The Framing of Sustainable Consumption and Production in SDG 12

Des Gasper, Amod Shah and Sunil Tankha

International Institute of Social Studies (The Hague), Erasmus University Rotterdam

Special Issue Article

Abstract

This paper examines the processes of formulation of UN Sustainable Development Goal 12 (SDG 12) – 'Ensure Sustainable Consumption and Production Patterns' – and its targets and indicators. We argue that business interests have steered its narrative of sustainable growth. The outcome of the SDG 12 negotiations reflects a production- and design-centered perspective that emerged in the 1990s and has a business-friendly regulatory approach and faith in solutions through new technologies. We show how the targets and indicators emerged in debates between national governments, UN agencies, civil society and private sector organizations – and how they reflect both the political process and technical and practical considerations in translation of a broad concept into the SDG format. While the emergence of SDG 12 as a standalone goal stems from a push by developing countries to build pressure on developed countries, and its presence may open space for attention to this area in the future, many of its targets were watered down and left vague. The indicators to measure progress on the targets further narrow the scope and ambition of Goal 12, whose current content does not adequately reflect earlier more transformative conceptualizations of Sustainable Consumption and Production.

The UN Sustainable Development Goals (SDGs) are envisioned as universal goals, relevant for both developed and developing countries.[1] They link economic, social and environmental dimensions of development (UN, 2015), moving beyond the narrower focus on poverty and human development which characterized the Millennium Development Goals (MDGs) (Fukuda-Parr, 2016), and merging it with the environment agenda pursued through the UN Conferences on Sustainable Development (UNCSD) since the early 1990s. The combined agenda now includes a focus on achieving sustainable consumption and production (SCP) patterns, which despite substantial discussion through the UNCSD process had not become part of conventional development approaches.

Our paper analyzes how the concept of SCP was incorporated as standalone goal SDG 12, 'Ensure Sustainable Consumption and Production Patterns', and elaborated as a set of sub-goals (known as 'targets' despite often lacking specificity) and corresponding indicators. First, we evaluate how SCP is conceptualized and operationalized in SDG 12, and how this relates to the history of the concept and discourse, by comparing assumptions underlying the goal and its targets with the predominant understandings of SCP. Second, we study the SCP-related discussions in the Open Working Group (OWG) of the UN General Assembly, to understand the determination of the final text on SDG 12 targets.[2] Third, we similarly explore the subsequent work of the Inter-agency and Expert Group on SDG Indicators (IAEG). For the third and fourth sections we studied the deliberations of the OWG and IAEG as made available publicly by the UN and supplemented this with reference to secondary sources, including discussions of these and related processes published by insiders.[3] To conclude we review how both technical and political factors brought watered down SDG 12 targets and how the selected indicators are often products of compromise and expediency which need to be revisited and deepened. The paper does not assess how far the concept of SCP has been adopted in other SDGs, which would require a separate exercise.

The pedigree of 'Sustainable Consumption and Production' Ideas and their influence on SDG 12

The evolving conceptualization of sustainable consumption and production

Discourses on SCP have featured in UN discussions on the environment and sustainable development since the 1972 UN Conference on the Human Environment in Stockholm. Earlier work had introduced closed-systems perspectives, including the 'spaceship earth' concept (Fuller, 1968; Ward, 1966) that the earth's resources are finite and its capacity to re-absorb the by-products of production processes is also limited. Also in 1972, the Club of Rome, a network of senior scientists and industrialists, released a report commissioned from the Massachusetts Institute of Technology. Using computer simulations, *Limits to Growth* updated the Malthusian vision of contradiction between static stocks of resources and arithmetic growth in some means of production versus geometric growth in population and consumption, to caution against continuing the extant economic trajectories (Meadows et al., 1972). Much subsequent work has emphasized that several key limits concern not the earth's stocks but its ability to act as a sink for pollution. Both types of

Global Policy (2019) 10:Suppl.1 doi: 10.1111/1758-5899.12592

limits figure in current understandings of planetary boundaries (e.g., Carpenter and Bennett, 2011; Steffen et al., 2015).

These discussions tried to respond to ever-increasing consumption and inefficient production by calling upon both morality and human ingenuity to safeguard ecosystems for future generations as well as safeguard contemporary vulnerable groups. Arguments for consumption restraint and an eventual steady-state economy (e.g. Daly, 1973) failed to become mainstream. Absolute and relative poverty for some people in all countries, and the inbuilt expansion imperatives in capitalist systems, limited serious discussion about shifting from economic growth. Nevertheless, the discussions began to call into question unsustainable rates of resource extraction and pollution.

This phase culminated in the Brundtland Commission (the United Nations World Commission on Environment and Development) report *Our Common Future* in 1987, which introduced the term 'sustainable development'. It called for not compromising the ability of future generations to fulfil their needs, and implied a difference between felt wants and justified needs. While it emphasized that growth was necessary to reduce global poverty, it highlighted also the imbalance between consumption patterns of the wealthy and the poor, opening space for discussions about consumption levels. Arguing that 'perceived needs are socially and culturally determined', the report argued that sustainable development required, first, 'promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all can reasonably aspire' and, second, 'a production system that respects the obligation to preserve the ecological base for development' (WCED, 1987, pp. 42, 58).

The term sustainable development and the concept of SCP became progressively popularized and elaborated, including in successive UN Conferences on Sustainable Development. The Rio Declaration on Environment and Development at the 1992 Earth Summit (the UN Conference on Environment and Development) called on states to 'reduce and eliminate unsustainable patterns of production and consumption' (UN, 1992). The 2002 World Summit on Sustainable Development in Johannesburg recognized that 'fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development' and called for 'a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production' (UN, 2002). The Brundtland focus on consumption norms, 'standards' and levels was gradually displaced by focus on methods of production and consumption.[4] The follow-up Marrakech Process, launched in 2003, further mainstreamed such ideas of SCP and culminated in the adoption of a broad-brush and indicative 10-year Framework of Programmes on SCP Patterns (10YFP) at the 2012 UN Conference on Sustainable Development, the Rio+20 Conference. Its outcome document stated that 'poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development' (UN, 2012a).

Corporate and industrial interests have played a major role in formulation of sustainable development concepts and strategies ever since the initial stages, including in influencing understandings of SCP in UN discourse. Strong regulatory laws had been enacted in various developed countries, for example the Clean Air (1963, 1970) and Clean Water (1972) Acts in the United States. The prospect of further and stronger regulation motivated business to propagate ideas of self-regulation and market-based innovation as counterweights. From the other side, important organizations working on sustainable development sought corporate involvement because they realized that production and consumption occur largely in a context of private transactions where regulatory approaches are often slow, belated, and politically difficult. The World Business Council for Sustainable Development emerged after the Secretary General of the Rio Earth Summit of 1992, Canadian businessman Maurice Strong, appointed Swiss industrialist Stephan Schmidheiny as his chief advisor for business and industry. Similarly, the Stockholm Environment Institute (SEI), which was established by the Swedish government in 1989 and has become one of the most prominent policy-oriented organizations in the sustainable development field, had from the start a strong orientation to private business. Opening a major SEI volume on *Clean Production Strategies,* the SEI vice-director warned against treating industry as the enemy, to be curbed: 'SEI has always striven to avoid this'. Industry, like future generations, has needs, so SEI 'has made a conscious effort to seek out solutions to environmental problems which take account of the demands and the needs of industry ... and to embrace rather than alienate the sentiments of the industrial lobby'; by 'redesigning products and processes, reexamining economic activity and reorienting consumption patterns ... and the devising of policies and institutional frameworks which allow for the natural tendencies of commercial enterprise for innovation' (Kristoferson, 1993). For the industrial lobby the phrase 'sustainable consumption and production patterns' already from the 1990s meant re-engineered consumption, not reduced or constrained consumption. With sufficient 'natural' innovation then consumption can cease to impose environmental burdens and can expand without limit.

One result of the intersection between business and the UN in the formulation of sustainable development strategies has thus been a shift of emphasis away from consumption volume, a focus in Daly, to cleaner production. The theme of ever greater technological innovation permeates the corporate-centered literature. Schmidheiny (1992) himself published *Changing Course,* in which corporations were encouraged to look upon sustainability as a business opportunity, not as an existential threat. The book highlighted corporate best practices, to present sustainable development not as a choice between environmental protection and economic growth but as reconciliation of the two. This and other works emphatically opposed strong governmental regulation, in favour of allowing market forces to develop,

deliver, and deploy the innovations necessary for sustainable development. Many environmentalists too campaigned to revolutionize technical efficiency levels; for example, commissioned by the Club of Rome, Weizsäcker, Lovins, and Lovins (1997)'s *Factor Four* proposed that by adopting the best practices available the global economy could create 'four times as much wealth' without increasing resource usage.

While this literature was antipathetic to government regulation, it recognized that some essential changes in corporate beliefs and purpose would require corresponding supportive policy plus regulatory innovation; for example, the 'polluter pays principle', so that corporations come to internalize the idea that 'pollution prevention pays'.[5] It called similarly for the removal of subsidies which encourage unsustainable practices, and emphasized a lifecycle approach to product management wherein a firm's responsibility would extend to the eventual disposal or recycling of its product and where the polluting outputs of one set of industrial processes could be channeled as feeds into others (Hawken, 1994). In parallel, for retail and trading concerns the idea of product stewardship was proposed (Schmidheiny, 1992). The assertion was that the natural bases for human survival could be protected without abandoning endlessly increasing wealth creation and consumption.

When one compares these works with the ideas on SCP in subsequent official UN discourse, including in the Marrakech Process and the 10YFP on SCP, one finds great similarities. The 1987 Brundtland Commission report addressed not only moderating the environmental impacts of economic growth, but the need to fundamentally change unsustainable consumption patterns, plus the inter and intragenerational equity issues associated with growth (Holden et al., 2014; Langhelle, 1999; WCED, 1987). In contrast, current mainstream understandings of SCP center on 'doing more and better with less' and thereby 'increasing net welfare gains from economic activities by reducing resource use, degradation and pollution along the whole lifecycle, while increasing quality of life' (UNEP, 2010, p. 13). SCP 'is not about consuming less but consuming differently', declared the long-term head of the SCP department in the coordinating agency, UNEP (Hoballah, 2016, p. 3).[6] Integrated product lifecycles approaches to SCP look at production, consumption, disposal, and recycling processes together (UNEP and IISD, 2014); the separate concern with the volume of consumption disappears. Protecting the environment and aspiring to unendingly higher levels of consumption for everyone are not seen as contradictory. The now predominant faith is that economic growth can be decoupled from environmental degradation and resource depletion. Not regulation but technological innovation and transfer, via partnerships between governments, private sector and civil society, are emphasized (UNEP, 2010). With appropriate policies and incentive structures, sustainable patterns of production and consumption can, it is argued, avoid reducing growth and compromising on economic and social demands, and instead permit increased prosperity through creation of new markets, decent jobs, and opportunities for developing countries to leapfrog to better technologies (UNEP, 2010).

This shared set of ideas reflects the close involvement of business groups both in the general SCP discourse since the 1990s and in the UN-led processes through which SCP has been incorporated into the global sustainable development agenda. The central role-played by UNEP in these initiatives also explains the consistent manner in which the SCP concept has been presented in official UN discourse. The language used on SCP across key strategy documents – including the Johannesburg Plan of Implementation (UN, 2002), the Marrakech Process progress report (UNEP, 2011) and the text of the 10YFP (UN, 2012b) – has remained remarkably constant.

The specification of sustainable consumption and production in SDG 12

The standalone Goal 12 is to 'Ensure sustainable consumption and production patterns'. It includes eight specific targets (Targets 12.1–12.8) plus three targets related to Means of Implementation (12.a–12.c) (refer to Table 1). They view sustainability mainly through the lens of production efficiency, in relation to use of natural resources (12.2), food production and supply related losses (12.3), management of chemicals and wastes (12.4), sustainable corporate practices and reporting (12.6) and sustainable public procurement (12.7). With the exception of targets to reduce food waste at the consumer level (12.3) and promote (voluntary) consumer action by ensuring universal access to information for sustainable lifestyles (12.8), the Goal does not highlight unsustainable patterns of consumption. This reflects the stance in the 2030 Agenda as a whole: its Paragraph 9 declares: 'We envisage a world in which *every* country enjoys sustained, inclusive, and sustainable economic growth.' (UN, 2015; emphasis added). Monitoring sustainable tourism (12.b) has no definite action content at all in regard to tourism levels. The targets for reduced waste generation (12.5) and rationalizing fossil fuel subsidies (12.c) can cover both production and consumption, but especially the former can in practice emphasize new business opportunities rather than change of consumer lifestyles.

The language in the targets emphasizes voluntary and indirect policy approaches for achieving SCP patterns: to 'encourage sustainable corporate practices and reporting' (Target 12.6), 'promote' sustainable public procurement (Target 12.7), or provide people with 'relevant information and awareness' (Target 12.8). The 10YFP on SCP, whose implementation is the focus of Target 12.1, is a purely voluntary initiative.[7] With the possible exception of measures to 'rationalize' inefficient fossil fuel subsidies (Target 12.c), there is no explicit acknowledgement of the need for regulatory changes to enforce sustainable practices and to restrict or prohibit unsustainable ones. Akenji and Bengtsson (2014) note that neither the 10YFP nor SDG 12 give attention to key drivers of unsustainability, such as the business strategy of built-in obsolescence.

Table 1. SDG 12 targets and indicators

SDG 12 Target	Indicator
12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	12.1.1 Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies
12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Material footprint, material footprint per capita, and material footprint per GDP 12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	12.3.1 Global Food Loss Index (GFLI)
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their lifecycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.1 Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement 12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled
12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	12.6.1 Number of companies publishing sustainability reports
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	12.7.1 Number of countries implementing sustainable public procurement policies and action plans
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	12.8.1 Extent to which: (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in: (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production	12.a.1 Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies
12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products	12.b.1 Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools
12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities	12.c.1 Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels

(Source: UN, 2015)

Many of the targets call for substantial improvements without making specific quantified commitments. Rather, they seek broadly defined outcomes: to 'achieve' the sustainable management and efficient use of natural resources (Target 12.2) and environmentally sound management of chemicals and all wastes (12.4), 'ensure' universal access to relevant information and awareness for sustainable development and lifestyles (12.8), or 'reduce' food losses (12.3), chemical and waste pollution (12.4) and waste generation (12.5). Target 12.3 to halve per capita global food waste at the retail and consumer levels by 2030 is an outlier in this regard.

Underlying SDG 12 is a faith in human ability to manage the adverse environmental impacts of unending economic growth, including in already rich countries, through technological innovation and cooperation (see, e.g., Targets 12.1 and 12.a), efficient resource use (Target 12.2) and cleaner production processes (Targets 12.3, 12.4, 12.5 and 12.c). Many of the targets incorporate ideas from the 1990s discussions around product design (12.5), lifecycle approaches (12.3, 12.4 and 12.5) and sustainable corporations (12.6 and 12.7).

In sum, the text of SDG 12 and its targets adheres closely to ideas developed and popularized by business-oriented

norm entrepreneurs since the 1990s, whose main audiences were, first, government officials to whom the message was to downplay regulation as a tool for promoting sustainability and, second, corporate leaders for whom the message was that sustainability should be embraced as a profitable way of thinking about their businesses.

The formulation of Sustainable Development Goal 12: The Open Working Group of the General Assembly on Sustainable Development Goals

The OWG of the General Assembly developed an SDGs proposal through a series of 13 sessions between March 2013 and July 2014, as an intergovernmental forum comprised of nominated (sets of) member countries representing the five UN regional groupings (UN, 2014a). Representatives of the UN Specialized Agencies, international organizations and the UN Major Groups[8] and NGOs in consultative status with the UN Economic and Social Council participated as observers, often contributing detailed representations and proposals. The OWG sought to reconcile the wide range of views and build consensus among members on a concrete proposal for goals and targets. Its recommendations on SDG 12 were fully adopted in the subsequent intergovernmental negotiations in New York and endorsed in the following Summit, reflecting the unified insistence by the developing countries bloc on not reopening discussion on basic issues (Dodds et al., 2017). The seventh OWG session, covering 'sustainable consumption and production (including chemicals and waste)', and negotiations during the ninth to thirteenth sessions are particularly relevant for our purposes. The documents from these sessions – presentations, statements by member states and other actors and session summaries – show the following key SCP-related debates.

SCP as a standalone goal or a crosscutting theme in the SDGs

While broad consensus existed among OWG members and observers on the crucial importance of SCP patterns, the choice between a standalone goal or a crosscutting theme across different goals was debated at length. The High-level Panel of Eminent Persons on the Post-2015 Development Agenda and the UN Sustainable Development Solutions Network had called for SCP to be a crosscutting theme, with a range of SCP-related targets under different goals. Many developed countries echoed these arguments in the OWG sessions.

The joint statements by Canada, Israel and the USA argued for targets under many different goals, given the complex and overarching character of SCP.[9] The troika of Australia, the Netherlands and the UK argued similarly[10]; as did Poland and Romania.[11] Though the group of France, Germany and Switzerland did not explicitly oppose a standalone goal, their representations focused on integrating SCP in the development agenda within a proposed goal on 'sustainable and inclusive growth' and in areas like energy, health, food security, water and sanitation, climate change and education.[12] Several other developed countries – including Greece, Sweden, Bulgaria and Croatia, and the troika of Denmark, Ireland and Norway – followed a similar approach. Among developed countries, the representation by Italy, Turkey and Spain was one of few calling for a separate goal, both to raise SCP's visibility and better capture its breadth, as certain aspects would not fit under other goals.[13] Finland argued that given the ambitious nature of the SCP theme and its linkages to all three sustainability dimensions, it should be both a standalone goal and incorporated in other goals.[14]

Many developing countries pushed emphatically for a standalone goal, as in statements by Indonesia, Iran, Saudi Arabia, Brazil and Nicaragua, Bangladesh, Cyprus, Singapore and the UAE, and regional groupings like the Caribbean Community (CARICOM), Economic Community of West African States (ECOWAS) and the Southern African countries. Several representations highlighted the need to also mainstream SCP in other goals. The troika of India, Pakistan and Sri Lanka, plus India in separate statements, argued like Finland: SCP patterns were crucial, so the objective should be both a separate goal and mainstreamed in the SDGs.[15] There remained no overall consensus among developing countries, so the main G77-and-China group never lent explicit support for a standalone goal.[16] But, suggest Dodds et al. (2017, p. 34), for a large set of countries 'the goal on sustainable consumption and production became an important test of commitment to a universal agenda' and a way to underline responsibilities for rich countries too.[17]

Among the OWG observers, the UN Inter-Agency Technical Support Team of specialized UN agencies argued for a crosscutting approach. It proposed 'integrated' goals containing targets that seek to decouple economic development from natural resource depletion and environmental degradation (UN, 2014b, p. 8). Similarly, a detailed proposal by the BioRegional Development Group[18] on behalf of the Beyond 2015 coalition – a global civil society campaign – suggested that the SCP theme might need not a standalone goal but integration into other goals (BioRegional, 2013). On the other hand, the joint statement by European NGOs argued for a standalone goal, that would help implementation of the 10YFP on SCP.[19]

A widely read paper by Akenji and Bengtsson (2014) suggested that a crosscutting approach helps to address the interlinkages between sustainable development challenges and ensure that SCP is adequately embedded; whereas a standalone goal facilitates integration of economic, social, and environmental dimensions and provides greater visibility and political attention. In the end, both paths were adopted. The choice for a standalone SCP goal, in the OWG proposal and the final SDG Declaration, matched the demand by many developing countries to highlight tasks where developed countries must take a lead. At the same time, targets with direct relevance to SCP were included under many other goals. UNEP and IISD (2015) identify 13 SCP-related targets under 12 goals besides SDG 12. Many of these address issues also tackled by SDG 12, including resource use and efficiency, education for sustainable development, chemical and waste pollution, and sustainable

tourism. The outcome likely represents an attempt to balance the contrasting positions and an acknowledgement of SCP's broad nature. Akenji and Bengtsson (2014) warn it could also become a source of confusion.

Respective responsibilities of developed and developing countries

The OWG discussions revealed a divide between developed and developing countries over which countries should bear primary responsibility for efforts to achieve SCP. In 2011, the UN Commission on Sustainable Development had failed to agree any outcome document on SCP (Dodds et al., 2017). Now, in the OWG, developing countries consistently reiterated that the Rio principles, in particular the principle of Common But Differentiated Responsibilities (CBDR), should be recognized as guiding the SDGs.[20] The G77-and-China group as well as the individual representations by most developing countries further argued that imbalances and inequities in global consumption patterns and lifestyles required that developed countries must lead on SCP, with developing countries following but without compromising their priorities of poverty eradication and socioeconomic progress.[21] For instance, the presentation by India, Pakistan, and Sri Lanka stated: 'just like poverty eradication and hunger are to be tackled primarily in developing countries, similarly the battle against unsustainable patterns of consumption will be won or lost in the developed countries.'[22] Brazil and Nicaragua called for 'addressing consumerist lifestyles and the culture of "overconsumption" created and largely fostered by developed countries'.[23] In addition, developing countries emphasized ensuring adequate Means Of Implementation, particularly financial resources and technology transfer from developed countries.[24]

A number of developed countries – including Japan, Portugal, Poland and Romania, and the troika of Australia, the Netherlands and the UK – claimed that CBDR applied only to multilateral environmental agreements, not to the SDGs.[25] Most developed countries' statements on SCP did not explicitly mention CBDR, but emphasized the universal relevance and nature of the challenge of achieving SCP patterns, while acknowledging differences in the needs and capabilities of different countries.[26] Many of these statements stressed the benefits developing countries could derive from taking action, in terms of cleaner growth, green jobs, and transition to more sustainable practices and technologies. Statements by Sweden, Finland and the troika of France, Germany and Switzerland did acknowledge the need for developed countries to take the lead.

Differences over developed and developing country responsibility were also apparent in proposals for specific targets. Representations by China, Indonesia and Kazakhstan, India, Brazil and Nicaragua, and the troika of Argentina, Bolivia and Ecuador all argued for explicit language establishing the primary responsibility of developed countries in implementing targets in areas like sustainable lifestyles, economic incentives for SCP patterns, corporate sustainability, waste management, and natural resource efficiency.[27] They argued that specific percentage improvement targets be restricted to developed countries, and for removal or reformulation of targets using concepts that were not multilaterally defined – for instance, 'culture of sufficiency', 'sustainable lifestyles' and 'sustainable supply chains' – and that could potentially result in additional obligations or trade restrictions on developing countries. In contrast, many developed countries' statements made proposals for additional SCP targets. The outcomes of the 2013–15 discussions in New York can be seen as a compromise.[28]

All the SDG 12 targets are universally applicable, with some emphasis on special developed country responsibilities for 10YFP implementation and providing scientific and technological support to developing countries. However, the targets are vague and diluted. Almost all percentage references in targets were removed, so countries have not committed to clear quantified improvements. For instance, target 12.5 aims to 'substantially reduce' waste generation, unlike previous proposals for a specific percentage reduction in overall and/or per capita waste. Similarly, calls for a specific percentage increase in corporate sustainability reporting were reduced to just an 'increase' in this practice; and the final target 12.6 only aims to 'encourage' sustainability reporting by companies. Most terms and concepts opposed by developing countries have also been removed from the targets, leaving their intent and scope in many cases unclear. In other cases too, the ambition of targets appears diluted. The final target 12.3 aims to halve per capita global food waste at the retail and consumer levels, but excludes the similar reduction in production-related losses that was initially proposed. Target 12.7 seeks to 'promote' sustainable public procurement practices, rather than to '(substantially) increase' the share of such procurement as in earlier proposals. An exception to this trend is Target 12.8, which seeks to 'ensure' universal access to information and awareness for sustainable development and lifestyles, rather than merely 'redouble efforts' as earlier proposed. A likely consequence of such changes is that progress by countries on achieving SCP patterns will depend largely on their specific interests and priorities, rather than on effective obligations created under SDG 12. The implied theory of change is that the global framework will channel attention and stimulate country-specific commitments that vary according to local opportunities and dynamics.

The central position of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns

OWG members agreed that the SDGs should be consistent with existing international laws, frameworks and commitments (UN, 2013). During SCP-related discussions, many countries therefore stressed the importance of implementing and ensuring resources for the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) that had slowly emerged via the Marrakech Process after the 2002 Johannesburg summit, under UNEP supervision (UN, 2014c). After failure to reach agreement in

the 2011 meeting of the UN Commission on Sustainable Development, the 10YFP was adopted at the 2012 Rio Conference. It has been envisioned as a 'global framework of action to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP) in both developed and developing countries' (UNEP, undated).

The 10YFP has become target 12.1 under SDG 12, that calls now for its universal implementation. Its components of sustainable public procurement, consumer awareness, sustainable lifestyles, sustainable tourism, and food waste reduction are also explicitly addressed as other SDG 12 targets. More broadly, implementation of the 10YFP can contribute to the achievement of most SDG 12 targets, particularly those relating to use of natural resources, waste generation, sustainable corporate practices and reporting, and scientific and technological support to developing countries.[29]

The other SDG 12 targets do not go fundamentally beyond the 10YFP, retaining its emphasis on voluntary, multi-stakeholder cooperation in relevant areas and on green economy style ideas. For example, target 12.6 merely 'Encourage[s] companies ... to adopt sustainable practices.' It reduces even the much narrower theme of corporate sustainability reporting to mere 'encouragement', diluting language proposed in initial OWG discussions, in response to developing countries' demands for consistency with the Rio+20 outcome document.[30] Leading developed countries had in turn resisted inclusion of significant provisions on corporate environmental responsibility and on addition of sustainability criteria into the work of finance agencies during the Rio+20 negotiations (Dodds et al., 2014); the US government blocked a proposal for obligatory environmental reporting by companies (Dodds et al., 2014). In contrast to resistance in these areas, 'right from the first informal consultation [for Rio+20] the link between sustainable consumption and production and the green economy [had] emerged as an area where most progress could be made' (Dodds et al., 2014, p. 159); SDG 12 reflects this.

Ensuring conformity with existing international agreements has influenced the scope and language of other SDG 12 targets too. For instance, target 12.4 on chemicals and hazardous waste management is focused on commitments made under relevant international conventions (specifically, the Basel, Rotterdam and Stockholm Conventions). The text of this target, including the call for its achievement by 2020, is in line with the Strategic Approach to International Chemicals Management (SAICM) and the Johannesburg Plan of Implementation (UN, 2002).

The SDG 12 targets largely represent what major corporations and patron governments have already proposed or accepted in other fora, rather than major new commitments. SDG 12 does add an extra degree of attention and encouragement to these existing commitments, while remaining at the level of encouragement: 'We encourage the implementation of the 10-Year Framework of Programmes' (UN, 2015, para. 28). Targets are global – for all countries – but 'aspirational' (UN, 2015, para. 55), wishes.

Formulating indicators for Sustainable Development Goal 12

The finalization of SDGs and corresponding targets has been followed by a process of developing indicators at the global level to monitor progress. Formulation of this Global Indicator Framework (UN, 2017a) was led by the intergovernmental Inter-agency and Expert Group on SDG indicators (IAEG-SDGs), created by the UN Statistical Commission in March 2015. For SDG 12, a total of 13 indicators had been identified (see Table 1), as of end-2017. Many match those in the monitoring and evaluation framework developed for the 10YFP (UNEP, 2016). Nearly all these global SDG 12 indicators are, however, not yet well-developed and operationalized. At the time of their inclusion in the Global Indicator Framework, 11 out of 13 were classified as Tier III: an internationally agreed methodology for their measurement did not exist. Indicator 12.2.2 on domestic material consumption was classified as Tier II (established methodology exists but data is not easily available), while only indicator 12.4.1 on reporting under multilateral environmental agreements on hazardous waste and chemicals was Tier I (both an established methodology and data exist) (UN, 2016b). As of May 2018, ten SDG 12 indicators continued to be classified as Tier III, alongside one in Tier II, and two in Tier I (UN, 2018).

The IAEG-SDGs indicator selection and development process

The IAEG-SDGs too relied on an intergovernmental process, here involving 28 National Statistical Offices (NSOs) from all the five UN regional groups. Members developed the Global Indicator Framework through four meetings between June 2015 and November 2016. Open consultations were also conducted with observers (countries which were not IAEG-SDGs members, UN Regional Commissions, and various regional and international organizations), and the UN Major Groups and other civil society actors.[31] Most SDG 12 indicators were discussed and finalized already during the first two IAEG-SDGs meetings – in New York in June 2015 and Bangkok in October 2015 – and the associated consultations.

The specialized UN agencies – in particular, UNEP (as coordinating agency for SDG 12), the Food and Agricultural Organization (FAO) and the UN World Tourism Organization (UNWTO) – were closely involved in SDG 12 indicator selection. They provided an initial compilation of proposed indicators for discussion by IAEG-SDGs members and later suggested revisions to the expert group's proposals (UN, 2016a). UNEP is also centrally involved in the ongoing methodological development of SDG 12 indicators currently classified as Tier II and III. Other UN agencies coordinate particular parts of this work, such as the FAO (indicator 12.3.1), the UN Statistics Division (indicators 12.4.2 and 12.5.1), and the UN Conference on Trade and Development (indicator 12.6.1). They consult other bodies with specific expertise. For instance, the Global Reporting Initiative (GRI), Sustainable Stock Exchanges Initiative and member governments of

the Group of Friends of Paragraph 47 (GoF47) have participated in the discussions on indicator 12.6.1 on company sustainability reporting (UN, 2017b).

Since the Global Indicator Framework is very recent, we concentrate on the preparation debates and outcome. This is supplemented by an examination of the current process and work plans for further development of Tier II and III indicators. It is too early to identify impacts, let alone from the major complementary work expected at country level. Even for the Netherlands, that sees itself as a leader in sustainability research and awareness, its 2017 Voluntary National Review on measuring national performance in regard to the SDGs showed large gaps in data coverage for SDG 12, even after sometimes turning to substitute indicators, and great shortcomings in performance in areas where data exists.[32]

Analyzing SDG 12 Indicators – mismatches between targets and indicators

The SDG 12 indicators show major deficiencies, in particular inadequate coverage of corresponding targets and a checklist orientation which privileges counting of reports over examination of their content and quality. Specifically:

- Target 12.3: the Global Food Loss Indicator (Indicator 12.3.1) is a measure of production-related food losses. In the IAEG-SDGs discussions, some countries commented on its lack of clarity in definition and coverage, and on problems of data availability and reliability.[33] However, it was ultimately adopted in its original form. It does not cover the other component of Target 12.3, to halve per capita global food waste at the retail and consumer levels by 2030. An additional indicator on Per Capita Food Waste, suggested by UNEP and the World Resources Institute, was not accepted, in part due to concerns about data quality and availability.[34] Further methodological development of the Global Food Loss Indicator by the FAO does not include plans for an additional indicator or for methodology to measure food waste (UN, 2017b).
- Target 12.4*:* the initial proposal for indicator 12.4.1 on management of chemicals and hazardous wastes was restricted to hazardous chemicals and to reporting on, rather than compliance with, relevant international agreements. This became modified through the IAEG-SDGs discussions, to cover all chemicals and to count the number of parties meeting their commitments and obligations for transmitting information under these agreements. Concerns about limiting coverage to the small proportion of chemicals covered by existing agreements and the UN member states that are parties to them remain unaddressed.[35] The final indicator 12.4.1 falls short too in terms of target 12.4's call for significant reduction in hazardous chemical and waste pollution. In response, the IAEG-SDGs adopted an additional indicator 12.4.2, on the generation and treatment of hazardous waste.[36]
- Target 12.5, to substantially reduce waste generation, is monitored only through the national recycling rate and tons of material recycled (Indicator 12.5.1). Since data on total waste recycled are currently unavailable, the amount and rate of municipal waste recycled are likely to be used as a proxy (UN, 2017b). This indicator too remained unchanged through the IAEG-SDGs discussions, despite concerns that it did not match the target's emphasis on prevention and reduction of waste, and despite suggestions for an additional or alternative indicator on waste generation.[37]
- Target 12.c: indicator 12.c.1 estimates the amount of fossil fuel subsidies as a share of GDP and total national expenditure on fossil fuels, but does not focus on subsidies that are 'inefficient' and 'encourage wasteful consumption' as mentioned in the target. Questions about how subsidies will be defined and measured were raised by various members and observers.[38] The indicator approved by the IAEG-SDGs is unchanged from the original proposal and remains loosely defined, likely due to the practical difficulties in developing a widely accepted methodology and the political sensitivities in relation to fossil fuel subsidies.
- Targets 12.1 and 12.7: indicators for targets related to implementation of the 10YFP (Indicator 12.1.1) and promotion of sustainable public procurement (Indicator 12.7.1) count the number of countries with relevant policies and action plans, but do not evaluate actual progress made in these areas, as required by the corresponding targets.[39] That would require a focus on more qualitative and complex aspects, including the contents of the documents and actual government commitments and funding. However, both these indicators remained essentially unchanged through the IAEG-SDGs discussions; suggestions for stronger, and more comprehensive indicators were not accepted. For indicator 12.7.1, a proposal to instead measure the share of sustainable public procurement in total public procurement was rejected.[40] A proposal to modify indicator 12.1.1 to directly measure national progress on implementation of SCP action plans was similarly not accepted.[41]
- Target 12.4: for the target on management of chemicals and hazardous waste, the indicator about transmission of information required under relevant international agreements (Indicator 12.4.1) does not cover the extent of compliance or the quality of the information provided.[42]
- Target 12.6: the indicator to monitor progress in adoption of sustainable corporate practices and reporting (Indicator 12.6.1) is the number of companies publishing sustainability reports. It says nothing about the quality and accuracy of these reports or, as envisioned in the corresponding target, whether companies are adopting sustainable business practices.[43] Suggestions for an indicator which calculates the share of (large) companies that publish sustainability reports were rejected.[44] Apart from a clarification of the focus of the indicator, as about sustainability reports rather than sustainability-related reporting more generally, it remained unchanged through the IAEG-SDGs discussions.

The above analysis highlights numerous instances where IAEG-SDGs members and observers raised concerns about the SDG 12 indicators proposed by the UN Specialized Agencies. Yet agreement on the abovementioned indicators – in their

originally proposed form or with minor changes – was achieved fairly early in the IAEG-SDGs process. However, a few indicators saw considerable further debate and/or became significantly modified.

- Target 12.2: the proposal to use material footprint (MF) (Indicator 12.2.1) to measure Target 12.2 on sustainable management and efficient use of natural resources relies on a methodological framework currently implemented by NSOs in the EU and Japan. Its use was challenged by some IAEG-SDGs members, including due to lack of information about the indicator, particularly in developing countries.[45] Suggestions included using an indicator linked to targets under existing international agreements on biodiversity conservation,[46] and indicators monitoring specific natural resources like fish stocks, timber, and water.[47] While these suggestions were not accepted, the final list of SDG 12 indicators includes an additional indicator, 12.2.2 on Domestic Material Consumption.[48] Taken together, this pair of indicators can help to distinguish between natural resources pressures due to domestic consumption and to the extraction of resources for export to other countries.
- Target 12.8: indicator 12.8.1 for the target on information and awareness for sustainable development and lifestyles underwent substantial change. Countries argued that the initial proposal merely counted the number of countries reporting inclusion of relevant topics in their formal education curricula.[49] A revised indicator sought to measure the percentage of educational institutions with formal and informal curricula on sustainable development and lifestyles. A suggestion to utilize reporting mechanisms under existing multilateral frameworks for promoting education on environmental awareness was not adopted[50], but indicator 4.7.1 under the Education goal was adopted instead.[51] This is broader in scope, covering mainstreaming of global citizenship education and education for sustainable development in national education policies, curricula, teacher education, and student assessment.
- Targets 12a, 12b: proposals for indicators 12.a.1 and 12.b.1 to measure progress on the means of implementation faced substantial concerns regarding unclear definitions, calculation methodologies, and data availability.[52] Many countries called for indicator 12.a.1 on green patent applications to be replaced since it did not measure scientific and technological support to developing countries, as envisioned in target 12.a.[53] The final approved indicators are more closely aligned with the corresponding targets.[54]

Assessment of the IAEG-SDGs process

The limited scope and ambition of SDG 12 indicators reflect, in part, the inevitable challenges – practical and political – in monitoring the Goal's broad agenda through a small number of measurable indicators. Features of the IAEG-SDGs selection process seem to have played a role too. The purpose of the process was to relatively quickly secure acceptance of a list that was acceptable to all members, to allow the SDGs exercise to be deemed operative. The relatively short period of time allotted for securing agreement may have led countries to limit their opposition, to only the most contentious cases. Indicators are in principle open to update in 2020 and 2024. Moreover, since the selection of indicators to measure global progress does not oblige member countries to adopt only those indicators at the national level, they were more willing to accept proposals despite their concerns. In addition to the global monitoring framework, it is expected that member states will develop complementary indicators to track progress at national and regional levels. Further, for SDG 12 in particular, its sheer breadth and aspirational quality may explain why there was less protracted disputation at this stage than for some other goals. Most SDG 12 indicators were adopted despite significant remaining concerns about their definitions, calculation methodologies and data availability.

The relatively more political stages of SDG 12 indicator selection, that involved active NSO participation, have been followed by a primarily technical process to develop and reach consensus on Tier II and III indicators, led by the specialized UN agencies. For many indicators, this concerns methodological frameworks and datasets that are already being developed or implemented by various actors – UN agencies, the 10YFP, private sector organizations and NSOs of some developed countries. Participation by other NSOs in this process has been very limited. However, in most instances, the final proposed methodologies have to secure intergovernmental approval at the UN Statistics Commission. Work on indicators related to 10YFP implementation (indicator 12.1.1), food losses (indicator 12.3.1), sustainable corporate practices and reporting (indicator 12.6.1) and sustainable public procurement (indicator 12.7.1) has been independent of NSOs. Data for them is being compiled through surveys commissioned under the auspices of the 10YFP administered through UNEP or through non-governmental sources (UN, 2017b). In such cases, it remains unclear if and how NSOs will be involved in data collection, validation and reporting. Others – like indicator 12.4.2 on hazardous waste generation, indicator 12.5.1 on waste recycling and indicator 12.8.1 on access to education on global citizenship and sustainable development – rely on official data sources, but NSOs have not so far been directly involved in methodological development (UN, 2017b). Work to adapt and build consensus on indicator 12.2.1 on material footprint and indicator 12c.1 on fossil fuel subsidies, around the existing methodological frameworks for these indicators, does involve NSOs (UN, 2017b). Limited NSO participation in development and operationalization of many SDG 12 indicators would raise questions about the extent of national ownership of ongoing monitoring and reporting, which was earlier specified as a key objective by the IAEG-SDGs (UN, 2016a).

Review and concluding remarks – promoting transformative change?

SDG 12 is an extremely broad goal. Both politics and technical limitations have determined how it has emerged and been operationalized.

First, whereas most other SDGs have been achieved to more or less satisfactory extents in at least some jurisdictions, SCP patterns have not yet been realized anywhere (see e.g., Akenji and Bengtsson, 2014; Mignaqui, 2014). The transition path is therefore unclear. Many scholars, for example Daly (1973) or Redclift (2002), have argued that pursuit of such a transformation will require a fundamental rethink of not just existing production and distribution processes, but also the culture of ever-growing consumption and the underlying structures of societal organization and motivation, including by building an ethical orientation towards consuming less while 'living more' and more equitably. Recent studies of the material footprint (MF) indicator conclude that the developed countries have an MF of around 25 tons per capita while developing countries have an average of 10–15 tons per capita, with India being one of the lowest at 3.7 tons per capita (Wiedmann et al., 2015). If, as one analysis argues, a sustainable level of MF is around 10 tons per capita (Lettenmeier et al., 2014), it appears optimistic to assume that, given that lifting people out of poverty will necessarily increase their consumption levels, technology and process-based improvements alone can suffice for the transition to sustainability. As the SDG 12 targets do not deal adequately with the goal's requirements, especially with regard to consumption, they fail to engage the wider public with an urgent agenda for discussion, thereby increasing the risk that even the necessary technological and process improvements will be too little and too late. While fundamentally reorienting consumer societies was a major theme in various fora that fed into the OWG process, the targets have rather little to say on it.

Second, we saw that in this respect SDG 12 continues the intellectual trajectory for SCP which emerged from 'green business' circles in the 1980s and 1990s (a current variant is 'eco-modernism': Visscher and Bodelier, 2017): technical innovations will supposedly allow consumption and production to grow indefinitely. This perspective, articulated in many business and business-oriented circles, long ago became the predominant understanding of SCP in UNEP, the coordinating agency for SDG 12 discussions, and in for example the post-2002 Marrakech Process. Major new pro-business lobbying or interventions in 2012–15 were not required for this perspective to predominate in the formulation of SDG 12.

Third, what SDG 12 adds are: heightened attention and universal scope, and incorporation to some degree of the principle of CBDR. The debate on whether to have a standalone SCP goal linked closely to that on whether the Rio principle of CBDR would apply in the SDGs. We saw from the OWG discussions that the international relations of establishing SDG 12 mirror those in the climate change negotiations: developed countries espoused a notion of shared responsibility while many developing countries emphasized differentiated responsibility and the duty and necessity for developed countries to act first and do more. Eventually, the September 2015 UN General Assembly resolution on the 2030 Agenda for Sustainable Development did include a commitment to the Rio principles. The push for a standalone goal on SCP, with developed countries implicitly bearing primary responsibility for its implementation, represented a partially successful attempt by developing countries to ensure that the principle of CBDR was underlined in relation to SCP.

Fourth, this outcome is also a reaction to an internal tension in the market-induced approach to innovation, in which innovators are partly motivated by potential monopolistic rents accruing via intellectual property rights but where this limits diffusion, especially to developing countries. Concern about their ability to access green technologies was an important issue for developing countries during the post-MDGs negotiations. Many countries, not least India, were adamant about having SCP as a standalone goal, partly in order to strengthen the visibility of rich countries' responsibility to share technology needed for developing countries to produce cleanly. SDG 12 addresses these concerns in target 12.a: to 'support developing countries to strengthen their scientific and technological capacities to move towards more sustainable patterns of consumption and production'. The target and its indicator talk about 'support' in broad terms, not specifically technology transfer to developing countries; but SDG 17 adds targets on technology transfer. The SDG 12 language is oriented towards heightening attention rather than setting a directly actionable target, that anyway would remain largely dependent upon patent-holding private corporations' strategic calculations.

Fifth, within this standalone goal, the disagreements and maneuverings in the OWG discussions reflected deeper disagreements about the nature of SCP and the paths to reach it, including the ethical and production choices to be made and the distribution of costs and benefits of these efforts. Thus, for many developed countries, attempts to conceptualize SDG 12 as a 'developed country' goal were inconsistent with the universal nature of the SDG agenda. Given that there is limited clarity and consensus on how SCP should be operationalized, the discussions did not lead to an ambitious set of binding and targeted commitments. The negotiations brought instead considerable dilution of the scope and ambition of targets. These remain universal in nature – all additional references calling on developed countries to 'take the lead' have been removed, with the exception of target 12.1 on implementation of the 10YFP – but they are vague; and developing relevant indicators to measure and stimulate progress will at best be a long-drawn process.

Sixth, the removal of almost all percentage references in the targets means that countries are not committing to specific quantified improvements. So progress on achieving SCP patterns depends on the interests and priorities within individual countries. Instead of calling for strenuous commitments, the approach seems to rely on hopes that harnessing existing and soon-to-be-developed technologies will obviate the need for sacrifices and politically difficult discussions. It emphasizes voluntary, informed consumption and production decisions, rather than regulation. A sister hope is that the targets will trigger processes of domestic mobilization and country-specific reform. They chart territory for government and corporate action, and require corresponding innovation also in indicators, for use in demanding as well as monitoring progress.

Seventh, the weakness as yet of most of the globally formulated indicators reflects also the problems of operationalizing vague but ambitious and novel targets, and the limited political interest in a technical process in which the specialized UN Agencies and NSOs predominate. Moreover, the process for deciding upon and specifying the indicators was highly compressed in time. Some existing indicators that are being tested in other forums, but which only peripherally or partially address the corresponding SDG 12 targets, have been adopted. Several of these are proxies. In several areas, such as corporate reporting, the indicators are merely publication counts. In addition, since the NSOs and other responsible parties do not have a clear and resourced mandate to collect the required data, there can be little confidence that it will become widely available soon. Substantive debates and refinement of SDG 12 indicators might occur in other forums. If so, how far will national governments feel invested in implementing the monitoring framework, and consequently, how much impact will SDG 12 have in leading a transition to sustainability?

In sum, given the pressures to reach an agreement despite strongly conflicting interests and technical and practical challenges, the SDG 12 targets and indicators have emerged with, as yet, few numbers and too little power to be truly transformative in regard to global sustainability (cf. Fukuda-Parr and Yamin, 2015; Merry et al., 2015). On the positive side, explicit incorporation of SCP in the SDGs represents a mainstreaming of important initiatives which have been underway in diverse fora. While most of the targets under SDG 12 do not yet have satisfactory indicators, enunciation of the targets may spur further work and even some real actions. The indicator specification and target monitoring need ongoing improvement, including at national levels, where there will sometimes be scope for augmenting the targets too. At best, SDG 12 might yet evolve to provide a space for focused public and agency attention, and for demanding innovation and accountability.

Notes

This paper benefited from support to the special issue project from: Friedrich-Ebert-Stiftung New York Office; UNDP; University of Oslo Centre for Environment and Development and the Environment; Julien J. Studley Grant to The New School Graduate Programs in International Affairs.

1. We acknowledge that the terminology of 'developed' and 'developing' countries provides a contentious and inadequate description. Our use of these terms reflects their widespread and predominant use amongst actors involved in preparing the SDGs.
2. The OWG proposal for SDGs and targets was an input to the Intergovernmental Negotiations of the UN General Assembly to finalize a 2030 Agenda for Sustainable Development. We focus more on the OWG since the later process involved little further discussion on SCP. For SDG 12, the final text adopted by the UN General Assembly is identical to the OWG proposal.
3. The OWG and IAEG documents and proceedings are available online, through the UN Sustainable Development Knowledge Platform (https://sustainabledevelopment.un.org/focussdgs.html) and the UN Statistics Division (https://unstats.un.org/sdgs/iaeg-sdgs/).
4. The insertion of the words 'patterns of', rather than simply talking of 'unsustainable production and consumption', may steer attention towards the methods rather than levels of production and consumption.
5. The 3M Corporation coined the phrase 'Pollution Prevention Pays' in 1975, arguing that avoiding pollution at the outset is more environmentally effective and economical than *ex post* pollution control.
6. Arab Hoballah was head of the SCP division in UNEP from 2005 to 2016.
7. The 10YFP document, adopted at the 2012 Rio+20 conference, stated that 'programmes included in the 10-year framework of programmes on sustainable consumption and production patterns are voluntary' (UN, 2012b, p. 8). The conference outcome document used similar language on their voluntary nature (UN, 2012a).
8. Since their establishment at the Rio Earth Summit in 1992, the UN Major groups – including e.g. non-governmental organizations, local authorities, workers and trade unions, business and industry, scientific and technological community, farmers – have been the primary means of societal engagement in UN Conferences on Sustainable Development.
9. Statements in OWG Sessions 7 and 10.
10. Statements in OWG Sessions 7, 10 and 11.
11. Statement in OWG Session 11.
12. Statements in OWG Sessions 7 and 10.
13. Statement in OWG Session 7.
14. Statement in OWG Session 10.
15. Statements in OWG Sessions 7 and 10.
16. Divergences between the stances of individual countries/troikas and of their broader country-groupings reflect also the unconventional format of the OWG which provided greater scope for countries to place their own positions for discussion. However, on highly contentious issues like Common But Differentiated Responsibilities (CBDR), there was considerable consensus within both the developing and developed country groupings, largely mirroring stances adopted in other UN negotiations on the environment.
17. Donoghue observed many of the interactions, in the OWG as Ireland's UN Ambassador and as co-chair of the Intergovernmental Negotiations on the 2030 Agenda that followed submission of the OWG's report.
18. Statement in OWG Session 7.
19. Statement in OWG Session 7.
20. See, in particular, statements by the G77-and-China (in OWG Sessions 9, 10 and 11), Brazil and Nicaragua (in Sessions 10 and 11), India (in Sessions 9 and 10) and Argentina-Bolivia-Ecuador (in Session 11).
21. Statement by the G77-and-China in OWG Session 11.
22. Statement by India-Pakistan-Sri Lanka in OWG Session 7.
23. Statement by Brazil-Nicaragua in OWG Session 11.
24. Statements by Iran, China-Indonesia-Kazakhstan, and the G77-and-China (all in OWG Session 11).
25. Statements by Australia-Netherlands-UK, Poland-Romania, Japan, and Portugal (all in OWG Session 9).
26. Statements by Poland-Romania (in OWG Sessions 9 and 11), Slovenia-Montenegro (in Session 10); Greece (in Session 10); Finland (in Sessions 9 and 10); the European Union (in Session 7); and Sweden (in Session 9).
27. Statements made by China-Indonesia-Kazakhstan (in OWG Session 11); India (in Session 11); Brazil-Nicaragua (in Sessions 10 and 11); and Argentina-Bolivia-Ecuador (in Session 11).
28. For example, according to Dodds et al. (2017) the US government eventually accepted reference to CBDR in return for revised text on biodiversity.
29. For a summary of these linkages, see http://www.unep.org/10yfp/about/10yfp-and-sdgs.
30. Statements by Argentina-Bolivia-Ecuador; China-Indonesia-Kazakhstan; and India (all in OWG Session 11).

31. For a detailed overview of the IAEG-SDGs indicator selection process, see UN (2016a, pp. 4–6).
32. For example, in regard to the proxy adopted for all waste-recycling, only a quarter of municipal waste is recycled (Statistics Netherlands, 2017). For the SDGs as a whole, only a third of the indicators are currently included in Netherlands statistics.
33. Statements to the IAEG-SDGs by Colombia, Denmark, Japan, US, Brazil, France, Germany, India, China and Cuba. Similar reservations were expressed during the Open Consultation on Green Indicators facilitated by the IAEG-SDGs. [Statements by IAEG-SDGs member countries were made on behalf of their respective sub-regional groupings. For brevity in the notes, we mention only the country making the statement.]
34. Statements to the IAEG-SDGs by UNEP and WRI.
35. Statement to the IAEG-SDGs by Denmark and statement during the Open Consultation on Green Indicators by the UN Special Rapporteur on Hazardous Substances.
36. Statements to the IAEG-SDGs by Colombia, France, Canada, Ecuador, Switzerland, Eurostat, Cuba, India and Germany.
37. Statements to the IAEG-SDGs by Germany, Denmark, Colombia, Canada, UN Statistical System. Organizations, Eurostat, Mexico, India, France and Kyrgyzstan. Similar statements were made during the Open Consultation on Green Indicators by various CSOs.
38. Statements to the IAEG-SDGs by Japan, Brazil, UK, Estonia, Australia, Germany, France, IMF, Cuba, China and Paraguay.
39. Statements to the IAEG-SDGs by Colombia and Cuba (on indicator 12.1.1), and by Denmark, Brazil, Germany and Cuba (on indicator 12.7.1).
40. For the proposal, see statement to the IAEG-SDGs by Denmark, Estonia and Brazil.
41. Statement to the IAEG-SDGs by the UNSSO. For the proposal, see statement to the IAEG-SDGs by Colombia and Cuba.
42. Statements to the IAEG-SDGs by Denmark. Statements in Open Consultation on Green Indicators by UNEP and CSOs.
43. Statements to the IAEG-SDGs by Ecuador, Australia, Germany and Cuba. Statements in Open Consultation on Green Indicators by UNEP and CSOs.
44. Statements to the IAEG-SDGs by Colombia, Brazil, Denmark and Germany. Statements in Open Consultation on Green Indicators by GRI and other CSOs.
45. Statements to the IAEG-SDGs by Japan, Brazil, Canada, Turkey, Estonia, China, Cuba, Argentina, Paraguay, Fiji and Samoa.
46. In particular, the Aichi targets agreed under the UN Convention on Biological Diversity (CBD). See the statements to the IAEG-SDGs by UK, Denmark, India, the Netherlands and Kyrgyzstan.
47. Statements to the IAEG-SDGs by France, Switzerland and Eurostat.
48. Statement to the IAEG-SDGs by Germany. Statements in Open Consultation on Grey Indicators by UNEP and Hungary.
49. Statements to the IAEG-SDGs by Canada, Estonia, Germany, Australia, Colombia, Singapore and Cuba.
50. Statements to the IAEG-SDGs by Denmark, UNECE, and Canada.
51. Influenced by a statement to the IAEG-SDGs by Brazil, and statements in Open Consultation on Grey Indicators by UNEP, UNESCO and CSOs.
52. Statements to the IAEG-SDGs by France, Mexico, Brazil, United States, China, Paraguay and Uruguay (for indicator 12.a.1), and by Colombia, Mexico, Brazil, Italy, Germany, Japan, United States, Turkey, India, Cuba and China (for indicator 12.b.1).
53. Statements to the IAEG-SDGs by Canada, India, Ecuador, Colombia, Japan, Estonia, Australia, Cuba, China, Germany and Sweden.
54. Statements to the IAEG-SDGs by Canada, China, Sweden, UNSSO, Germany and Cuba (for indicator 12.a.1), and by UNSSO, Mexico and Australia (for indicator 12.b.1).

References

Akenji, L. and Bengtsson, M. (2014) 'Making Sustainable Consumption and Production the Core of the Sustainable Development Goals', *Sustainability*, 6 (2), pp. 513–529.

BioRegional (2013) One Planet Living – The Case for Sustainable Consumption and Production in the Post-2015 Development Agenda [online]. Available from: https://sustainabledevelopment.un.org/content/documents/5483bioregional3.pdf [Accessed 25 October 2017].

Carpenter, S. R. and Bennett, E. M. (2011) 'Reconsideration of the Planetary Boundary for Phosphorus', *Environmental Research Letters*, 6 (1), pp. 1–12. https://doi.org/10.1088/1748-9326/6/1/014009.

Daly, H. E. (ed.) (1973) *Toward a Steady-State Economy*. San Francisco, CA: W.H. Freeman.

Dodds, F., Donoghue, D. and Roesch, J. L. (2017) *Negotiating the SDGs: A Transformational Agenda for an Insecure World*. Abingdonand New York: Routledge/Earthscan.

Dodds, F., Laguna-Celis, J. and Thompson, L. (2014) *From Rio+20 to a New Development Agenda: Building a Bridge to a Sustainable Future*. Abingdon and New York: Routledge/Earthscan.

Fukuda-Parr, S. (2016) 'From the Millennium Development Goals to the Sustainable Development Goals: Shifts in Purpose, Concept, and Politics of Global Goal Setting for Development', *Gender & Development*, 24(1), pp. 43–52.

Fukuda-Parr, S. and Yamin, A. E. (eds.) (2015) *The MDGs, Capabilities and Human Rights: The Power of Numbers to Shape Agendas*. Abingdon: Routledge.

Fuller, R.B. (1968) *Operating Manual for Spaceship Earth* [online]. Available from: http://bigbrainradioshow.com/pdf/Fuller_Operations.pdf [Accessed 15 January 2018].

Hawken, P. (1994) *The Ecology of Commerce: How Business Can Save the Planet*. London: Weidenfeld & Nicolson.

Hoballah, A. (2016) Promoting City Resilience, Sustainability and Quality of Life [online]. Available from: https://www.dewa.gov.ae/~/media/Promoting%20city%20resilience%20%20sustainability%20and%20quality%20of%20lifeArab%20Hobal.ashx [Accessed 25 October 2017].

Holden, E., Linnerud, K. and Banister, D. (2014) 'Sustainable Development: *Our Common Future* Revisited', *Global Environmental Change*, 26 (5), pp. 130–139. https://doi.org/10.1016/j.gloenvcha.2014.04.006.

Kristoferson, L. (1993) 'Foreword', in T. Jackson (ed.), *Clean Production Strategies: Developing Preventive Environmental Management in the Industrial Economy*. Boca Raton, FL and New York: Lewis Publishers/CRC Press.

Langhelle, O. (1999) 'Sustainable Development: Exploring the Ethics of "Our Common Future"', *International Political Science Review*, 20 (2), pp. 129–149.

Lettenmeier, M., Leidtke, C. and Rohn, H. (2014) 'Eight Tons of Material Footprint – Suggestion for a Resource Cap for Household Consumption in Finland', *Resources*, 3 (3), pp. 488–515.

Meadows, D. H., Meadows, D. L., Randers, J. and Behrens, W. W. (1972) *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.

Merry, S. E., Davis, K. E. and Kingsbury, B. (eds.) (2015) *The Quiet Power of Indicators: Measuring Governance, Corruption, and Rule of Law*. Cambridge: Cambridge University Press.

Mignaqui, V. (2014) 'Sustainable Development as a Goal: Social, Environmental and Economic Dimensions', *International Journal of Social Quality*, 4 (1), pp. 57–77.

Redclift, M. (2002) *Sustainable Development: Exploring the Contradictions*. London: Routledge.

Schmidheiny, S. (1992) *Changing Course: A Global Business Perspective on Development and the Environment*. Cambridge, MA: MIT Press.

Statistics Netherlands (2017) *Measuring the SDGs: An Initial Picture for The Netherlands*. The Hague: Statistics Netherlands.

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M. et al. (2015). Planetary Boundaries: Guiding Human Development on a Changing Planet. *Science*, 347 (6223), 1259855

UN (1992) *Annex I: Rio Declaration on Environment and Development. Report of the United Nations Conference on Environment and Development*. A/CONF.151/26 (Vol. I). Rio de Janeiro: United Nations.

UN (2002) *Plan of Implementation of the World Summit on Sustainable Development*. Johannesburg: United Nations.

UN (2012a) *The Future We Want. Resolution adopted by the General Assembly on 11 September 2012*. A/RES/66/288. New York: United Nations.

UN (2012b) *A 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns*. A/CONF.216/5. Rio de Janeiro: United Nations.

UN (2013) Summary – Second Session of the OWG on SDGs, 17–19 April 2013 [online]. Available from: https://sustainabledevelopment.un.org/content/documents/1813Summary_OWG2_final.pdf [Accessed 25 October 2017].

UN (2014a) *Report of the Open Working Group of the General Assembly on Sustainable Development Goals*. A/68/970. New York: United Nations.

UN (2014b) TST Issues Brief: Sustainable Consumption and Production, Including Chemicals and Waste. Prepared by the Technical Support Team (TST) Drafting Group on SCP with Inputs from the 10YFP Inter-Agency Coordination Group (IACG) [online]. Available from: https://sustainabledevelopment.un.org/content/documents/2296SCPIssues Brief SDG_FINAL.pdf [Accessed 25 October 2017].

UN (2014c) Summary – General Assembly Open Working Group on Sustainable Development Goals Seventh Session, 6–10 January 2014, UNHQ [online]. Available from: https://sustainabledevelopment.un.org/content/documents/3427Summary of OWG-7_rev.pdf [Accessed 25 October 2017].

UN (2015) *Transforming Our World: The 2020 Agenda for Sustainable Development*. A/RES/70/1. New York: United Nations.

UN (2016a) *Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators*. E/CN.3/2016/2/Rev.1. New York: United Nations.

UN (2016b) Tier Classification for Global SDG Indicators (as of 21 December 2016) [online]. Available from: https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-05/Tier_Classification_of_SDG_Indicators_21_Dec_2016.pdf [Accessed 25 October 2017].

UN (2017a) *Report of the Inter-agency and Expert Group on Sustainable Development Goal Indicators*. E/CN.3/2017/2. New York: United Nations.

UN (2017b) Work Plans for Tier III Indicators (as of 3 March 2017) [online]. Available from: https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-05/TierIII_Work_Plans_03_03_2017.pdf [Accessed 25 October 2017].

UN (2018) Tier Classification for Global SDG Indicators: 11 May 2018 [online]. Available from: https://unstats.un.org/sdgs/files/Tier Classification of SDG Indicators_11 May 2018_web.pdf [Accessed 31 July 2018].

UNEP (2010) *ABC of SCP: Clarifying Concepts on Sustainable Consumption and Production*. Paris: Division of Technology, Industry and Economics, United Nations Environment Programme.

UNEP (2011) *Paving the Way for Sustainable Consumption and Production: The Marrakech Process Progress Report*. Paris: Division of Technology, Industry and Economics, United Nations Environment Programme.

UNEP (2016) *Demonstrating Progress and Impact of the 10YFP: Monitoring and Evaluation Framework*. Nairobi: United Nations Environment Programme.

UNEP (2018). What is the 10YFP? [online]. Available from: http://drustage.unep.org/ar/node/577 [Accessed 31 July 2018].

UNEP and IISD (2014) 'Sustainable Consumption and Production (SCP) Targets & Indicators and the SDGs'. UNEP Post-2015 Discussion Paper 2. Paris: Division of Technology, Industry and Economics, United Nations Environment Programme.

UNEP and IISD (2015) 'Sustainable Consumption and Production Indicators for the Future SDGs'. UNEP Discussion Paper. Paris: Division of Technology, Industry and Economics, United Nations Environment Programme.

Visscher, M. and Bodelier, R. (eds.) (2017) *Ecomodernisme*. Amsterdam: Nieuw Amsterdam.

Ward, B. (1966) *Spaceship Earth*. New York: Columbia University Press.

WCED (1987) *Report of the World Commission on Environment and Development: Our Common Future*. Geneva: World Commission on Environment and Development.

Weizsäcker, E. V., Lovins, A. B. and Lovins, L. H. (1997) *Factor Four: Doubling Wealth – Halving Resource Use*. London: Earthscan.

Wiedmann, T. O., Schandl, H., Lenzen, M., Moran, D., Suh, S., West, J. and Kanemoto, K. (2015) 'The Material Footprint of Nations', *Proceedings of the National Academy of Sciences*, 112 (20), pp. 6271–6276.

Author Information

Des Gasper is Professor of Human Development, Development Ethics, and Public Policy at the International Institute of Social Studies of Erasmus University Rotterdam, Netherlands. He has worked in recent years on climate change policy debates and ethics, human security analysis, and the roles for universities in relation to environmental change.

Amod Shah is a PhD researcher at the International Institute of Social Studies of Erasmus University Rotterdam. He worked earlier at the Centre for Equity Studies in New Delhi.

Sunil Tankha is Assistant Professor in Public Policy and Development Management at the International Institute of Social Studies of Erasmus University Rotterdam. His work in recent years covers climate change adaptation in South Asia and education for sustainability.