.

Agarwal, Namit, Gneiting, Uwe, & Mhlanga, Ruth (2017). *Raising the Bar: Rethinking the Role of Business in the Sustainable Development Goals*. Oxfam.

Alliander. 2021. 'Effective Together; Energy Is a Hot Topic, Annual Report 2020'.

Biermann, Frank, Kanie, Norichika, & Kim, Rakhyun E. (2017). Global governance by goal-setting: The novel approach of the UN sustainable development goals. *Current Opinion in Environmental Sustainability, 26-27*, 26–31. https://doi.org/10.1016/j.cosust.2017.01.010

Bijker, Wiebe E., Hughes, Thomas P., Pinch, Trevor, & Douglas, Deborah G. (2012). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. MIT Press.

Bovens, Mark. (2010). Two concepts of accountability: accountability as a virtue and as a mechanism. *West European Politics, 33*(5), 946–967. https://doi.org/10.1080/01402382.2010.486119

Bowen, Kathryn J., Cradock-Henry, Nicholas A., Koch, Florian, Patterson, James, Häyhä, Tiina, Vogt, Jess, & Barbi, Fabiana (2017). Implementing the "sustainable development goals": towards addressing three key governance challenges—collective action, trade-offs, and accountability'. *Current Opinion in Environmental Sustainability, 26*, 90–96.

Breuer, Anita, & Leininger, Julia (2021). Horizontal accountability for SDG implementation: A comparative cross-national analysis of emerging national accountability regimes. *Sustainability, 13*(13), 7002.

Cumming, Tracey L., Shackleton, Ross T., Förster, Johannes, Dini, John, Khan, Ahmed, Gumula, Mpho, & Kubiszewski, Ida (2017). Achieving the National Development Agenda and the Sustainable Development Goals (SDGs) through investment in ecological infrastructure: A case study of South Africa. *Ecosystem Services, 27*, 253–260.

De Villiers, Charl, Rinaldi, Leonardo, & Unerman, Jeffrey (2014). Integrated reporting: Insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal*.

Deegan, Craig, Rankin, Michaela, & Tobin, John (2002). An Examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory. *Accounting, Auditing & Accountability Journal*.

Delanka-Pedige, H. M. K., Munasinghe-Arachchige, S. P., Abeysiriwardana-Arachchige, I. S. A., & Nirmalakhandan, N. (2021). Wastewater infrastructure for sustainable cities: Assessment Based on UN Sustainable Development Goals (SDGs). *International Journal of Sustainable Development & World Ecology, 28*(3), 203–209.

Donald, Kate, & Way, Sally-Anne (2016). Accountability for the sustainable development goals: A lost opportunity? *Ethics & International Affairs, 30*(2), 201–213.

Driscoll, Patrick Arthur (2014). Breaking carbon lock-in: Path dependencies in large-scale transportation infrastructure projects. *Planning Practice and Research, 29*(3), 317–330.

Emma, García-Meca, & Jennifer, Martínez-Ferrero (2021). Is SDG reporting substantial or symbolic? An examination of controversial and environmentally sensitive industries. *Journal of Cleaner Production, 298*, Article 126781.

Engebretsen, Eivind, Heggen, Kristin, & Petter Ottersen, Ole (2017). The sustainable development goals: Ambiguities of accountability. *The Lancet, 389*(10067), 365–365.

Fernando, Susith, & Lawrence, Stewart (2014). A theoretical framework for CSR practices: Integrating legitimacy theory, stakeholder theory and institutional theory. *Journal of Theoretical Accounting Research, 10*(1), 149–178.

Friedman, Eric A. (2016). An independent review and accountability mechanism for the sustainable development goals: The possibilities of a framework convention on global health. *Health and Human Rights, 18*(1), 129.

Galli, Alessandro, DJurović, Gordana, Hanscom, Laurel, & Knežević, Jelena (2018). Think globally, act locally: implementing the sustainable development goals in Montenegro. *Environmental Science & Policy, 84*, 159–169.

de Gooyert, Vincent (2020). 'Long term investments in critical infrastructure under environmental turbulence; dilemmas of infrastructure responsiveness. *Sustainable Futures, 2*, Article 100028.

Gualandris, Jury, Klassen, Robert D., Vachon, Stephan, & Kalchschmidt, Matteo (2015). Sustainable evaluation and verification in supply chains: Aligning and leveraging accountability to stakeholders. *Journal of Operations Management, 38*, 1–13.

Hertwich, Edgar G., & Wood, Richard (2018). The growing importance of scope 3 greenhouse gas emissions from industry. *Environmental Research Letters, 13*(10), Article 104013.

Janus, Heiner, & Keijzer, Niels (2014). Post 2015: Setting up a coherent accountability framework. *German Development Institute Briefing Paper, 13*.

Jordana, Jacint. (2017). Accountability challenges in the governance of infrastructure. *The Governance of Infrastructure*, 43–62.

Karlsson-Vinkhuyzen, Sylvia, Dahl, Arthur L., & Persson, Åsa (2018). The emerging accountability regimes for the sustainable development goals and policy integration: friend or foe? *Environment and Planning C: Politics and Space, 36*(8), 1371–1390.

Mansell, Paul, Philbin, Simon P., & Broyd, Tim (2020). Development of a new business model to measure organizational and project-level SDG impact—case study of a water utility company. *Sustainability, 12*(16), 6413. https://doi.org/10.3390/su12166413

Mhlanga, Ruth, Uwe Gneiting, and Namit Agarwal. 2018. *Walking the talk: Assessing companies' progress from SDG rhetoric to action*. Oxfam. doi: 10.21201/2018.3378.

Montero, Aránzazu Guillán, & Blanc, David Le (2019). *The Role of External Audits in Enhancing Transparency and Accountability for the Sustainable Development Goals*. New York, NY, USA: United Nations. DESA Working Paper No. 157 ST/ESA/2019/DWP/157.

Mügge, Daniel. (2011). Limits of legitimacy and the primacy of politics in financial governance. *Review of International Political Economy, 18*(1), 52–74.

Mügge, Daniel. (2020). Economic statistics as political artefacts. *Review of International Political Economy*, 1–22.

Mytton, David. (2020). Hiding greenhouse gas emissions in the cloud'. *Nature Climate Change, 10*(8), 701–701.

Norman, Wayne, & MacDonald, Chris (2004). Getting to the bottom of "triple bottom line"'. *Business Ethics Quarterly, 14*(2), 243–262.

Ocampo, José Antonio, & Gómez-Arteaga, Natalie (2016). Accountability in international governance and the 2030 development agenda. *Global Policy, 7*(3), 305–314. https://doi.org/10.1111/1758-5899.12322

Parmigiani, Anne, Klassen, Robert D., & Russo, Michael V. (2011). Efficiency meets accountability: performance implications of supply chain configuration, control, and capabilities. *Journal of Operations Management, 29*(3), 212–223.

Phillips, Peter W. B. (2007). *Governing Transformative Technological Innovation: Who's in Charge?* Edward Elgar Publishing.

Pillai, Kamala Vainy, Slutsky, Pavel, Wolf, Katharina, Duthler, Gaelle, & Stever, Inka (2017). 'Companies' accountability in sustainability: A comparative analysis of SDGs in five countries. *Sustainable development goals in the Asian context* (pp. 85–106). Springer.

Pizzi, Simone, Rosati, Francesco, & Venturelli, Andrea (2021). The determinants of business contribution to the 2030 agenda: Introducing the SDG reporting score. *Business Strategy and the Environment, 30*(1), 404–421.

Raworth, Kate. (2012). *A Safe and Just Space for Humanity: Can We Live within the Doughnut?* Oxfam.

Redman, Aaron. (2018). Harnessing the sustainable development goals for businesses: A progressive framework for action. *Business Strategy & Development, 1*(4), 230–243. https://doi.org/10.1002/bsd2.33

Ricciolini, E., Rocchi, L., Cardinali, M., Paolotti, L., Ruiz, F., Cabello, J. M., & Boggia, A. (2022). Assessing progress towards SDGs implementation using multiple reference point based multicriteria methods: The case study of the European countries. *Social Indicators Research*, 1–28.

Rockström, Johan, Steffen, Will, Noone, Kevin, Åsa Persson, F., Stuart Chapin, III, Lambin, Eric, Lenton, Timothy M., Scheffer, Marten, Folke, Carl, & Schellnhuber, Hans Joachim (2009). Planetary boundaries: Exploring the safe operating space for humanity. *Ecology and Society, 14*(2).

Rosati, Francesco, & Faria, Lourenço Galvão Diniz (2019). Business contribution to the sustainable development agenda: organizational factors related to early adoption of SDG reporting. *Corporate Social Responsibility and Environmental Management, 26*(3), 588–597.

Rowland, Nicholas J., & Passoth, Jan-Hendrik (2015). Infrastructure and the state in science and technology studiesA. Barry, J. Guldi, A. Mazur, & S. B. Pritchard. (Eds.), Infrastructure and the state in science and technology studies. *Social Studies of Science, 45*(1), 137–145.

Thacker, Scott, Adshead, Daniel, Fay, Marianne, Hallegatte, Stéphane, Harvey, Mark, Meller, Hendrik, O'Regan, Nicholas, Rozenberg, Julie, Watkins, Graham, & Hall, Jim W. (2019). Infrastructure for sustainable development. *Nature Sustainability, 2*(4), 324–331.

van Tulder, Rob. (2018). *Business & the Sustainable Development Goals: A Framework for Effective Corporate Involvement*. Erasmus University Rotterdam.

Wei, Wendong, Zhang, Pengfei, Yao, Mingtao, Xue, Min, Miao, Jiawen, Liu, Bin, & Wang, Fei (2020). Multi-scope electricity-related carbon emissions accounting: A case study of Shanghai. *Journal of Cleaner Production, 252*, Article 119789.

[3] Figure from https://unece.org/circular-economy/press/target-unece-report-highlights-need-strengthened-commitment-achieve-sdgs

Yin, Robert K. (2009). Case study research: Design and methods sage publications. *Thousand Oaks*.

van Zanten, Jan Anton, & Tulder, Rob van (2021). Analyzing companies' interactions with the sustainable development goals through network analysis: Four corporate sustainability imperatives. *Business Strategy and the Environment*.

Vitens (2021) Water voor nu en later, Annual report 2020, available from: https://www.vitensjaarverslag.nl/FbContent.ashx/pub_1003/downloads/v210526173644/vitens-jaarverslag-2020.pdf.