

The Design of Environmental Priorities in the SDGs¹

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Abstract

This article argues that the environment was extensively incorporated into the Sustainable Development Goals (SDGs), with broad and ambitious targets, reflecting environmental concerns throughout the SDGs. Many environment-related targets – including some of the most important ones – were placed under ‘non-environmental’ goals. The SDGs also adopted the view that economic growth can be made environmentally sustainable using ‘decoupling’ and ‘resource efficiency’ as key technological solutions. Governments rejected a more transformative objective ‘beyond GDP’, the concept of planetary boundaries, and strong implementation mechanisms. Most disappointing, the environmental elements in many targets were not included in indicators, or the indicators lacked ambition, or were watered down. Key factors in achieving the strong and integrated approach to environment and development at the level of goals and targets were: (1) the role of new ideas on the importance of the environment and an integrated approach to sustainable development which was promoted by the science and research community; (2) a group of norm entrepreneurs, who promoted these ideas; and (3) the institutional structure and working modalities of the Open Working Group (which drafted the text of the SDGs) whose special characteristics facilitated the final agreement. The dilution of the indicators resulted from a very different institutional structure and process with different actors and from the development focused legacy of the Millennium Development Goals (MDGs) that had not resulted in sufficient capacity for thoroughly measuring environmental concerns.

How to incorporate the environment was one of the central issues in the creation of the Sustainable Development Goals (SDGs). This article aims to explain how the environment was incorporated into the SDGs, and why it was incorporated in this way. It also discusses how goal setting and quantification influenced the environment’s prioritization.

The linkage between environment and development has long been controversial. In the traditional ‘3 pillars’ approach, the environment was one pillar of development, alongside the economic and social pillars (Farley and Smith, 2013). In principle, the environment appears essential. However, in practice, many governments and experts have often prioritized the economic and social pillars, and believed in a basic ‘trade-off’ between the environment and the economy. This became a rationale to avoid major strengthening of environmental protections. The common strategy was to grow first and clean up later (O’Connor, 1996). The 3 pillars framework also obscured synergies and tradeoffs between the environment and the other pillars, and encouraged a silo and sector based approach to development. Others argued for an integrated approach, based on the concept that the environment is the basic foundation for development and human well-being, as a way to advocate for stronger environmental protection measures (Brundtland, 2000; Sachs, 2015).

Governments agreed to strengthen environmental protection and promote a more integrated approach through a series of global UN conferences on ‘environment and development’ starting with the Stockholm Conference on the Human Environment in 1972. Two decades later, Agenda 21 included a long list of goals, actions and means of

implementation. However, as Klaus Topfer (2000) observed, ‘most of the world’s problems are still getting worse’, so it was followed up by the Johannesburg Plan of Implementation (JPOI), adopted in 2002.

Later, environment and development substantially diverged under the Millennium Development Goals (MDGs). Created in 2000 by development experts under the auspices of the UN Secretary General, MDGs prioritized social and economic goals. Only one narrow environmental goal was included which was generally considered quite weak (Fehling et al., 2013).

In addition to the failure of the MDGs to strongly reflect environmental concerns, many felt that the Rio process ‘failed to deliver on many of [its] promises’ (Tollefson and Gilbert, 2012), and some criticized the Commission on Sustainable Development (CSD), charged with implementing Agenda 21, as a ‘talk shop’ (Speth, 2004). The Rio process had lost its integrative character, involving mainly environmental issues and weak environment ministries, making it difficult to interest more powerful ministries, which focused on the MDGs instead. At Rio+20, governments recognized that progress had been ‘uneven’ and ‘insufficient’, making it necessary to ‘raise the level of commitment’ to ‘accelerate’ progress (United Nations, 2012).

The future relationship between the environment and development was a core issue of Rio+20. Ultimately, governments decided to reunite them by creating SDGs, merging the MDG’s separate development agenda back into Agenda 21’s environment and development process. While prioritizing poverty reduction, the SDGs aimed to revitalize

sustainable development and promote synergies between environment and development by using the MDG's goal/indicator approach.

This article aims to explain the nature and pattern of the environment's place in the SDGs, which has five main elements: two positive, one ambiguous and two negative. First, overall, the environment was extensively incorporated into the SDGs, considerably more than in the MDGs. Many environmental targets were very broad-ranging and ambitious. Second, at the level of the targets, the SDGs in fact adopted an integrated approach. Environment-related targets were included in all of the other goals with some coherence. Third, however, the SDGs adopted a technocratic approach which tried to pursue both economic growth and environment, highlighting measures such as 'decoupling', 'resource efficiency' and 'integrated management' as key solutions. There was no alternative concept 'beyond GDP' to address structural barriers to sustainability. Pollution reduction was mentioned, but less emphasized, particularly in the indicators, and some governments refused to incorporate the concept of planetary boundaries. Fourth, on the negative side, environment-related implementation mechanisms were very weak. Fifth, the environmental elements of many targets were not included in the indicators, or the indicators were not very ambitious, or were watered down, particularly in the 'economic' goals (8 and 9). In many cases, this significantly reduced or eliminated the integration between the environment and other issues.

The first task of this article must be to explain what are the environmental elements of the SDGs, since existing literature has not adequately established this. The explanation is based on a textual analysis of the targets and indicators, not only the headline goals. Observation based only on the headline goals is highly misleading. On the surface, the SDGs may appear to be organized by the traditional 3 pillars, but this article's comprehensive analysis shows a very different and much more complex picture.

This article argues that the decision on the overall structure of the SDGs and their targets, including how to incorporate the environment, was determined by several factors. The first key factor was the role of ideas about the importance of the environment and integrated approaches. Second, several norm entrepreneurs from governments, the UN and other stakeholders came together to support an architecture of the goals that includes these ideas. Third, the institutional set up and process were very important, especially the Open Working Group (OWG), which prevented formation of negotiation blocks and created strong ownership of the project to define the SDGs among participating governments and non-state actors. The dilution of the indicators resulted from a very different institutional process with different actors that were influenced by the development focused legacy of the MDGs.

The article's structure is as follows. The next section identifies the nature and pattern of the environment's incorporation into the SDGs. The third section explains why the governments decided to incorporate the environment into the SDGs in this pattern. The final section concludes.

Environment's place in the SDGs

The pattern of the environment's incorporation in the SDGs is complex. Many goals and targets have multiple components, which are often not captured by the indicators. The environment is incorporated quite differently at each level. Understanding this requires a broad analysis of goals, targets and indicators, presented below.

Analysis of the goal headlines

On the surface, the SDG headlines may suggest a 'three pillars' (or 'dimensions') interpretation based on expanded MDGs, despite Agenda 2030's stated integrated approach. Table 1 compares the headline goals of the MDGs and

Table 1. Comparison of the MDGs and SDGs

MDGs (2000–2015)	Corresponding SDGs (2016–2030)	'Pillar'
1. Eradicate Extreme Poverty and Hunger	1. No Poverty	Social
2. Universal Primary Education	2. Zero Hunger 4. Quality Education	Social Social
3. Promote Gender Equality and Empower Women	5. Gender Equality	Social
4. Reduce Child Mortality	3. Good Health and Well-being	Social
5. Improve Maternal Health	3. Good Health and Well-being	Social
6. Combat HIV/AIDS, Malaria and Other Diseases	3. Good Health and Well-being	Social
7. Environmental Sustainability	6. Clean Water and Sanitation 7. Affordable and Clean Energy 11. Sustainable Cities and Communities 12. Responsible Consumption and Production 13. Climate Action 14. Life Below Water 15. Life on Land	Any Any Any Environmental or Economic Environmental Environmental
8. Global Partnership for Development Economy-related	17. Partnerships to Achieve the Goals 8. Decent Work and Economic Growth 9. Industry, Innovation and Infrastructure 10. Reduced Inequality	N/A Economic Economic Economic
Not in MDGs	16. Peace, Justice and Strong Institutions	N/A

SDGs. The first few SDGs (1–5) could be interpreted as ‘social’, addressing the MDG’s poverty reduction agenda, and representing various aspects of poverty. The SDGs strengthen the MDG’s focus on education, health and gender. Then, the ‘economic’ SDGs could be the middle ones (8–10), which should facilitate poverty reduction. Finally, SDGs 11–15 near the end could be the ‘environmental’ SDGs.

The three pillars view is no longer commonly accepted in the sustainable development community, although it may still inform the views of government officials, business people and other stakeholders who are not very familiar with sustainable development issues. Still, the gravitational pull of the three pillars approach seems hard to escape even for those trying to elaborate integrated approaches for specific issues. For example, one analysis of how food is linked with all of the SDGs uses a ‘wedding cake’ framework (Stockholm Resilience Centre, 2018), which organizes the headline goals into three ‘layers’ – economy, society and biosphere – essentially, if unintentionally, recalling a three pillar approach that fails to reflect the complex linkages between these ‘layers’.

Still, it is very difficult to create a clear and consistent interpretation based on the goals’ headlines. SDGs 6, 7 and 11 could be interpreted as belonging to any pillar/dimension – or all of them. SDG 12 on Sustainable Consumption and Production (SCP) could be interpreted as economic or environmental or both, and its placement is between both groups. The next section shows that different targets under specific SDGs can be classified under different pillars/dimensions.

Analysis of the targets

A broader and more detailed examination of the targets shows the complexity of the environment’s incorporation into the SDGs. The SDGs include significant environmental content, which is widely distributed throughout the SDGs. The targets do not follow the 3-pillar approach but rather show some degree of organized integration of all three dimensions of development.

The environmental targets can be defined as ones which use specific words such as ‘environment’, ‘sustainability’ or ‘pollution’ or whose text can be interpreted as referring to them. These targets are compiled in Table 2. This shows that 73 of the 169 targets are directly related to the environment. These 73 environment-related targets represent over half (53 per cent) of the targets under SDGs 1–15 (excluding the targets under SDGs 16 and 17, which apply to all goals in principle). Conversely, only 37 of the 169 targets (about 22 per cent) do not seem clearly related to the environment. Only SDGs 10, 16 and 17 do not directly or indirectly refer to the environment, although all of their targets are related to the environment, in practice.

An integrated approach

The targets, taken together, also constitute an integrated approach to the environment and development. This

integration is not fully systematic or well-organized, so it is not easily visible. Nevertheless, it is very clear from Table 2 that many environmental targets are in the so-called ‘non-environmental’ SDGs. Overall, the SDGs are a complex web of means-ends interlinkages (Elder et al., 2016), and this is particularly true for the environment-related targets. The governments intended to divide SDGs into ‘goals’ and ‘means of implementation’. Each SDG has separate targets for ends and means, but, in practice, ends and means are often mixed because of the complex interlinkages. Some targets, such as 12.1 and many in SDG 14, include both ends and means.

There are many definitions of integrated approaches. The pattern of integration observed in the SDGs is that the environment is incorporated in targets across almost all policy areas represented by the SDGs. Theoretically it means that the SDGs should be implemented in a coordinated way taking into account their interlinkages and interdependencies. The literature on environmental policy integration mostly focuses on analysing the effectiveness of various ways of implementing integrated approaches (Jordan and Lenschow, 2010; Le Blanc, 2015; Persson, 2004; Runhaar et al., 2014; Stevens, 2018; Tosun and Lang, 2017; Tosun and Leininger, 2017). However this is beyond the scope of this paper, which examines how a more integrated view of development became reflected in the SDGs rather than how it could be operationalized.

The environmental targets in Table 2 can be classified into three types: (1) means/measures to improve the environment such as sustainable agriculture, energy efficiency and decoupling environmental degradation from economic growth; (2) environmental conditions that should be improved, such as ecosystems, safe housing, and air quality; and (3) other ends that would benefit from environmental improvement, such as fewer deaths and illness from pollution, reduced water borne disease and protected cultural and natural heritage.

It is especially notable that many of the most important means to improve the environment are found in the so-called economic targets. The most important one is arguably Target 8.4, which calls for economic growth to be decoupled from environmental degradation. Resource efficiency is also very important. Industrialization and infrastructure (in SDG 9) are supposed to be ‘sustainable’. The targets in this table span a wide range of economic sectors including industry, infrastructure, agriculture, energy, transport and buildings.

Climate change is a major example of an integrated approach spanning a range of goals. However, the key means for addressing it are mostly not under SDG 13; instead they are under other goals such as SDG 7 on energy (energy efficiency and renewable energy), or SDG 12 (ending fossil fuel subsidies) Other climate measures are listed under other goals.

Several targets specifically call for various forms of policy integration and integrated management approaches. These include Targets 6.5 on integrated water resource management, 11.b on integrated policies on inclusion, resource

Table 2. Targets directly related to the environment

Target No.	Content related to environment	Target No.	Content related to environment
1.5	Resilience to climate and environmental shocks and disasters	7.b.	Infrastructure and technology
2.4	Sustainable food production systems	8.4	Resource efficiency & decoupling economic growth from environmental degradation
2.5	Genetic diversity	8.8	Labor rights and safe working environment
3.3	Deaths and illness from pollution	8.9	Sustainable tourism
3.9	Water-borne diseases	9.1	Sustainable and resilient infrastructure
4.7	Education for sustainable development	9.2	Sustainable industrialization
5.a	Women's equal rights to economic resources, property, natural resources	9.4	Sustainability upgrading and resource efficiency
6.1	Access, safe water	9.a	Financial, technical, & technological support for sustainable & resilient infrastructure
6.2	Sanitation	11.1	Adequate, safe, affordable housing
6.3	Water quality	11.2	Sustainable transport
6.4	Use-efficiency, scarcity	11.3	Inclusive and sustainable urbanization
6.5	Integrated water management	11.4	Protect & safeguard cultural & natural heritage
6.6	Ecosystems	11.6	Environmental impact, air quality, waste management
6.a	Capacity building	11.7	Green and public spaces
6.b	Local participation	11.a	National and regional development planning
7.2	Renewable energy	11.b	Integrated policies on inclusion, resource efficiency, climate mitigation & adaptation, resilience, disaster risk management
7.3	Energy efficiency	11.c	Support for sustainable & resilient buildings
7.a	Related investment	12-15: All	(Except 14. a)

Gray box: environmental condition to be improved

Bold text: means to improve the environment

Gray box and bold text: the target combines the environmental condition to be improved with means to improve it

Normal text: ends which benefit from an improved environment

efficiency, climate mitigation & adaptation, resilience, disaster risk management, 13.2 on integration of climate change measures into national policies, strategies and planning and 15.9 on integration of ecosystem and biodiversity values into national and local planning. These are means targets related to governance.

Finally, there are many implicit interlinkages among the goals which were not explicitly included in the targets (Elder et al., 2016; Zhou and Moinuddin, 2017). For example, climate change negatively affects poverty and health, which worsens gender and income inequality, so mitigating climate change will help reduce poverty and inequality and improve health, but these points are not directly addressed under their respective SDGs (1, 3, 5, 10). Effects of environmental pollution on health are addressed in some targets, but effects on poverty and inequality are not. Measures to improve the environment can also contribute to creating decent jobs (SDG 8). Other examples include healthy food and access to education (SDGs 2, 3, 4). A cleaner environment contributes to food security; reduced pollution and reduced land degradation will help to promote food production. For example, air pollution reduces crop yields (Avnery et al., 2011; Nawahda et al., 2013). Likewise, air and other pollution can make it difficult for children to attend school. Even though specific targets linking each goal with the other goals were not

included systematically, a healthy environment remains a key means to achieve the other SDGs in a broad sense.

Limitations and missing elements in the targets

Generally, the SDGs adopt an optimistic vision that environmental protection is compatible with economic growth, which is a continuation of the way sustainable development has been promoted since Brundtland in 1987. Thus, in SDG 8, economic growth appears as the key to prosperity and poverty reduction. Overall in the SDGs, this might possibly be reconciled with the environment through 'decoupling', sustainable consumption and production, resource efficiency, various integrated approaches, greater corporate responsibility, etc. However, other perspectives argue that this optimism is unwarranted, and that economic growth is not compatible with long run sustainability (Jackson, 2017; Klein, 2015; Raworth, 2017).

Means of implementation remains a major limitation, even though it is addressed by many targets (19 under SDG 17 and 43 under the other SDGs). SDG implementation depends on voluntary efforts. There are few new legal mechanisms, enforcement mechanisms or designated financial resources. Many existing frameworks were also left out. For example, the World Health Organization's air quality guidelines could have been adopted, similar to the 10 Year

Framework of Programmes on SCP, which was adopted as the first target under SDG 12.

The environmental goals and targets, like most of the others, lack some elements of being SMART (specific, measurable, achievable, realistic and time bound), which was a key initial concept of the SDGs. Many are measurable in principle, although only target 8.1 on economic growth is quantified, which could undermine environmental protection if target 8.4 on decoupling (which might not necessarily be achievable or realistic) is not implemented simultaneously. Generally, quantification is in the indicators, not the targets.

In general, the environmental targets tend to be broad, holistic, ambitious, qualitative and potentially transformative, although in some cases their achievement may not be very realistic in the short run. In the long run, there may be some advantages to these characteristics, compared to SMART, such as greater ambition, flexibility and facilitating integrated approaches.

Although SDGs seem comprehensive and have been criticized for being too complex and ambitious (Economist, 2015; Lomborg, 2015), it is nevertheless possible to identify important missing elements, especially related to the environment. The most important one is the official global target to limit climate change to 2 degrees, and the aspirational 1.5-degree target. There were also no targets related to climate adaptation. Another example is mining or natural resource extraction, which is a major cause of environmental pollution. The SDGs do not mention this directly. However, because many targets are very broad, missing issues could probably be addressed under a variety of targets. For example, mining could be related to SDGs 6 and 15 related to preservation of various ecosystems, SDG 12 on SCP, as well as decoupling under SDG 8 and sustainable industrialization under SDG 9. This case illustrates the usefulness of the broad scope of some of the more ambitious targets.

Air pollution is explicitly mentioned in the SDGs, but it is de-emphasized and its influence is diluted in contrast with the other environmental media, land and water, or climate (one aspect of the air environment), which all have their own headline goals. Air pollution is mentioned in three goals, health (SDG 3), cities (SDG 11) and SCP (SDG 12). However, in all cases, it shares the target with other issues. No target is devoted exclusively to air pollution. Nevertheless, the causes and effects of air pollution are related to various other targets, such as SDG 3 on health and SDG 7 on energy (Elder and Zusman, 2016).

Gender issues are also closely related to the environment and pollution (UNEP, 2016). However, there is only one specific reference in target 6.2 on sanitation; other opportunities to strengthen linkages to the environment are missed. For example, indoor air pollution disproportionately affects women in many least developed countries.

An environmental justice perspective is lacking. Access to information is a key environmental issue. Target 16.10 could be applied to this in principle, but it did not mention environmental information specifically.

Finally, there is a question about whether some elements should be considered 'green-washing' rather than

integration, for example target 9.2 on promoting inclusive and sustainable industrialization. It is quite possible that some countries may not have intended or would not be able to implement the environmental or sustainability components of this and other targets. Nevertheless, the analysis here is based on a positive interpretation of the contents of the actual text. To what extent actual implementation of SDGs could be characterized by green-washing is beyond the scope of this paper.

Analysis of the indicators

This section assesses how much the environment-related indicators appropriately reflect their targets in terms of scope and ambition, focusing only on indicators listed in Table 2. It only addresses how much each indicator reflects the scope and ambition of the target, since this may be more related to the discussion about how goal setting influences priorities. It does not consider the indicators' measurability or data availability, even though broad and ambitious indicators may have less available data or be less measurable. The analysis is summarized in Table 3.

Many indicators generally reflect the scope and contents of the targets, especially in SDGs 2, 6 and 7, but many others substantially dilute or exclude the environmental/sustainability aspects of the targets. The individual indicators for climate (SDG 13) and land (SDG 15) seem mostly appropriate, although the 2 degree and financing targets are missing, and several land indicators have very narrow scopes. SDG 12 is somewhat disappointing. The indicators for about half of the targets seem appropriate, but the scope of the other half is too narrow. The means of implementation targets for energy (7.b. and 7.c) regarding financial flows to developing countries as well as investments are also disappointing; the points addressed in the indicator are appropriate, but they omit important elements of the target.

The indicators for the main economic targets in SDGs 8 and 9 are the most problematic, completely excluding the

Table 3. Assessment of indicators of environment-related SDG targets

Assessment of related indicators	Specific indicators
Environmental/sustainability element excluded	1.5, 3.3, 3.9 (other pollution forms), 6.6 (water quality), 6.a, 8.8, 8.9, 9.1, 9.2, 9.4, 11.1, 11.2, 11.3, 11.a, 11.b.
Scope is narrower than the target	7.a, 7.b, 8.4, 11.6, 11.c, 12.4, 12.5, 12.6, 12.7, 12.8, 13.2, 14.1, 14.2, 14.3, 14.4, 14.7, 14.a, 15.1, 15.4, 15.8, 15.b.
Indicator captures the general direction of target	2.4, 2.5, 4.7, 6.1, 6.2, 6.3, 6.4, 6.5, 7.2, 7.3, 11.4, 11.7, 12.1, 12.2, 12.3, 12.a, 12.b, 12.c, 13.1, 13.3, 13.a, 13.b, 14.5, 14.c, 15.2, 15.3, 15.5, 15.6, 15.7, 15.9, 15.a, 15.c.

environmental and sustainability elements. These targets were among the most important ones to achieve environmental sustainability, so this severely weakens the environmental element of the SDGs. The indicator of the key target on decoupling (8.4) refers to material footprint, which is one important element. However, many other aspects of decoupling are not included, so the indicator is highly inadequate. Target 11.b calls for integrated policies on inclusion, resource efficiency, climate mitigation and adaptation, resilience and disaster risk management, but the indicator includes only disaster risk management. Sustainable tourism (target 8.9) is a narrow issue. However, the two indicators (8.9.1 and 8.9.2) inexplicably and inappropriately refer to tourism in general, and not 'sustainable' tourism as clearly specified in the target's headline. A key health target, 3.9, addresses death and illness from pollution, but the indicator (3.9.1) only includes one very narrow type of pollution, household ambient air pollution, and only includes deaths. All other kinds of pollution and all illnesses from pollution were excluded. The two indicators for target 1.5 on resilience to climate and environmental disasters exclude the climate and environmental aspects.

Another problem is that many environment-related indicators have no established methodologies or have low data availability compared to indicators in other areas (Zusman et al., 2016). However, there may be a tradeoff: it may be more difficult to develop appropriate indicators for broader, multi-dimensional targets, while clear indicators with better data availability may be too narrow and not suitable for broad targets promoting integrated approaches.

There are also two main missed opportunities. First, there are many already existing environmental indicators, such as for the state of the environment, various kinds of pollution, environmental industries, etc. The WHO air quality guidelines are one example. The SDGs could have been used as an opportunity to strengthen data collection and environmental monitoring for these, including purchasing monitoring equipment, but this was not a main focus. Second, many 'non-environmental' targets could potentially contribute to the environment, or be helped by a cleaner environment, and could have included environment-related indicators. These include indicators related to means of implementation (2.a., 3.d, 4.b, 4.c, 9.a, 9.b, 9.c and SDG 17), governance (in SDG 16), research and innovation (9.5), financial market regulation (10.5), migration (10.7) and education (4.1, 4.2, 4.6).

Overall, the story of the indicators is about diluted targets and missed opportunities. The indicators appear to significantly weaken the environmental elements of the SDGs and restrict the scope of many targets. Moreover, although many indicators are narrow, they still do not have established methodologies or much available data. The indicators' narrowness is likely to hinder efforts to implement integrated approaches within and between goals.

Explaining the environment's place in the SDGs

Two broad aspects of the environment's place in the SDGs are explained here: (1) the overall character of the goals and targets; and (2) the relative weakness of the indicators. This

explanation is preliminary, based on tracing the overall progress of the draft SDG text, written sources and the authors' personal experience during the process of defining the SDGs. These findings should be viewed as a preliminary explanation. A more comprehensive and systematic analysis, especially of the role of key actors, will require further research.

Goals and targets

The first steps in defining the SDGs were taken at Rio+20 including: (1) the decision to establish sustainable development goals; (2) the basic topics; (3) the basic principles; and (4) the overall decision-making process, especially the Open Working Group (OWG). In retrospect, the main topics of the SDGs were not significantly different from the priority areas agreed at Rio+20, although there were some differences in ordering and level of prioritization. The principles of universality and an integrated approach were decided, and the road was paved to merge the Post MDG Agenda with the sustainable development process. The key factors that contributed to the relatively strong role of the environment and the adoption of an integrated approach were the: (1) role of ideas; (2) norm entrepreneurs promoting these new ideas; and (3) the institutional set-up and process.

The importance of environment as the foundation of development and the importance of integrated approaches were not new ideas, and had been promoted since Agenda 21, but these ideas had never been widely acted upon by governments. However, by the lead up to Rio+20, these ideas began to gain momentum.

Two concepts gained particular prominence. The first was Planetary Boundaries (Rockström et al., 2009), which highlighted the urgent linkage between environmental problems and human development, instead of the importance of the environment for its own sake. The concept identified nine limits to the Earth's ecosystems that should not be exceeded to avoid undermining development. The second was the *Oxfam Doughnut*, and a working paper explaining it was distributed to the Rio+20 negotiators (Raworth, 2012). It presented a diagram combining social minimums with planetary boundaries, illustrating their interdependence. While these concepts were not directly referenced in either Rio+20 or the SDGs, they illustrate that a more integrated view on development, based on intertwining aspects or 'dimensions' rather than sectoral pillars, was gaining traction around that time and influenced the architecture of the SDGs.

For instance, the need for an integrated approach and integrated management of ecosystems was highlighted in the Rio+20 outcome document (e.g. paragraphs 3, 4 and all of section B). Integration appeared in more than 50 areas of the document. The section on SDGs (paragraphs 245–251) focused on general principles and procedures, and did not specifically prescribe their contents. However, it is now clear that the 'Thematic Areas and Cross-Sectoral Issues' were mostly incorporated into the SDGs, although to varying degrees and with a different organization (United Nations, 2012).

The shift toward a stronger focus on integration was also reflected in the text. Rio+20 brought a very significant shift in sustainable development's basic terminology, replacing the traditional concept of '3-pillars' with '3 dimensions'. As Maria Ivanova (2013) noted, 'this change recognizes the fluidity and interconnectedness of the environmental, economic, and social aspects of global issues rather than their parallel existence and opens up opportunities for integrative work at multiple levels of governance'. This provided an important foundation for the SDGs' integrated approach.

During the OWG, the trend of promoting integrated (rather than 3-pillar) approaches was equally evident. A prominent article published in *Nature* argued for a nested approach to development (Figure 1), and proposed to revise the definition of sustainable development to strengthen the role of the environment, as development that meets the needs of the present *while safeguarding Earth's life support system* [emphasis added], on which the welfare of current and future generations depend' (Griggs et al., 2013). A small research consortium promoted its concept of *SDGs for a Small Planet* (Pinter et al., 2014), adapting Herman Daly's Ends-means Triangle (Meadows, 1998) arguing that any set of goals should be viewed as a mutually interdependent system (Figure 2) with interlinked means and ends.

Experts invited by governments to address the OWG also promoted an integrated approach during their interventions. The growing persuasiveness of these arguments can be seen in statements from OWG sessions 8, 10 and 11, which discussed environmental aspects of the agenda such as SCP, climate, forests, biodiversity and oceans. Analysis of these statements shows that the term 'pillar' was used 26 times to describe sustainable development, while 'dimension' was used 71 times. Most of these occurrences were used to describe sustainable development. Only in a few cases, the term referred to multi-dimensional problems or transformative *dimensions*. Overall, this suggests some shift from a

sectoral to a more integrated view of sustainable development, though clearly not all countries were persuaded.

The OWG Co-Chairs increasingly adopted the integrated approach as they prepared focus areas for what was to become the SDGs (UN Open Working Group on SDGs, 2014; OWG Co-Chairs, 2014). The prevalence of the integrated approach can also be recognized in a presentation made by one of the Co-Chairs in 2013 (Figure 3). Although they classified each target according to environmental, social and economic dimensions, the diagram showed that they believed that most goals addressed at least two and often all three dimensions. However, the diagram also illustrates some limitations of their view of integration. For example, the co-chairs interpreted SDG 16 on peaceful societies to be mainly about the social and economic dimensions, excluding the environment, but nearly all of SDG 16's targets are very important for environmental conservation, particularly the rule of law and equal access to justice (16.3), effective, accountable and transparent institutions (16.6), responsive, inclusive, participatory and representative decision making (16.7) and public access to information (16.8).

Thus, a systematic treatment of economic, social and environmental aspects of development became a recognizable aspect of the SDGs, although there were some inconsistencies in how it was applied to specific goals and targets. The inconsistencies resulted from the fact that the OWG was not only informed by conceptual ideas but had to compromise among competing views and divergent priorities among participating member states. It is beyond the narrow focus of this article to investigate the precise extent to which these and other documents concretely influenced the SDGs, but they illustrate that integrated views were presented, became more widely understood, and gained the support of various actors.

Unfortunately, these ideas were not enough to persuade many governments to adopt a new concept of human well-

Figure 1. Nested interdependencies. (Griggs et al., 2013; Hajer et al., 2015; Steffen et al., 2015).

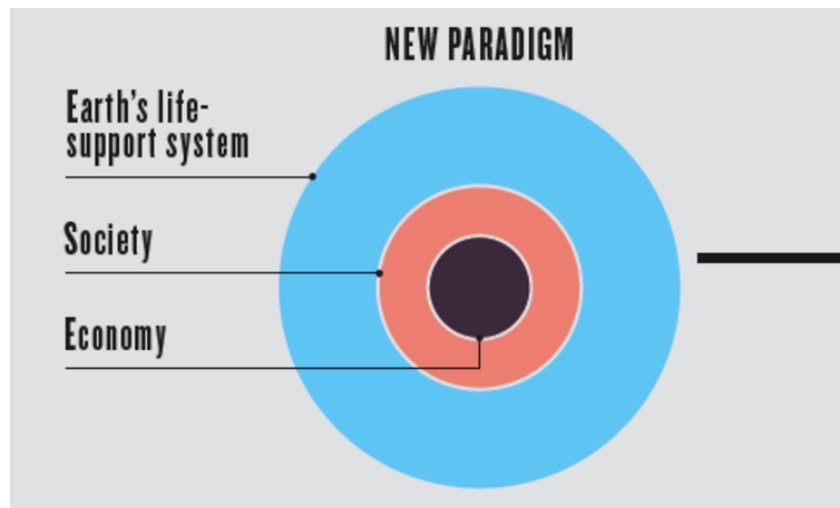
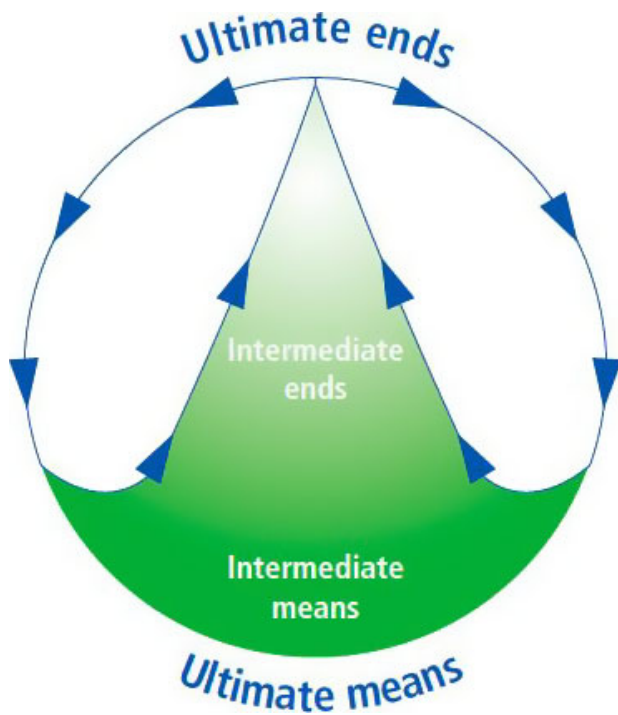


Figure 2. Means-ends framework. (Pinter et al., 2014).



being and prosperity 'beyond GDP' that would have been instrumental for operationalizing an integrated view. Instead, developing countries insisted on headline goals on economic growth and industrialization. Target 8.1 on economic growth is the only target with a specific numerical objective. Finally, governments agreed to condition economic growth on 'decoupling', and SDG 9 specified that industrialization should be 'sustainable'.

The ideas on integration were strongly and effectively promoted by a group of norm entrepreneurs. These were government officials who played a lead role in the negotiations over Rio+20 and the SDGs in the OWG. A group of UN officials also played key roles. The scientific community provided strong support to these efforts. One example was a collective initiative by a global group of research institutes called the Independent Research Forum (IRF), which organized several informal member state retreats on the sidelines of the regular OWG meetings (IRF, 2016). These retreats used Chatham House rules and served as non-UN forums where member states could freely discuss how the SDGs could reflect integration, universality, reporting and many other issues that OWG members were challenged with.

Colombia, Guatemala and Peru were initially the key countries behind the idea of SDGs. In particular, Colombia's chief negotiator, Paula Caballero, was a key norm entrepreneur who strongly supported strengthening the role of the environment in the context of an integrated approach to development. She spent much time gathering the views of many countries about their priorities, and contributed to the

synthesis of priority issues at Rio+20, which became the basis for the contents of the SDGs. She continued as a negotiator for Colombia throughout the SDG process (Caballero, 2016; Dodds et al., 2016). This provided continuity which was very important to the SDGs' adoption.

Two other key norm entrepreneurs were the OWG Co-Chairs, supported by a dedicated Technical Support Group from across the UN development system with some 40 members (Kjorven, 2016). The Co-Chairs appeared to support strengthening the position of the environment and adopting an integrated approach. Their role was to synthesize all inputs during each OWG session, reflecting them into the draft goals and targets. This was an important and delicate balancing act, because the Co-Chairs needed to maintain the trust of the OWG representatives while trying to strengthen the overall outcome (Donoghue, 2016). Many also credited the major groups, which were allowed greater participation than in the past, with helping to raise the level of ambition (Dodds et al., 2016).

The first key element of the institutional process is the merging of the Post MDGs with the sustainable development agenda, which brought together the development and environment communities. Previously, the environment had been marginalized in traditional development mechanisms such as the MDGs, while the sustainable development agenda had come to be seen as mainly for environment ministries, and other ministries were reluctant to participate. Therefore, before the SDGs, it was difficult to integrate the 'three pillars' of sustainable development.

The second key element was the institutional structure and working modalities of the Open Working Group (OWG), which negotiated the contents of the SDGs (Chasek and Wagner, 2016). Originally it was to have 30 seats, but due to substantial interest, eventually, over 70 countries shared the 30 seats in 'troikas'. It was hoped that the troika structure might encourage governments to develop joint inputs instead of individual country statements. Although this was very difficult for some troikas (particularly for unusual groupings like Iran, Japan and Nepal) and many countries continued to make their own statements, others did develop group inputs. This may have fostered more cooperation among participants and generally prevented the OWG discussions from slipping into typical negotiation mode. One study observed that the OWG's unique structure also may have reduced the influence of the North-South regional blocs (Dodds et al., 2016), helping to maintain the SDGs' universal and integrated character.

The open structure of the OWG had a major influence on the views of the governments on the relation between environment and development. Each of the OWG sessions invited inputs from experts on a wide range of topics central to sustainable development. The OWG sessions thus functioned as a capacity building mechanism for all involved. Voices that promoted an integrated view on development, especially one that emphasized the foundational role of a healthy environment for development, were among those that shared their views and concepts. The OWG Co-chairs also contributed their own views. For

Figure 3. The three dimensions of sustainable development in the SDGs. Cited in (Dohlman, 2014).



example, in different *focus areas* documents prepared to guide discussions, they stated that: 'Humans are fundamentally dependent on the capacity of ecosystems for life and to provide services for their well-being and societal development' (OWG Co-Chairs, 2014, p. 7).

Many negotiators developed considerable experience in SDG topics and process, since they had participated in the Rio+20 negotiations, and many stayed on throughout the SDG negotiations (Dodds et al., 2016), so there was a considerable continuity. This may have created some sense of ownership among the negotiators, which may have fostered some resistance to potential efforts to weaken the SDGs. Since the negotiations took a long time, there was greater opportunity for the many negotiators to be persuaded by the arguments of the norm entrepreneurs and the scientific community.

The statements of several OWG members demonstrated the growing acceptance of the integrated approach. At OWG 7, one group recognized that SCP policies are 'the means to decouple the economic growth from resource consumption and environmental degradation ... and the means to reduce inequalities and secure social justice' (Bulgaria and Croatia, 2014, p. 2). Italy, Spain and Turkey remarked on the links between biodiversity conservation and poverty reduction at OWG 8 (Orlando, 2014). Cyprus, Singapore and the United Arab Emirates argued that the proposed goal on SCP 'should aim to address ends rather than means' at OWG 10 (Cyprus-Singapore-United Arab

Emirates, 2014). Civil society also recognized this approach, arguing at OWG 8 that gender equality is 'an essential means for sustainable development but also a development end in itself' (OWG Co-Chairs, 2014, p. 2).

This inclusiveness and wish to capture all major development issues in one set of goals and targets caused the agenda to balloon. Not all actors agreed with such a comprehensive approach to reflecting integration, since it would be hard to communicate a large and complex development agenda to the capitals and the general public. Some thus argued for a concise maximum of 10 goals similar to the MDGs (SDSN, 2014). Others argued that 17 goals could never be implemented cost-effectively and used cost-benefit analyses to propose prioritization according to economic efficiency (Lomborg, 2015).

The additional environmental elements accounted for much of the agenda's large expansion. This is evident from a comparison of the proposal by the Secretary General's High Level Panel (HLP) with the OWG's initial proposal (High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, 2013). The HLP started to define the 'post-MDGs' before the SDG discussions started, but its work was largely sidelined once governments decided to use the intergovernmental OWG process and avoid the expert-driven processes that developed the MDGs. The HLP's proposal had 12 goals, in comparison with the MDG's 8. Like the MDGs, it had only one environmental goal ('manage natural resource assets sustainably'),

although it also had an energy goal, which could be considered environment-related. In contrast, the OWG's initial draft, with 19 focus areas, reorganized the HLP's topics and added several others: SCP; climate; marine resources, oceans and seas; and ecosystems and biodiversity (Dodds et al., 2016; OWG Co-Chairs 2014). These additional topics all made it into the final version of the SDGs. In contrast, the HLP's draft was more oriented towards the narrowly focused development community, and its approach was basically 'MDG-plus', focusing on human development, and more incremental than transformative.

The SDGs' relatively large number of goals and targets partly resulted from a recognition of the need for an integrated approach to sustainable development including many related elements. Another key factor was the OWG's inclusive procedure. Many more countries than expected wanted to participate, aiming to achieve global recognition for their priority topics. The end-result was quite comprehensive but also a somewhat messy, delicate political compromise. Moreover, after the importance of the 'integrated approach' was accepted, it became more difficult to exclude proposals to include particular topics, so most countries' main concerns had to be accommodated as either a goal or a target.

Other elements of the structure and process can explain why reluctant countries could agree to the outcome and why the SDGs were not stronger. First, many countries may have expected the OWG outcome to be just the initial draft for further negotiation. The developing countries' firm rejection of further negotiations surprised many (Donoghue, 2016). Second, the governments had already agreed to establish the High Level Political Forum (HLPF) to monitor and review implementation. The HLPF was institutionally weak and its procedures were unclear, so some governments may have thought that accountability would not be very strict (Biermann et al., 2017). Countries could implement SDGs according to their national circumstances, so there was ample flexibility for countries to focus on what they had already planned to do anyway.

Some specific environmental issues

Several significant environment-related issues decided during the OWG negotiations have their own separate explanations. It is possible that other specific issues may also have more detailed explanations, but this would require further systematic research to investigate.

Climate change is a special case. Its position in the SDGs was heavily influenced by the fact that there was a separate negotiating process. Many delegates opposed a stand-alone goal to avoid complicating the upcoming Paris climate negotiations, although others, such as Bangladesh, felt it would be helpful (OWG Participants, 2014). Many argued that climate related issues should be integrated across other goals. However, the Co-Chairs and major groups and stakeholders strongly urged a stand-alone goal, and the Alliance of Small Island Developing States (SIDS) also came to support it. Finally, a stand-alone goal was agreed, but many

countries insisted that the SDGs should not pre-empt the United Nations Framework Convention on Climate Change (UNFCCC) process. Thus, SDG 13 specifically referred to the official UNFCCC process and had weak targets (see Dodds et al., 2016).

The specification of different types of ecosystems is a notable feature of the 'environmental' SDGs. This feature was strongly urged by a variety of countries characterized by these ecosystems, particularly developing countries, who came to see the SDGs as a way to gain global attention to their specific issues and problems. The mountain countries were especially successful, achieving not only a headline target on conservation of mountain ecosystems (15.4), but mountains are also mentioned in two others, target 6.6 on protecting and restoring water-related ecosystems, specifically including ones related to mountains, and target 15.1 on protection of ecosystems in general. Many SIDS insisted on a headline goal on oceans (SDG 14), which has ten targets, including three on means of implementation.

Sustainable Consumption and Production (SDG 12) was added partly due to effective lobbying from the science community (Akenji and Bengtsson, 2014), as well as by the UN to promote the already existing 10-Year Framework on SCP. Similar to the climate discussion, opinions differed on the need for a stand-alone goal. Developing countries strongly pushed for a stand-alone goal, partly to reflect the universality of the SDG agenda, and partly with the expectation that developed countries would lead on this goal and reduce their consumption (Dodds et al., 2016).

Indicators

The process for developing the indicators was completely different from the OWG's process for developing the goals and targets, and much more technocratic. Weakening the environmental contents of the indicators does not appear to have been intentional. Instead, it resulted from various procedural and structural factors. Led by the Inter-Agency and Expert Group on the Sustainable Development Goal Indicators (IAEG-SDGs), the people involved were mainly representatives from national and international statistical agencies with a completely different perspective than the OWG negotiators. They were mainly professional statisticians concerned with the cost and feasibility of data gathering rather than the broad objectives of sustainable development.

There were also structural issues. One was the desire to limit the total number of indicators. Many of the targets were broad and sweeping, and included several dimensions or components, partly as a result of political compromise, and partly due to the integrated thinking that had characterized the OWG. However, the number of indicators would have ballooned to several hundred if each of the 169 targets had an average of 3 or 4 indicators to reflect the different dimensions of integration. There were serious concerns about whether national statistical offices, especially in developing countries, would have sufficient capacity to manage even 1 or 2 indicators per target. Another issue was that many environment-related indicators remained at the 'Tier

3' level without established methodology or regularly collected data (Zusman et al., 2016). Therefore, the IAEG decided to limit the number of indicators for each goal, and in many cases, excluded or reduced the environmental component of many goals.

Feasibility of data collection and measuring progress was an important priority. Therefore, they adopted a somewhat practical approach favoring the principle of 'measure what we know how to measure' rather than 'measure what matters'. Nevertheless, they left the door open for improvements with the Tier III indicators that could not be measured, reflecting an ambition to gradually improve on this shortcoming to measure progress on the SDGs over time.

Another structural factor was the legacy of the MDGs and their institutional structures. The IAEG-SDGs' mandate and TOR were at the outset basically the same as those for the UN's statistical work during the MDG era. Statisticians familiar with the sectoral thinking promoted by the MDGs, and unfamiliar with environmental issues, were suddenly confronted with the gargantuan task to articulate and define indicators that could capture the ambition and integrated nature of the SDG goals and targets which the OWG had developed. Moving from an incremental and sectoral measurement approach to a transformative and integrated approach proved very challenging for the statistical community, which can be seen in the large number of Tier III indicators that were included in the 232 SDG indicators. In addition, the members of the IAEG-SDGs, mainly statisticians, were accustomed to discussing technical issues with minimal politicization or public interest in the past. When confronted with the large interest in the process from various non-state actors, the IAEG-SDGs opened up the process through various measures such as lengthening periods for stakeholders to provide inputs and comments after each of their meetings. Nevertheless, despite expanded stakeholder participation, the fact remained that no-one had measured before what many targets sought to capture. Therefore many indicators could not adequately capture some environmental aspects or integration among the goals.

Conclusion

Overall, the SDGs have significant environmental content, and many of the environment-related targets are very broad and ambitious. The SDGs adopted an integrated, 'nested approach' to sustainable development (Giddings et al., 2002; Griggs et al., 2013). This approach included the environment in almost all of the other goals with some degree of organization, thereby encouraging a view of the environment as a foundation for development. Rather than being one among three separate pillars or dimensions of development, the environment now came to be seen as interlinked and mutually interdependent with the other dimensions of development.

However, the SDGs did not establish a new measure of well-being 'beyond GDP'. The extensive text on means of implementation did not establish any major concrete implementation or funding mechanisms in the voluntary SDGs. There were a number of omitted or under-prioritized

important issues. In particular, although some of the indicators appropriately address the environmental aspects of the targets, including for some 'non-environmental' goals like water and energy, many indicators reduce the scope of the environmental contents of the targets, or eliminate the environmental content altogether, and do not reflect the integrated approach taken by the OWG in formulating goals and targets.

This analysis found that three major factors influenced the environmental contents of the SDGs: (1) the role of new ideas on the importance of the environment and an integrated approach to sustainable development which was promoted by the science and research community, which influenced the ideas and perceptions of the key actors; (2) a group of norm entrepreneurs, including some negotiators for a few national governments, who promoted these ideas in the Rio+20 process and developed an innovative institutional process for deciding the SDGs; and (3) the institutional structure and working modalities of the Open Working Group, whose special characteristics facilitated the final agreement on the SDGs with its stronger emphasis on the environment and integrated approaches. Overall, these factors appear to have had a major impact on the goals and targets of the SDGs, but much less influence on the indicators, which were decided in a separate process with a different institutional structure and with different backgrounds of the key actors.

Regarding implications for the influence of goal setting on priorities, this article argues that the impact of SDGs on decision-making and stakeholder actions may be complex. On one hand, many targets are very ambitious, and environment-related targets are included in all the other goals, so the overall structure of the SDGs encourages an integrated approach to the environment and development. On the other hand, there are many weak indicators, which dilute this ambition, and hinder an integrated approach by excluding many environmental elements. Therefore, the ultimate impact of the SDGs on environmental sustainability may depend on whether governments and other actors focus on the spirit of the SDGs or merely 'check the boxes' of the individual indicators.

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