


Ambitiousness of Sustainable Development Goal (SDG) targets: classification and implications for policy making

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Abstract

We analyse how ambitiously the underlying targets for the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 are set in terms of their semantic formulation and discuss the implications of this for policy making. Our analysis is based on classifying ambitiousness into three types: semantic, relative and absolute ambitiousness; in this paper, we mainly analyse *semantic ambitiousness*. We establish an evaluation framework that shows clear differences in semantic ambitiousness levels between SDG targets. Awareness of these differences is essential, as semantic ambitiousness also lays the foundation for evaluating other types of ambitiousness of the SDGs in international cross-country comparisons and national policy making processes. We also analyse how progress towards the targets has been reported in the Sustainable Development Report of the SDG Index and in the SDGs Progress Chart of the United Nations. Finally, we discuss possible reasons for the differences in the level of ambitiousness and provide recommendations for operationalising the targets. Our aim is to provide a better understanding of the variability of interpretations that can occur in the evaluation of different SDGs, and to improve the coherence between the goals in developing any future development goal frameworks beyond Agenda 2030.

Keywords Sustainable Development Goals · Agenda 2030 · Ambitiousness · Classification · Cross-country comparisons

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1 Introduction

In 2015, the United Nations General Assembly adopted the universal Agenda 2030 for Sustainable Development [68] to frame an integrated approach balancing the economic, social and environmental dimensions of sustainable development. It includes 17 distinct Sustainable Development Goals (SDGs) and 169 individual targets under these goals, decided upon by the global community to “demonstrate the scale and ambition of this new universal Agenda” and to act as “a supremely ambitious and transformational vision” for the future [68].

The 169 SDG targets were initially designed to act as aspirational and global objectives, and national governments would decide how these should be incorporated into national planning processes, policies and strategies [68]. In this respect, the targets were considered as signposts providing a direction of movement, but not specifying implementation at national level (e.g. [39]). On the other hand, the very explicit formulations of some targets and formal (often quantitative) UN indicators for assessing progress towards achieving them does not provide much space for flexible national adaptation [36]. After revisions by the UN in 2021, 231 official UN SDG indicators defined by the Inter-Agency Expert Group on SDG Indicators were introduced. This new set of indicators makes it possible to carry out monitoring of the performance of different countries against specific targets. Consequently, the SDG framework can serve as a yardstick for comparisons between the countries within certain regional or other groupings, such as Europe [17], OECD [48] or Asian-Pacific [16], but also at global level (e.g. [27, 43, 53, 56, 70]). Even if this was not the initial objective of developing the SDGs, this kind of comparison with illustrative analyses can provide very appealing narratives to the media, policy makers and the public.

Several caveats associated with implementing the UN targets and indicators may hinder the utilisation of the results from comparative assessments of target fulfilment [7, 38]. A well-known caveat is that many indicators suffer from data gaps and that existing data may be of poor quality, or lack timeliness, as data collection from all countries often takes several years [10]. This article, however, focuses on a different caveat, namely the variation in the level of ambitiousness expressed in how the targets are presented. Substantial differences are illustrated in the formulation of targets for achieving Agenda 2030 goals in terms of their level of ambitiousness (see e.g. [59, 61, 64]). For example, some targets are described as ultimate goals (e.g. target 2.1 “End hunger by 2030”), whereas in some cases targets are just defined as changes in the direction of movement or specific trends (e.g. target 10.5. “Improve the regulation and monitoring of global financial markets”). Ultimate goals tend to be more difficult to accomplish than an unspecified degree of change in a certain direction, which semantically requires a mere insignificant change to reverse a trend or direction of travel into a desired direction. Given the grand challenges humanity is facing [54], small, incremental changes were not the intention of Agenda 2030. Consequently, there is a need to analyse the level of ambitiousness in the SDGs and their targets, and to assess the implications of these formulations.

We acknowledge that “ambitiousness” can be considered a rather vague term. A dictionary definition of ambitiousness is “a desire to achieve a particular goal” [40] that relates to the aspiration of “what do we want?”. However, when assessing the level of ambitiousness for a particular target, one should also consider the actors’ capacity of undertaking the required actions, which relates to a question of “what can we do?” [26, 52]. To specify the meaning of ambitiousness in our context, we identify three different types of ambitiousness (“semantic”, “relative” and “absolute”) and discuss the relationships between these.

In this paper, our focus is mainly on semantic ambitiousness: we classify all SDG targets according to their formulation, aiming to identify differences between how the SDGs are phrased. We seek answers to the following research questions:

- How ambitiously have SDG targets been formulated?
- How do differences in formulations of ambitiousness affect the interpretation of cross-country evaluations of SDG implementation?
- How can the semantic analysis of ambitiousness advance and support policy-development towards achieving sustainability?

To answer these questions, we first review the state of the art in the SDG debate, focusing on ambition and achievement of targets and suggest a framework which allows us to classify ambitiousness. Then, we analyse the formulations of the level of ambition in some SDGs and argue that this presents challenges in ensuring coherence across all domains and fulfilment of the principle of leaving no-one behind. The SDGs and their targets were the outcome of

a large-scale international political process that has been scrutinised since the SDGs were originally agreed upon (e.g. [19]). Therefore, the actual effort required to achieve the SDGs is an emergent property shaped by a political process, in which inconsistencies and even irreconcilabilities are to be expected, especially between different SDGs and their targets. Based on our findings, we also discuss the possible reasoning (e.g. political) behind the practical implementation of certain formulations, and policy implications, for example, of framing the discussion on risks related to not reaching the goals [36].

The fundamental motivations behind this analysis are two-fold. First, we aim to obtain a better understanding of the inherent differences between the SDGs in terms of how they were designed, with the aspiration that this will produce a more consistent analysis of their achievement. Second, we aim to provide insights for the preparation of future development agendas, and possibly also for informing the political processes in emerging future negotiations. The target years for attainment of the individual SDG targets are set between 2020 and 2030; thus, preparations for the “next round” of defining longer-term goals continuing the series of the Millennium Development Goals (MDGs) and SDGs, is likely to begin soon.

This paper is structured as follows. Section 2 discusses different ways of defining ambitiousness and reviews existing literature regarding discussions of ambitiousness related to the SDGs. Section 3 describes the framework for classifying SDG targets according to the ambitiousness of their semantic formulation. Section 4 describes the results of classifying the 169 SDG targets according to this framework, and the results of comparing this classification to two cross-country comparisons. It also introduces two indices: the “semantic ambitiousness index” (SAI) and the “average performance index of the countries” (API) for each SDG. The results and their implications for the policy making processes are discussed in Sect. 5, and Sect. 6 concludes the paper.

2 Background

2.1 Different ways of defining ambitiousness

The term ‘ambitious’ is often defined as something requiring substantial effort to succeed (see e.g. www.oxfordlearnersdictionaries.com or www.macmillandictionary.com). Analogously, the level of ambitiousness of an SDG target can be defined as an amount of effort required to reach the target. In practice, an unambiguous estimation of “effort” is impossible, but there are different ways of approaching the evaluation of the level of effort depending on how ambitiousness is defined. We suggest distinguishing between the following definitions:

1. *Semantic ambitiousness* (in terms of wording) is based on how ambitiously the targets are formulated semantically (e.g. “significant improvement” can be considered as more ambitious than “improvement”, and “eradicate” can be considered as more ambitious than “halve”);
2. *Relative ambitiousness* (in terms of distance to target) is based on how far we currently are from reaching the target level according to some indicator and reference level (e.g. the further the average of countries is from the target level, the more ambitious the target is);
3. *Absolute ambitiousness* (in terms of resources available to reach the target) is based on the actual amount of effort needed to reach the target.

Of these, *semantic ambitiousness* focuses on the *formulation* of the target, but it lays the foundations for the other definitions, which both require defining an explicit target level to operationalise ambitiousness. At best, the formulation of targets can provide very explicit goals for what should be achieved (e.g. by using semantic “end”). On the other hand, formulations defined such as “improve” or “increase” are also explicit, if we consider them purely semantically; even a minor improvement is sufficient to reach such a goal. However, in practice the intention behind these formulations often implies more than mere improvements, and setting the level of adequate improvement leaves much room for interpretation. This also affects the coherence and transparency of assessing the ambitiousness of the SDG targets according to the other two types of definitions.

The definition of *relative* ambitiousness is used, for example, in cross-country comparisons, in which the ambition stems from distance to reaching the target assessed according to how close different countries are to the stated target level [53, 70]. In these assessments, setting the level of comprehensively achieving a target can be based on the semantic ambitiousness of the target, but when the formulation of the target only postulates a desired direction of

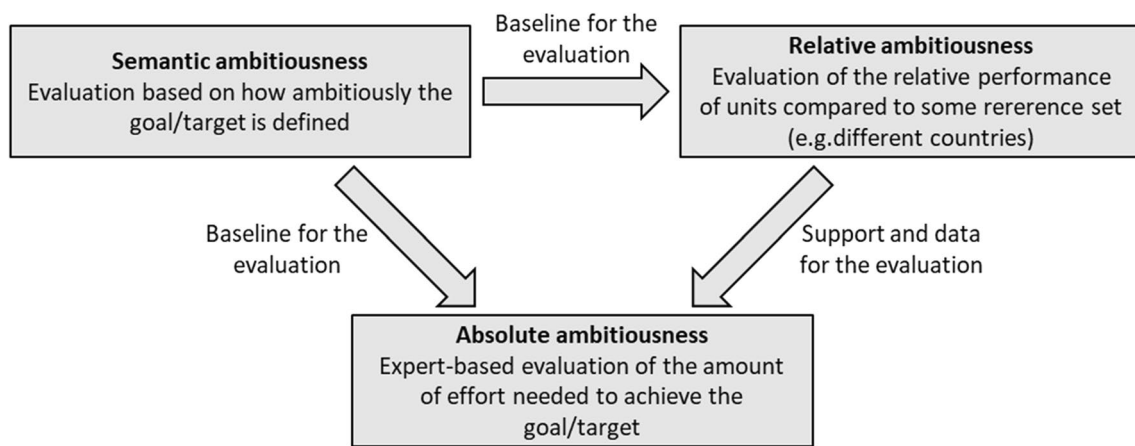


Fig. 1 Relationships between evaluating different types of ambitiousness as defined in this paper

improvement, analysts need to interpret or define the target level within their own reference framework. Comparisons also require setting a scale for how far different values are from reaching the target, in which relative performances of countries compared to others are typically utilised. The final decision of setting the levels rests with the analyst, which may introduce an arbitrary use of various target levels in the analyses, and consequently a reduced consistency between analyses across countries.

The definition of *absolute ambitiousness* focuses on the actual effort required to implement adequate sustainability measures. Assessments of absolute ambitiousness involve interpreting how well targets describe reality and how they are formulated (i.e. semantic ambitiousness), as well as assessing how different countries perform in terms of progress towards a target (i.e. relative ambitiousness). In addition, such assessments involve making very complex interdisciplinary expert judgments on how much effort is actually needed to reach the target, which also includes making evaluations of citizens' willingness to adjust decisions and behaviour in a stated direction and assessing differences between different types of efforts. For example, achieving full literacy rate of a population is not just a matter of teaching capabilities or funding, but also requires willingness of people to change behaviour. Substantial cultural and spatial variability in how important different targets are for reaching the overall goal, as well as subjective differences between individual people's values and motivation are often observed.

2.2 Relationships between the different types of ambitiousness

Figure 1 illustrates the relationships between evaluating different types of ambitiousness. Semantic ambitiousness provides the foundations for evaluating both relative and absolute ambitiousness by defining target levels that can constitute a baseline. The more explicit the definition of semantic ambitiousness, the easier it is to use it for operationalising targets, for example, in cross-country comparisons. From a policy perspective, evaluation of absolute ambitiousness is the ultimate means for estimating the effort required. Besides relying on the baseline defined through semantic ambitiousness, evaluations can highly benefit from data and analyses obtained from studies focusing on relative ambitiousness.

In this paper, our focus is on semantic ambitiousness, but we also study its relationship with relative ambitiousness by comparing our results to two published cross-country comparisons. Evaluating the SDGs in terms of absolute ambitiousness is beyond the scope of this paper, but we discuss the implications of our findings for such evaluations, aiming at contributing to making them more transparent.

2.3 Ambitiousness of the SDGs in the literature

To study how ambitiousness of SDGs has been previously analysed, we conducted a literature review based on abstracts in "Web of Science" (www.webofscience.org) with a search string ("ambitio*" AND (SDG* OR "Sustainable Development Goal*")). The asterisk was used to ensure that "ambition", "ambitious", or "ambitiousness" were all included as well as both single and plural forms of "SDG". The scan resulted in 407 hits, of which 115 abstracts mentioned ambitiousness only in a cursory way (e.g. "The ambitious Agenda 2030..." or "Sustainable Development Goals are ambitious..."). These were excluded from further analysis. The full results of the literature search are provided in the supplementary material.

During our literature review, we noticed that most of the abstracts did not generally discuss SDGs but focused on certain aspects only or had a specific viewpoint. In this respect, we identified three main dimensions for the studies: in 237 abstracts ambition was mentioned in the context of a single or a small number of SDGs, in 55 abstracts the focus was on applying SDGs to a certain topic such as mining or accounting, and 141 abstracts focused on regional (e.g. sub-Saharan Africa or EU) or national SDG analyses. Many of the abstracts dealt with two or three of these contexts simultaneously, and altogether we identified 280 abstracts focusing on at least one of these three contexts. The most cited SDGs were SDG 3—Health (86 results, e.g. [20, 22, 62]), SDG 13—Climate change (69, e.g. [55]), SDG 7—Energy (28, e.g. [44]) and SDG 6 – Water and sanitation (28, e.g. [25]). These kinds of papers provide useful insights and support the analysis of absolute ambitiousness regarding a single SDG or topic. Nevertheless, the results indicate that only a limited number of studies address SDG ambitiousness in a comprehensive manner, while most studies focus on a specific aspect of ambitiousness.

The remaining 12 papers were identified as the most relevant ones for our analysis, as these focused on comparing and discussing the ambition levels of different SDGs in general. The earliest paper by Norström et al. [46] set three necessary conditions for SDGs already before the Agenda 2030 was formally launched. One of these conditions was that “SDGs must acknowledge and navigate trade-offs between goal ambition and goal feasibility”. However, Elder and Olsen [15] concluded that environmental targets in particular lack elements that make them SMART (specific, measurable, achievable, realistic and time bound [14])—a key initial concept when setting the SDGs. Fukuda-Parr and McNeill [19] arrived at a similar conclusion that many goals were affected by a decline in ambition when the targets were negotiated and indicators selected.

Two of the papers proposed new procedures or methods for measuring the level of implementation of the targets. McArthur and Rasmussen [39] proposed an approach for implementing the targets at country level and suggested using proxy targets when the ambition of the target is not quantifiable and measurable. Shinwell and Cohen [61] proposed a method for measuring the countries’ progress towards the SDGs. In their approach, the target levels for indicators were primarily derived from the wordings of the initial SDG targets, but this was possible only for about one third of the 132 indicators analysed in the study. For the remaining indicators, they first used the target levels of other international agreements, and if there were none, then relative performance among the countries was chosen as target level. They concluded that the targets obtained directly from the initial SDGs were not as ambitious as the other targets.

Four papers focused specifically on SDG targets. Zimm et al. [76] considered progress towards the targets already beyond 2030 and classified them into three categories: (i) those in which SDG target levels for 2030 should be sustained, (ii) those in which their ambition should be increased to close a sustainability gap, and (iii) those in which re-evaluation is required to decide on more progressive ambition levels beyond 2030. Scott and Lucci [58] analysed national targets in terms of the difference between global and national target levels, but also as a ratio between rate of change to achieve the SDG target and “historical rate of change”. The latter is defined as one step forward from the basic distance-to-target analysis, as the rate of the change is also considered. Biermann et al. [4] emphasised that “many of the targets are qualitative and leave much freedom for governments to determine their own ambition in implementing the goals”. Scoones et al. [57] reviewed three approaches from the viewpoint of “transformations” labelled “structural”, “systemic” and “enabling” approaches, and analysed how different ways of interpreting the term “transformations” can affect what actions will be implemented.

The rest of the papers discussed the trade-offs and synergies between the SDGs with different ambitions. Obersteiner [47] found that policies for SDG 12 (Sustainable Consumption and Production) are the most effective at minimising trade-offs and emphasise the importance of these policies to the formulation of coherent SDG strategies. Dawes [11] analysed pairwise linkages between the SDGs and found that there is a clear asymmetry between SDGs 1–3 and the other goals, as progress on SDGs 4–16 generally promotes progress on SDGs 1–3, but in the other direction there are less links. Van Vuuren et al. [71] emphasised the identification of differences between long-time ambitions and short-term actions, and trade-offs between these. Trade-offs and synergies between SDGs have also been studied by others outside our literature review ([2, 6, 28, 34, 37, 45]).

According to the literature review, there is a clear research gap regarding what kind of impacts SDG formulations have on the evaluations of the achievement of SDGs. The analyses focusing on single SDGs can to some degree consider these impacts when evaluating the ambitiousness of a particular SDG. However, to our knowledge, this is the first article focusing on a comparison between the semantic ambitiousness of all the SDG targets.

3 Classifying the SDG targets according to their semantic ambitiousness

We suggest an evaluation framework to classify the SDG targets according to how their semantic ambitiousness is formulated. The framework consists of two dimensions. A temporal dimension is evaluated by determining whether a specified deadline for reaching the target is presented (and if yes, the time left to achieve it). An aspirational dimension is assessed by determining whether the development is formulated as an achievement or progress towards something (or anything in between).

We are aware that this kind of analysis focusing on the manifest contents and leaving latent meanings of the targets without attention presents a rather technical way to analyse the ambitiousness of SDG targets. Thus, it may not reveal the potential tensions or the diversity of the views behind the final formulations. However, the actual formulations are a result of negotiations between different actors and interests and therefore represent a consensus reached within a specific UN context.

One thing to note is that we analysed only the formulations in English. Translations to other languages may carry meanings, misinterpretations or even local adaptations that differ from the wordings in English.

Besides analysing the SDG targets, we also considered analysing the semantics used in the initial formulations of SDG indicators. However, these only define the metrics for measuring progress towards targets (e.g. "Proportion of people", "Death rate" or "Maternal mortality ratio"), but most of them do not define actual target levels. For example, in target 1.1. ("By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day"), the ambition level is described already in the target, but the indicator ("Proportion of population below the international poverty line, ...") just specifies the metrics for measuring it. Thus, we decided not to include indicators in our analysis. Of course, when SDG targets are operationalised, the target levels are explicitly or implicitly set by selection and presentation of the indicators [24, 29, 72]. For example, in the cross-country comparisons discussed in Sect. 4.2, the target levels of SDG targets are operationalised through indicators. Thus, we compare our results to these cross-country comparisons in terms of target/indicator combinations.

3.1 Deadlines for reaching targets

The year 2030 is explicitly included in the name and core understanding of Agenda 2030 and thus, it is a natural deadline in the target descriptions. However, some targets have deadlines set already in 2020 or 2025, and for some targets no deadline is mentioned at all. As the deadline sets a temporal ambition for the SDGs, we decided to use this information as one means of classification in our framework.

For the specific deadlines, we used the following three categories:

- Yes (2020/2025): Year 2020 or 2025 is mentioned as a deadline for the target
- Yes (2030): Year 2030 is mentioned as a deadline for the target
- No: No mention of the deadline for the target

3.2 Type of development (achievement or progress)

The main issue in determining the semantic ambition of the target is whether the target specifically defines an ultimate achievement or just some kind of progress towards a target. Thus, the main categories in our classification are based on this division into "achievement" or "progress" according to the verb used in the formulation describing the expected development of the target. However, in many cases, the verb is accompanied by a specifying attribute that can modify the level of a target. For example, the progress verb "increase" can be amplified with a word such as "substantially" or "significantly" or quantified with some additional specification such as "by one third". Similarly, an achievement verb as such can sound quite utopian, but can be softened by using expressions such as "ensure that a substantial proportion of the people ..." instead of "ensure that all people ...". To take these kinds of nuances into account, we decided to further divide the "achievement" and "progress" categories into sub-categories. For some verbs, it was not possible to decide whether the ambition pointed towards progress or achievement (e.g. "rationalise" or "develop tools"). Thus, "other action" was also included in the set of categories.

This led to the following categories:

- Full achievement: The development is described by a verb indicating a completed action or an achieved target
- Softened achievement: The development is described by a verb indicating a completed action or an achieved target, but the description includes some softening word (e.g. “ensure that a *substantial proportion* of adults...”) or has a vague interpretation (e.g. “achieve access to *adequate* sanitation”)
- Quantified progress: The development is described by a verb indicating quantified progress (e.g. “halve” or “double”), or the progress is quantified with some additional specification (e.g. “decrease by one third”)
- Amplified progress: The development is described by a verb indicating progress or improvement in a desired direction (e.g. “increase” or “improve”) and is amplified with some specification such as “significantly” or “substantially”
- Progress: The development is described by a verb indicating progress or improvement to a desired direction (e.g. “increase” or “improve”)
- Other action: The development is described by a verb that does not clearly define achievement or progress (e.g. “rationalise” or “develop tools”)

3.3 Decisions regarding classification

We classified all verbs used in the SDG target definitions of Agenda 2030 under the above-mentioned six categories (Table 1). For most verbs the classification was clear, but for some, there was room for interpretation. For example, the verb “develop” can be understood as “a process of being developed” or as “a result of a development process”, thus the classification becomes context dependent. We listed all these verbs under “other actions” in Table 1, but after applying the classification to specific reports, we listed them under the category indicated by the context. However, some cases could still not be adequately classified and are hence listed under “other action”.

Of all categories, “full achievement” is generally the most challenging to achieve as it is defined as an ultimate goal that cannot be exceeded, whereas “plain progress” is the easiest one, as even an insignificant improvement would be sufficient to consider the target achieved. Furthermore, “softened achievement” can be reached more easily than “full achievement” and “amplified progress” is harder to accomplish than “plain progress”. However, classifying verbs according to “softened achievement”, “quantified progress” or “amplified progress” based on the degree of challenge anticipated to fulfil achievements may vary depending on the specific situation. For example, in some cases “quantified progress” can be seen as very ambitious, but even more ambitious levels are conceivable (e.g. “double” can be exceeded by “triple”).

It can also be debated whether, for example, “maintain” is an achievement, as it only aims at keeping a current state. However, in many cases keeping a current state would also require certain action(s) or at least a change in current behaviour, and thus, we decided to classify it as an achievement. For example, maintaining biological diversity can be considered as an achievement of halting (or reversing) the currently ongoing diversity loss.

4 Results

We evaluated the 169 SDG targets according to our classification to provide an overview of their semantic ambitiousness in terms of their temporal scales and level of achievement. We then compared our results against two existing cross-country comparisons, which capitalise on specifically designed composite indicators based on the concept of relative ambitiousness. Insights drawn from these steps informed the conclusions we drew regarding implementation of the SDGs. The results provided the basis for our comparative analysis and policy discussion.

4.1 Analysis of the level of semantic ambitiousness of the SDG targets

Figure 2 depicts the summary results of our classification in terms of the share of the targets associated with various categories of “deadline” and “achievement vs. progress” for each SDG. The full numerical results are provided in the supplementary material. Some targets included several actions belonging to different categories and were split accordingly. For example, target 8.8 (“Protect labour rights and promote safe and secure working environments ...”) has two different targets (“protect labour rights” and “promote safe and secure working environments”), and thus 50% of it was classified in the category “full achievement”, and 50% in the category “progress”.

Table 1 Classification of the verbs used in the SDG target definitions according to our typology

Full achievement	Softened achievement	Quantified progress	Amplified progress	Plain progress	Other action
Achieve	[All the achievement verbs with some softened or vague attribute]	Double Halve [+ all the progress verbs with quantified specification]	[All the progress verbs having some amplifying attribute]	Assist Broaden Build Combat Empower Encourage Enhance Expand Facilitate Improve Increase Promote Raise Reduce Refrain Strengthen Upgrade	Develop Implement Manage Mobilise Provide Rationalise Recognise Refrain Respect Strive Support Sustain Transfer
Adopt					
Conserve					
Create					
Devise					
Eliminate					
End					
Ensure					
Enforce					
Eradicate					
Halt					
Integrate					
Maintain					
Minimise					
Operationalise					
Prevent					
Prohibit					
Protect					
Realise					
Restore					
Undertake					

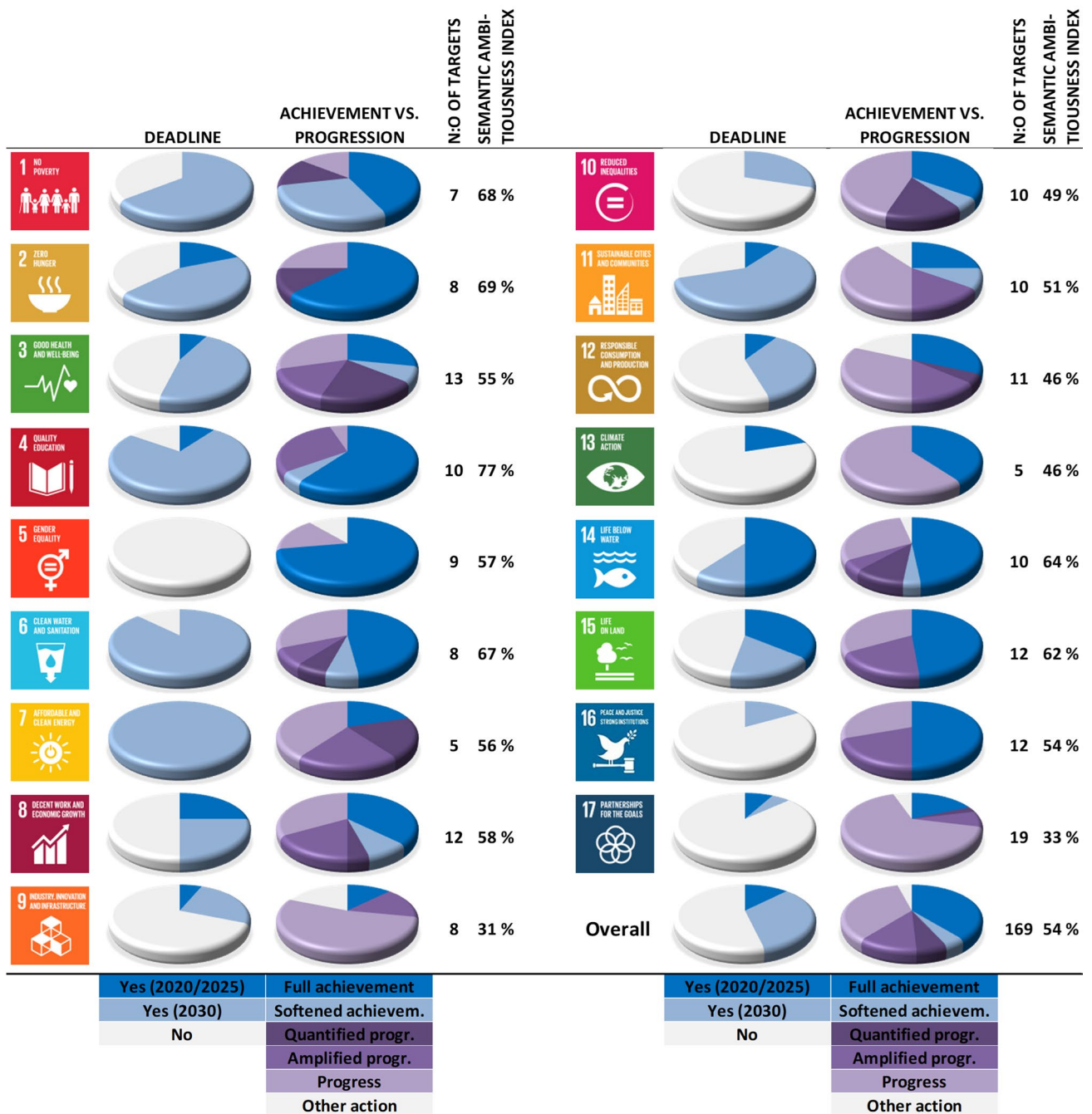


Fig. 2 Shares of the targets in each category for each SDG

Reviewing the ranking of different SDGs in our framework provided a first overview on the conceptualisation and underlying ambitiousness of SDGs across the whole Agenda 2030 framework. Overall, we noted marked differences between the SDGs in how the targets were formulated. In terms of deadlines, the extremes were SDG 5 (“Gender equality”) in which none of the underlying targets mentioned a deadline, and SDG 7 (“Affordable and clean energy”) in which all the targets mentioned some kind of deadline. Also, the time horizon of the deadlines varies between SDGs, with the shortest timescale being for SDG 14 (“Life below water”) where half of the targets have a deadline of 2020 or 2025.

In terms of the “achievement vs. progress” category, according to our analysis the most tangibly defined SDGs were SDG 2 (“Zero hunger”) and SDG 5 (“Gender equality”), in which 75% and 72%, respectively, of the targets were defined

as “full achievement” or “quantified progress”. At the other end of the scale was SDG 9 (“Industry, innovation and infrastructure”), in which only 13% of the targets belong to either of these categories.

Combining the elements allowed us to identify potential inconsistencies in the conceptualisation of certain targets. For instance, some targets have specific deadlines, but only vague or non-existent quantification (e.g., target 6.2 “By 2030, achieve access to adequate and equitable sanitation”). Conversely, there are targets with defined levels of quantification, but no deadlines mentioned (such as target 5.1 “End all forms of discrimination against all women and girls everywhere”). Such inconsistencies can complicate the operationalisation of the SDGs in national, regional and local contexts as well as the monitoring of their progress.

To summarise the results into a comparable scale, we created a “semantic ambitiousness index” (SAI) for each SDG, which describes the average degree of ambitiousness in the formulations of the targets associated with that SDG. The index consists of two parts (“deadline” and “achievement vs. progress”) and is calculated as a weighted average of these with “achievement vs. progress” being attributed 75% (because it describes the action itself) and “deadline” 25% of the weight (because it is a specifying attribute). The “achievement vs. progress” part of the SAI was calculated as an average value of targets mapped on the 0–1 (i.e. 0–100%) value scale so that “full achievement”=1, “softened achievement”=0.75, “quantified or amplified progress”=0.5, “progress”=0.25 and “other action”=0. The “deadline” part was calculated similarly with mapping “Yes (2020/2025)”=1, “Yes (2030)”=0.75 and “No”=0. We acknowledge that this approach could be deemed coarse, but we consider it to be adequate for the purpose of providing an indicative evaluation of how ambitious targets are semantically set for each SDG. According to the SAI, the most ambitious goals were SDG 4 (SAI = 77%), SDG 2 (69%) and SDG 1 (68%), and the least ambitious ones SDG 9 (31%), SDG 17 (33%) and SDGs 12 and 13 (both 46%) (see Fig. 2).

4.2 Comparison of the results to two existing cross-country comparisons

We analysed two exemplary case studies that evaluated and compared the progress of reaching the SDG goals in different countries or regions of the world. We assessed how the targets were operationalised in these studies and compared these results to our findings above. In our classification of ambitiousness, these analyses dealt with the relative ambitiousness of the SDGs. As a first case, we selected the Sustainable Development Report (SDR, formerly SDG Index and Dashboard [53, 56]) since it is comprehensive, systematic and perhaps the most well-known independent analysis of implementation of SDGs. As a second case, we selected the Sustainable Development Goals Progress Chart (SDGPC) of the UN [70] due to its official status as a UN report. Another reason for selecting these two documents for comparisons is that the SDR is carried out on SDG goal level and the SDGPC on SDG target level. Consequently, comparisons with these two indexes can provide different types of information.

4.2.1 Sustainable Development Report (SDR)

The SDR is an annually published report providing detailed evaluations and profiles on national progress towards achieving the SDGs. It also calculates an SDG Index score for each country’s overall performance and contains several analyses related, for example, to the development of different regions of the world. It includes data from 165 countries and an evaluation framework based on 121 indicators partially adopted from the official UN SDG indicator set and further complemented by additional global indicators adopted from other international and civil society organisations to ensure sufficient data robustness and coverage. The selection of indicators is based on five criteria: global relevance and applicability to a broad range of country settings, statistical adequacy, timeliness, data quality and coverage [33]. Even though the SDG index provides results only at the goal level, targets with identifiable target levels are still considered in the conceptualisation of the index as they assist in determining the performance thresholds for rescaling the index’s underlying indicators.

To evaluate the relative ambitiousness of the SDGs in the SDR, we calculated how far countries currently are from reaching the goal in terms of the classification scheme used in the report. Figure 3 shows the distribution of 193 countries into different classes in terms of how they perform against each SDG according to the SDR. From the distribution, we calculated an “average performance index of the countries” (API) for each SDG by transforming each country’s reported level of achievement into a number (with scale “SDG achieved”=3, “challenges remain”=2, “significant challenges remain”=1, and “major challenges remain”=0), and calculating an average of these. This number can thus be considered as a relative performance-based indicator for how ambitiously this SDG has been defined. To sum up the relationship between SAI and API, a high SAI in some SDG means that for this SDG the targets are semantically defined as very ambitious.

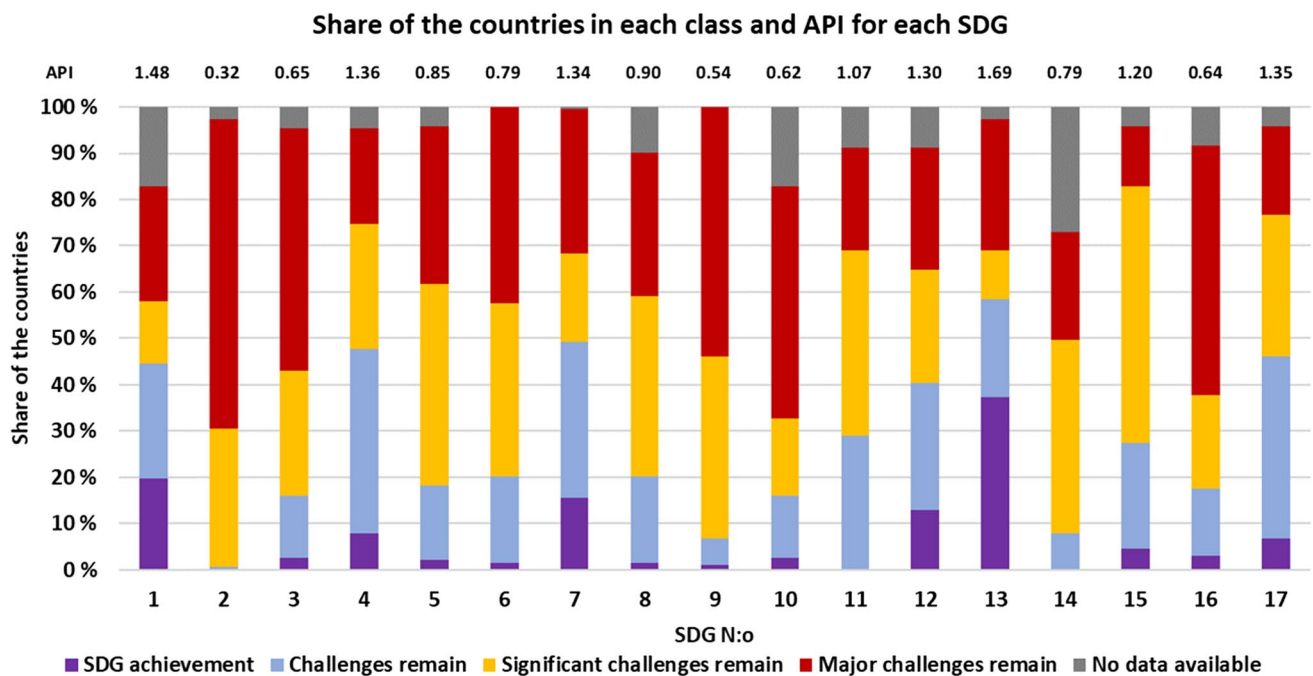


Fig. 3 Distribution of 193 countries into different classes in terms of how they perform in each SDG according to the SDR

Consequently, it is expected that only few countries would achieve that target, which means that API for this SDG would be expected to be low. Correspondingly, a low SAI would intuitively lead to a high API.

Based on the results, we identified four SDGs that illustrate interesting findings when comparing them using the outcomes derived from our evaluation framework:

- High SAI, low API: On SDG 2 (“Zero hunger”), the results of the SDR are quite in line with our semantic ambitiousness analysis. This was the most strictly defined SDG in our analysis (SAI = 75%), and it is also the least achieved SDG among the countries in the SDR (API = 0.32). One additional reason for a generally poor performance of the countries in achieving SDG 2 is that besides having indicators related to hunger itself, there are also indicators not related to hunger but to the ways of producing food such as the sustainability of food production including nutrient loading. Low-income countries may have large challenges regarding hunger, and high-income countries regarding environmental sustainability issues, which leads to almost all countries having significant challenges regarding this SDG.
- High SAI, high API: On SDG 4 (“Quality education”), our analysis and the SDR suggest very opposite results. That is, despite having very ambitious targets in our analysis (SAI = 72%), this goal is the third best achieved SDG in the SDR (API = 1.36). One reason for this is that the SDR interprets the targets of this SDG quite loosely, and most of the SDG 4 targets that are initially formulated as “full achievement” (such as “ensure that all boys and girls complete secondary education”), do not require 100% of people completing the goal but something between 90 and 97%. Another reason is that the SDG 4 targets seem to be correlated with each other in the sense that if you reach one target (e.g. “primary education for all”), it is likely that you will also reach the other ones (e.g. “secondary education for all”), and vice versa. As a result, there are many countries that have fully achieved the goal, but also a large share of countries in which there are several challenges in achieving the goal.
- Low SAI, low API: On SDG 9 (“Industry, innovation and infrastructure”), the results come in exactly the opposite way compared to SDG 4. That is, this is the second-least achieved goal in the SDR (API = 0.54), but in our analysis it is the least strictly defined (SAI = 31%), and only one SDG 9 target was defined as an achievement. The main reason for a poor performance in the SDR evaluation is that it uses ten indicators, of which seven have the optimum level defined as “average of 5 best performers among all the countries” or “average of 3 best OECD performers” and three has the optimum level based on a principle of “leave no one behind”, which is somewhat ambiguous. Consequently, the use of these indicators has led the SDR to have quite strict achievement levels, which combined with a quite large number of indicators, has made achieving them all hard.

- Low SAI, high API: SDG 17 (“Partnerships for the goals”) is the fourth best achieved goal by the countries in the SDR (API = 1.35), and is also quite unambitiously defined according to our analysis (SAI = 33%), which is quite in line with expectations. One should, however, note that the SDG 17 targets are very diverse and thus, much depends on which indicators are selected for the analyses. The SDR uses only 6 indicators related to government spending, international finance, and government revenue, but in Agenda 2030 there are 19 targets with 24 indicators. However, it seems that the indicators selected for the SDR are those identified quite loosely in terms of achieving the target.

Overall, the SDR does not follow the initial setting of the targets literally but takes liberties in interpreting the targets and the levels of achieving them, as well as in selecting the indicators for the analysis. On the other hand, the process of setting the target levels in the SDR can be considered transparent and scientifically sound [33]. There are five different types against which the target can be measured: (1) the initial SDG target (applied to 15 targets), (2) average of 5 best performers (38 targets), (3) average of 3 best OECD performers (18 targets), (4) technical optimum (24 targets), (5) leave no one behind (19 targets). In addition, “average of 5 best performers minus outliers” and “average of best performers (EU Report)” were both used for one target. Thus, even if only a minority (13%) of the indicators are connected directly to the target definitions of the SDGs, there is a clear logic associated with all indicators.

Something else that can impact on the achievement of the countries in the SDR, is the number of indicators considered under an SDG. The correlation between the number of indicators used to measure an SDG and the API of the countries in this SDG is -0.45 . This suggests that the number of indicators to measure an SDG can have at least a slight effect on how well countries perform in this SDG, which should be taken into account when interpreting the results.

4.2.2 Sustainable Development Goals Progress Chart of the UN

As a second example, we analysed how the Sustainable Development Goals Progress Chart (SDGPC) of the UN [69, 70] has implemented their cross-country comparison. The approach applied in the SDGPC is based on the UN considering one to four selected targets (36 targets overall) to represent a snapshot of the current achievement of each SDG. For each target, the UN analyses the level of achievement worldwide as well as in the seven regions of the world.

The SDGPC is carried out at target level, which we used to compare the results of our analysis to those of the SDGPC. Yet, it is notable that some of the targets are slightly modified from the initial targets to also include the indicator(s) of that target into their formulation. The data used for the SDGPC analysis are the official data from the Statistics Division of the UN Department of Economic and Social Affairs (<https://unstats.un.org/sdgs>).

The SDGPC classifies the targets into the following classes: “target met or almost met” = 5 (filled bars), “close to target” = 4, “moderate distance to target” = 3, “far from target” = 2, “very far from the target” = 1, “insufficient data” = 0. Some notable aspects of specific SDGs are highlighted as follows:

- Target 14.5: “By 2020, conserve at least 10 per cent of coastal and marine areas”. This target is the only target in the SDGPC that is “met or almost met”, but the main reason for the target being met in the SDGPC analysis is that the share of conserved areas is calculated at global level. As a result, countries with more than 10% of areas conserved compensate the lower level of protection in other regions. However, when considering this indicator at an individual country level, only 29% (55 of 192) of countries did meet this target (in 2018). Thus, achievement of this target entirely depends on the scaling of the problem. Actually, in 2015 the share of protected areas at a global level was 12.5%, which means that the target was already met at the global level at the time of the target being originally set.
- Target 3.1: “[By 2030] Increase the coverage of births attended by skilled health personnel”. This target is evaluated as “close to target” by the SDGPC and is a typical example of a target defined as progress in our evaluation framework. The coverage of births attended by skilled health personnel has increased constantly in recent decades following the overall economic development of countries globally. Thus, it is not surprising that it is likely to continue increasing also in the future, which means that not much effort is needed to meet the target.
- Target 8.1: “Sustain per capita economic growth”. This target is also evaluated as “close to target” by the SDGPC. To sustain growth as a goal is quite different to other goals as it does not only require improvement but constantly preserving the improvement. In addition, the ambitiousness of this formulation depends much on timing of the assessment, as historically the global economy has varied in waves with ups and downs [74]. In this respect, constant economic growth can be considered rather ambitious, especially as the link between the increase in economic growth and well-being is not straightforward [41].

- Target 3.3: “[By 2030] End the epidemic of malaria”. This target has a deadline and is a typical example of a target defined as “full achievement”, in which there are large differences between different regions. Even if many developed countries have already reached the target, many countries struggle with this target. In general, development on prevention of diseases is not progressing very quickly, which overall leads to the target still being classified as “far from target” by the SDGPC. Targets having currently similar status include target 4.1 “[By 2030] Ensure all girls and boys complete primary education” and target 6.2 “[By 2030] Achieve universal access to safely managed sanitation services”.

Overall, the SDGPC seems to follow the tone of the target formulation quite well, for example, the targets defined as an achievement are indeed still in a state of “far from target”. However, as the above examples shows, there are also some exceptions.

5 Discussion

5.1 Why does the semantic ambitiousness of the SDGs differ?

Different economic, technical, cultural and political reasoning [65] can explain substantial differences in the levels of semantic ambitiousness of different targets. We emphasise that the reasons discussed are only potential explanations, and we do not take a stance on how strongly they might have affected the actual target setting process. It is notable that some of the reasons—such as unawareness of the present scientific knowledge—affect the process unconsciously, but target-setting can also involve hidden agendas and purposeful withholding of information to support specific political or economic interests [35].

Many decisions on the formulation of targets can be explained by analysing the history of UN negotiations on the SDGs and path-dependencies of existing political ambitions, for example, with the MDGs. The Rio + 20 conclusion was the start of discussions on what later would become the SDGs (e.g. [23]). The conclusion was constituted as a follow-up on the so-called Open Working Group (OWG) in January 2013, which was pivotal for the SDGs, presenting results in September 2014 to the UN General Assembly. Then, intergovernmental negotiations started until the SDGs were agreed upon at the 2015 New York summit [68]. The OWG process and informal alliances managed to overcome some of the North/South division with cross-regional and cross-topical dialogue with novel global alliances among over 70 participating countries [9, 13]. The OWG process also broke down traditional negotiating blocks and forced countries not used to working together to develop joint statements [30]. In addition, reflection upon different views was fostered by the possibility for non-state actors to give presentations on the focal issue areas, which were followed by deliberative interaction with governments and observers [60].

The first documents of the OWG already presented various ideas about how universal or context-specific targets should be defined [51]. Generally, the sentiment was that targets should be universal, but differentiated for countries taking into account different levels of development. It was emphasised that the SDGs and associated targets should incorporate previous international agreements and focus on key drivers of sustainable development. It was further recognised that the integration of the economic, social and environmental dimensions can be achieved in many ways, and that the goals and associated targets and indicators should represent an aggregated pathway towards sustainable development. There were also frequent references to the cross-cutting nature of many of the issues, and the importance of achieving synergies between SDGs wherever possible by systematically addressing their interlinkages [51].

It is important to note that the formulation of targets emphasising transformative change emerged gradually and led to a complete redesign of the sustainable development framework, which is now much more inclusive and holistic [32]. On the other hand, the claims of an agreement to “transform our world” and “leave no-one behind”, has also been challenged by arguing that the discursive representation is biased towards a progressive sustainability discourse depicting a state-centric orientation of equity and responsibilities to address global sustainable development challenges [60]. Weber [73] has argued that the explicit commitment to “leave no-one behind” is a strategically deployed discourse to justify the implementation of a highly problematic political project.

The history of negotiations has had an impact on target setting, as it is convenient to utilise targets (or indicators) that have already been defined in some different context in international politics. For example, target 15.1. (“Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services”) is formulated with a note “in line with obligations under international agreements”. Another example is SDG 13, in which the

initial set of indicators did not include the actual CO₂ emissions, but the commitment by the United Nations Framework Convention on Climate Change (UNFCCC) to mobilise \$100 billion annually by 2020 to support climate activities [67].¹ A likely reason for not specifying explicit targets for CO₂ emissions was the risk of disturbing negotiations aiming at the Paris agreement. In many cases, target years deviating from 2030 can also be explained by existing international treaties. For example, the biodiversity community had already decided on global goals with a time frame until 2020 at the Convention on Biological Diversity. As a result, in such cases, the level of ambition after the stated target year remains unclear.

One technical reason that can affect target level setting is whether a physical limit, saturation point or threshold exists, thus implicitly defining the desired target level for the goal. The targets characterised by a natural limit, such as target 2.1 “End hunger”, are often very ambitious, as they are typically defined in terms of “what should be done”, following the principle of leaving no-one behind. One should also note that there are various ways of formulating the same achievement, for example, “end hunger” can be seen as synonymous with “ensure access to sufficient and healthy nutrition to all”. In the latter definition, the meaning of “sufficient and healthy” may have more room for different interpretations, but on the other hand, the meaning of “to all” is very explicit. In this respect, political contexts can also have an effect when negotiating the formulations. In contrast, regarding the targets that have no meaningful lower or upper limit (for example, target 9.5 “enhance scientific research”) the development can be—at least in theory—continued endlessly. Consequently, on these targets it is easier to consider some realistic limit of “what could be done”, which may consequently lead to a less ambitious target level.

Finally, the use of vague wording can be the result of political or motivational reasoning pursuing particular interests. The SDGs are, after all, a political outcome that needs to be understood against the context of UN political negotiations, which was far from being free of conflict (see, e.g. [18, 21, 31]). Vague wording leaves room for interpreting the targets in a way that is favourable to certain parties or specific wordings may be cherry-picked and used as a defence against more demanding interpretations [75]. Consequently, vague wording might be a result of compromises in international politics, as it makes it possible for laggard countries to have more symbolic policies regarding sustainable development. Motivational reasoning is not necessarily conscious; there can also be some unconscious motivational biases [35].

5.2 Implications for policy making and implementation

In their recent meta-analysis of 3,000 studies, Biermann et al. [5] found that so far, political impacts of SDGs have been limited to discursive impacts (i.e. making global and national debates more aligned with the SDGs), which have affected the understanding and communication of sustainable development issues. However, normative impacts (i.e. making legislative and regulatory frameworks and policies in line with the SDGs) and institutional impacts (i.e. creation or realignment of institutions such as committees, offices or programmes that are more explicitly linked to the achievement of the SDGs) have been rare. We hope that our analysis helps understand the implications of semantic ambitiousness for relative and absolute ambitiousness, and in this way promotes the shift away from rather politically motivated discursive impacts to more explicit normative ones, for example, by transparently informing negotiations on legislative and regulatory frameworks and policies.

In our analysis, we found considerable differences in the semantic ambitiousness of different SDGs. This can have a major impact on the implementation of the SDGs to support policy making, as support depends much on how the SDG targets are interpreted. The more explicit the SDG targets and their indicators are, the more comparable they are between countries, but at the same time the more challenging it can be to operationalise and implement them into national policies characterised by different contexts and priorities. The results of our analysis can help understand these differences in ambitiousness, as well as different strategies and motivations behind them, which is a prerequisite for making coherent conclusions based on SDG analyses. For example, for many targets, the specific threshold levels of reaching the target or an indicator have been left open in Agenda 2030 (e.g. 85% of the targets under SDG 9), perhaps with an aim to help implement them through national policies. However, as a result, cross-country comparisons with this type of target have to make choices on what thresholds to use. Obviously, the chosen threshold can have a major impact on the results of comparisons and therefore potentially also on policy implementation. For example, on SDG 9, the SDR has apparently defined the target levels quite strictly, as in our analysis it was only the second least achieved goal in the SDR. While it may not be realistic to expect a global consensus on all thresholds, understanding the logic behind the choices and transparently communicating this logic to the stakeholders is essential when analysing and utilising the results of these comparisons.

¹ One should note that indicators under SDG 13 have been later refined to also include CO₂ emissions.

Cross-country comparisons utilising composite indicators can provide a good overall picture of development. However, such a highly aggregated approach may complicate the evaluation of absolute ambitiousness through statistical and methodological choices that are being made when constructing the respective composite indicators. For example, on target 4.1 (“Ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes”) the SDR has the indicator “the lower secondary completion rate” which is already considered to be achieved at a level of 90%, whereas semantically “all girls and boys” should mean 100%. In the SDGPC the highest class of achievement is “the target is met or almost met”, meaning 100% is not a requirement. Miola and Schiltz [42] have also shown the importance of the choice of indicators and methodologies that are used to assess SDG performance of different countries. We do not make a value judgement on what the achievement level should be, for example, in “the lower secondary completion rate”, but these kinds of differences in the analyses further highlight the necessity of conceptually sound and clearly defined indicators to effectively monitor SDG implementation processes and needed policy actions.

A major challenge in defining SDGs has been to find targets that are suitable and appropriate for all low-, middle- and high-income countries [19]. Difficult political negotiation processes, where diverging views, interests and priorities of a highly diverse set of countries need to be united, have led to vaguely or ambiguously defined goals. Targets and indicators that are fit for high-income countries, may not be relevant for low-income countries, which make them quite useless in global comparisons. In this respect, regional comparisons (e.g. within EU, OECD or Africa) can often provide more insightful information for considering the specific actions to be implemented to improve the current state, as they are based on a more homogenous set of reference countries than wider, global comparisons. Deeper partnerships between rich and poor countries are also a key requirement to make the gaps in data smaller, as partners from low-income countries are typically involved in far fewer partnerships than those from high-income countries [8].

As our analysis indicates, the main difference between the targets is related to whether they are formulated as progress or achievement. There are large variations between the semantic ambitiousness levels among the initial SDG targets, as 43% of the targets were defined as full or softened achievement, and 57% as some type of progress or other action. In tackling this diversity, the approaches applied in the SDR and SDGPC are very pragmatic, and the demanding tone of the initial SDG targets does not seem to have much effect on how ambitiously the targets are set in the SDR and SDGPC. For example, these do not take a stance on whether the targets are formulated as a progress or an achievement but in both cases use the same way of assigning certain levels of achieving the goal. However, the more vaguely SDG targets are defined, the more degrees of freedom—and consequently more responsibility—the analysts have in transforming the targets into meaningful operational measures. In this respect, the SDR and SDGPC were quite successful in transparently describing and operationalising the applied measures, which is essential to build trust in the process.

Both the SDR and SDGPC separately evaluate the level of achievement (“state”) and the progress towards state changes (“trend”), instead of just choosing either an “achievement or progress” type target, as was done in the initial SDG target setting. In the SDR the trend scale is from “on track”, “moderately increasing”, “stagnating” to “decreasing”, and in the SDGPC from “substantial progress/on track”, “fair progress but acceleration needed”, “limited or no progress” to “deterioration”. This idea of separating state and trend corresponds to the “achievement or progress” type of classification made in our analysis, and we think that this is an illustrative way of highlighting these two important dimensions of reaching the goal.

When considering the true effort required to achieve the SDGs (i.e. absolute ambitiousness), measurement of the achievement of targets is a major challenge. In this respect, “statistical communities” may dominate or take over ownership of the target definitions from the “political communities” by presenting and communicating concrete indicators making visual and verbal suggestions about the actual content of the topic. Visually appealing indicators can be powerful framing tools if they deliver timely messages about radically changing trends. Especially, if the target or goal lacks precise definitions, indicators exercise considerable interpretative power. In this respect, the Inter-Agency Expert Group on SDG Indicators has a key role to play in developing and maintaining a robust and appropriate global indicator framework, and it has already taken a critical position on the procedures of some agencies regarding a lack of transparency, unhelpful approaches to communication and lacking involvement in co-producing indicators [50].

Another driver behind operationalising SDGs into policy or regulatory processes is the availability and timeliness of quantitative data particularly in low- and middle-income countries [3, 49]. All the indicators require data, which often seems to determine selection of indicators. For example, the number of indicators in the SDR (121) is only about half of the number of indicators in the official revised list of global SDG indicators (247), which means that all the dimensions of the SDG framework are not dealt with in the SDR. For example, the SDR has only three indicators for SDG 1, all of which are related to absolute or relative income (i.e. targets 1.1 and 1.2), which leaves out the social and structural dimensions

leading to poverty. The negative correlation between the achievement levels of SDGs and the number of their targets also highlights the need for being aware of the technical details of the analyses when interpreting their results.

The SDGs present an opportunity to permanently transform the nature of development [63]. However, while the holistic nature of the Agenda 2030 and its indivisible whole provide an encompassing roadmap to sustainable development, the systemic operationalisation of all SDGs remains a challenge [34]. This operationalisation requires integrated approaches that go beyond case-by-case decisions. Transformational pathways such as the one proposed by Sachs et al. [53] or the TWI2050 initiative [66] provide examples of such integrated approaches in which key SDG interventions with a great transformational potential are highlighted to boost the achievement of multiple SDGs while focusing implementation efforts only on certain SDGs (e.g. education, sustainable food systems).

Overall, it is helpful to understand the SDGs in the context of the history of global agreements (e.g. [4, 9]). The MDGs (with only 8 goals) had several “half-way line” goals (e.g., the goal of eradicating extreme hunger and poverty had an indicator of halving the proportion of people living in poverty by 2015), as well as other goals with only partial ambition. The SDGs were designed to conclude the work that the MDGs started and thus explicitly included “zero goals” (such as “End poverty in all its forms everywhere”) from the very beginning [59]. In fact, early in the life of the SDGs there were worries that the proliferation of these so-called statistical “zero goals” would be too ambitious. When we compare the old MDG goals with the new SDGs, of course there are major changes. Among them, while the MDGs only mentioned environmental stability, the SDGs have introduced a mainstreamed approach to safeguarding climate and biodiversity and include, apart from a standalone goal of climate, a wealth of new focus areas such as topics of urbanisation, an entirely new goal on water and sanitation, as well as on energy. On the other hand, in our semantic analysis only 39% of all targets were defined as “full achievement”, which means that SDGs were not designed only for achieving “zero goals”, but also for other types of achievement.

6 Conclusions and suggestions

Our analysis illustrates clear differences in the ambitiousness levels of the current SDG targets in terms of both their formulations (semantic ambitiousness) and how they have been operationalised in practical cross-country assessments (relative ambitiousness). This can have implications for monitoring processes, and consequently for the political willingness to act or not. In the following, we have summed up our findings and suggestions for interpreting and implementing the current SDGs as well as for setting and operationalising future development goals:

- Practitioners and planners working with the SDGs should be aware of possible reasons for differences in how ambitiously the goals are semantically defined. Our analysis helps to identify which SDG targets are defined as “improvement” and which as “achievement”, with an aim to increase transparency of analyses. Based on our analysis, we also suggest separately assessing the level of improvement and achievement to elaborate the characteristics of both these dimensions in isolation, instead of combining them in one single assessment. This kind of approach has been adopted in many settings (e.g. in both of our example cases, the SDR and SDGPC) in which “trend” has been typically used for assessing the level of improvement and “state” for the level of achievement, and it seems to work well.
- Practitioners and planners should also be aware that setting of targets and indicators is not merely a technical exercise. Political context matters and hence, in-depth engagement with the history of the targets is necessary to understand them (e.g. through qualitative social science). Optimally, technical processes and negotiations of target setting should be as transparent as possible so that the genesis of targets can be better reconstructed.
- Targets with no or vague quantifiable definitions are more prone to subsequent subjectivity of analysts, politicians, and other stakeholders when they are assessed. Furthermore, vague targets increase the risk of misinterpretations when monitoring SDG implementation. Identifying and highlighting these conceptual differences inside the SDG framework is essential for the operationalisation and implementation of the SDGs, and in this respect, our analysis can provide useful insights. The results can also be used to inform formulation processes of future sustainable development agendas, hopefully making goals and targets clearer.
- Global analyses aim to provide the big picture of global development. However, when considering the actual actions to be implemented to improve the current state, the regional comparisons (EU, OECD, Africa) are often more useful, as they can focus on the most relevant issues and characteristics of those regions. Science-based and commonly accepted facts should naturally be the starting point, but as discussed in this paper, there should also be room for

well-reasoned alternative interpretations of sustainability goals and local contextualisation in the level of ambition instead of attempting to provide definite, detailed and accurate one-size-fits-all definitions.

- Cross-country-comparisons on multiple SDGs can be helpful in identifying potential gaps or weaknesses on which political attention should be focused. However, care is needed when interpreting the results of the comparisons and underlying assumptions behind the applied models must be taken into account. For example, the SDR has well documented these assumptions in its background documents [33], but the question arises whether a lay user will read these. When considering how well an individual SDG is being achieved, it might be more recommendable to focus on the in-depth analyses related to that particular SDG. These analyses typically focus on what kind of effort is needed to reach the target (i.e. absolute ambitiousness). Thus, they also discuss the cultural, political and historical aspects of that field, which are typically not covered in cross-country comparisons on multiple SDGs, as these have to compromise between the diverse spectrum of different fields.
- The level of quantification of the targets should be considered carefully in future work on designing UN goals and these considerations should inherently integrate recent work done on indicators (e.g. [1, 12, 36]). A poor definition of targets is likely to lead to inaccurate, incomparable or missing indicators. Consequently, this might lead either to the exclusion of such indicators or to the use of others, which both will decrease the comparability and transparency of the applied evaluation framework. In this respect, the differences highlighted by our analysis, for example, between the API and SAI on SDG 9, is a good example of the need for being aware of the implications of formulating ambitiousness of goals and targets in different ways.

The UN will soon initiate the next round of political negotiations after the MDGs and the SDGs for developing future development goals. In order to track progress towards sustainable development as a whole, for many of the SDGs we need SMART (Specific, Measurable, Achievable, Realistic and Time-bound [14, 15]) targets as well as clear and sound communication that helps politicians, planners, citizens, and businesses to understand the essence of the goals. Needless to say, deciding on new sustainability goals will not be a purely scientific puzzle, but definitely a matter of political bargaining, too. Thus, it may not be realistic to expect to have fully scientifically sound targets, especially as such targets may be considered as a “constructed reality” that depends on the defining group’s understanding of reality. In this respect, analyses such as ours can help people “speak the same language” by transparently increasing the understanding of the implications of semantic variability between SDGs.

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Author contributions JM and DR initiated the project and its main conceptual ideas, developed the framework for classifying SGD targets, performed the main analyses and prepared the figures. JM took the lead in writing the manuscript and carried out the literature review. SR carried out the language check. All authors helped shaping the research, analysis and manuscript, discussed the results and contributed to the final manuscript. All authors read and approved the final manuscript.

Data availability All data generated or analysed during this study are included in this published article and its supplementary information files.

Declarations

Competing interests The authors declare no competing interests.

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