GLOBAL SUSTAINABLE DEVELOPMENT REPORT

2016 EDITION

Executive Summary

The following is an executive summary of the Global Sustainable Development Report (GSDR) 2016. Building upon the 2014 and 2015 reports, the current report responds to the mandate from the Rio+20 Conference to contribute to strengthening the science-policy interface for sustainable development in the context of the high-level political forum on sustainable development (HLPF).

The preparation of the report involved an inclusive, multi-stakeholder process drawing upon scientific and technical expertise from within and outside the United Nations. 245 scientists and experts based in 27 countries, including 13 developing countries, contributed to the report. 62 policy briefs were submitted in response to an open call. Twenty agencies, departments and programmes of the UN system contributed to the report with inputs, comments, suggestions or revisions.

Major international conferences and summits in 2015 – on financing for development, sustainable development, and climate change – have defined a new sustainable development agenda for the next 15 years. At all levels, from global to local, attention is turning to implementing this ambitious agenda. This is the context in which this year's Global Sustainable Development Report appears.

Given the adoption of the 2030 Agenda for Sustainable Development with its sustainable development goals (SDGs), the report adopts the SDGs as its scope. True to its mandate, the report is designed as an assessment of assessments. It endeavors to present a range of scientific perspectives and to be policy-relevant but not policy-prescriptive. Like its predecessors, it continues to explore possible approaches and vantage points from which to examine the science-policy interface, as well as scientific approaches that can inform policies building upon integration and interlinkages across sustainable development goals, sectors, and issues.

The report was prepared specifically to inform the discussions at the high-level political forum on sustainable development in 2016. The theme chosen for the HLPF is 'ensuring that no one is left behind'. This theme is a recurring thread in the report. The first chapter asks what 'ensuring that no one is left behind' means in relation to the 2030 Agenda, and provides a framing for other chapters of the report. Those provide specific highlights on how the inclusiveness imperative may impact the delivery of the Agenda, through examining the nexus of infrastructure, inequality and resilience (chapter 2) and through the cross-cutting dimensions of technology (chapter 3) and institutions (chapter 4). As a critical dimension of the science-policy interface, the report also explores ways in which new and emerging issues identified by science could be screened and analyzed for the benefit of the HLPF and its mandate to provide high-level guidance on sustainable development.

Leaving no one behind and the new Agenda

Ensuring that no one is left behind is a fundamental guiding principle for the implementation of the 2030 Agenda for Sustainable Development. In implementing the Agenda, countries and stakeholders will have to make choices on where, when and how to act. In that process, they have pledged to endeavour to reach the furthest behind first. Fifteen years from now, when the current and the next generations together assess the implementation of the 2030 Agenda, a key measure of success will be the extent to which it has allowed improvement in the lives of the poorest and most vulnerable, regardless of gender, race, age, religion, place of residence or any other factor. Many organizations have started to work on the implications of the call to leave no one behind for the delivery of the 2030 Agenda and for their missions.

Given the importance of this notion in the 2030 Agenda, it is critical that some clarity exists on its implications for implementing the Agenda. At the conceptual level, three main questions need to be addressed. First, who are those being or at risk of being left behind? Second, how can strategies and policies reach them in practice? And third, what types of strategies and policies would be appropriate in order to leave no one behind? Science can inform decision-making on these three broad questions. Through this, it can also provide elements to assess how ambitious and challenging it will be to realize the commitment of leaving no one behind, by revealing to what extent strategies and policies that have been used in various SDG areas are aligned with this objective, and what their success has been in achieving it.

The ambition to endeavor to reach the furthest behind first' is a transformative aspect of the 2030 Agenda. Does this imply different implementation strategies than those commonly used in the past? What could it mean for important cross-cutting dimensions such as institutions and for the way technology is managed? Here also, scientific evidence can inform the debate.

The first chapter of the report explores the implications of leaving no one behind for the operationalization of the SDGs from a science-policy perspective. It examines what 'ensuring that no one is left behind' means in relation to related concepts that are prominent in the 2030 Agenda such as inequality and inclusiveness. It reviews some of the concepts and methods used to identify those left behind and to reach them in practice. Finally, it highlights examples of development strategies used in various areas of sustainable development and what evidence tells us about their effectiveness in leaving no one behind.

Many SDG goals and targets directly relate to leaving no one behind and refer to specific objectives and actions as well as groups (of countries or people) that should be the object of sustained attention in this regard. This is particularly the case with goals that were within the scope of the Millennium Development Goals (MDGs), including poverty, gender, education, health, and means of implementation. In those areas, considerations of inclusiveness in a broad sense have long been part of the main development discourse and practice, and actions and policies to address this dimension have become part of the standard development apparatus.

Many criteria can be used to identify those left behind, whether within a country or between countries. In practice, those "left behind" with respect to a particular dimension of the Agenda may be different groups in different societies. In addition to the reference to certain groups (e.g., women, indigenous peoples, persons with disabilities, the youth, and others) and deprivation indicators focused on single areas or sectors, many indices of multiple deprivation exist, which incorporate social, economic and environmental indicators. For example, the Multidimensional Poverty Index (MPI) published by the United Nations Development Program (UNDP) incorporates ten weighted indicators that measure education, health and standard of living. This and similar composite indicators were created in response to the growing concern over the multiple dimension of poverty. Deprivations tend to be spatially concentrated and, therefore, policies concerned with leaving no one behind need to take into account geography. In this regard, multiple deprivation maps based on composite indicators have been used as an instrument of planning and management at different levels from national to sub-national to local, both in developed and developing countries.

In many areas, inclusive development strategies are the commonly accepted paradigm. Examples include drinking water, electricity and other basic services, where ensuring universal access is often an overarching objective and is now reflected in the SDGs. However, whether strategies succeed in reaching those left behind depend on many factors, from country-specific circumstances to their design, targeting methods and practical implementation. A variety of targeting methods have been used to reach those left behind. All require underlying data systems to be implemented, as well as administrative capacity in various institutions. Available evaluations from different SDG areas all suggest that there are significant practical challenges in effectively reaching those left behind. For example, self-targeting strategies to identify beneficiaries of food subsidies may impose costs on the recipients such as transportation costs involved in taking up transfers or may cause social stigma.

Examples of interventions reviewed for the report that aim to reach the furthest behind first include: nutrition, where the core target of interventions in developing countries is those suffering the most from stunting; area-based interventions targeting the poorest locations; and strategies to provide shelter for homeless people.

A message comes across strongly from chapters 1, 2, 3 and 4, even though their topics are very different and the scientific communities involved around each of them are distinct: if no one is to be left behind in 2030, the notion of inclusiveness cannot be treated as an afterthought or even mainstreamed in other areas. Rather, it should be an integral part of institution design and functioning; of research and development, and of infrastructure planning and development.

Based on the limited evidence reviewed in the report, over the next 15 years, factoring in the imperative to leave no one behind in sustainable development interventions may not present insurmountable difficulties in many areas of the new Agenda. Undertaking to systematically reach the furthest behind first may represent a much greater challenge and may in some cases imply a more significant departure from present strategies. Doing so is likely to require attention at three levels. First, better taking into account the interests of those left behind will require assessing the way in which strategies and policies are designed. This in turn may require the incorporation of enhanced understanding of the dynamics of poverty, marginalization and vulnerability in a country- and place-specific context. This may also involve ways to give more voice to deprived or marginalized groups in policy discussion and decision-making. The institutional dimension is clearly crucial in this, as argued in chapter 4. Second, there will be a need to review, and possibly update, ways in which strategies are executed, with particular efforts made to reach the furthest behind, addressing gaps in administrative capacity and data to improve the targeting of programmes. Third, at the highest level of decision-making in Government, taking the new Agenda at its word will require a consideration of how social objectives are balanced with other objectives, such as short-term economic efficiency. Ultimately, the priority given to those furthest behind will be reflected in the allocation of resources, both from the public and the private sectors.

Going forward, it will be critical to systematically collect further scientific evidence on how existing development strategies do indeed reach the furthest behind. A first step could be an inventory of existing meta-studies that attempt to review the effectiveness of development interventions in different SDG areas in reaching those left behind. While evaluations do exist for specific SDG areas, they use different criteria for defining and measuring those left behind or furthest behind and for assessing the effectiveness of interventions in reaching them. It could be worth assessing the costs and benefits of investing in

more comparable frameworks for evaluating development interventions in different SDG areas. This would likely be a significant undertaking in terms of methodology and costs.

A nexus approach: The infrastructure – inequality – resilience nexus

Nexus approaches, which examine sets of issues as a whole and focus on the connections between them, have been one of the lenses through which the GSDR has approached the SDGs. The aim is to strengthen the science-policy interface by showing policymakers how key interlinkages are analyzed by the scientific community, while providing the scientific community with key policy questions and highlighting areas for policy-relevant research.

This year's report examines interlinkages between infrastructure, inequality and resilience. These areas relate to several SDGs and have strong connections with inclusiveness and leaving no one behind. Chapter 2 highlights the main channels of interconnection among these areas put forward by 24 contributing scientists from various disciplines and United Nations experts, as well as a review of findings from several hundred publications. Extensive bodies of literature have focused on each of these areas. For example, infrastructure has received significant attention in development circles, due to its perceived critical role in spurring economic growth and development. Yet, scientists focusing on each of those fields typically hail from different communities, making links between the three areas less commonly studied than any of the three areas taken in isolation.

Some of the interlinkages in the nexus have received much more attention from scientists than others. This is illustrated in Figure 1, which summarizes in a simplified way key interlinkages that emerged from the analysis. Areas that are well covered by scientific research are the links between infrastructure and inequality, and how people's resilience is affected separately by inequality and by the resilience of infrastructure to natural disasters. By contrast, although the report consulted with experts from a broad range of disciplines, linkages in which the causal relation runs from resilience to inequality and from resilience to infrastructure were only very marginally or not covered. Further research in these two areas may be needed to document important linkages, synergies and trade-offs.

The interlinkages identified by experts and described in Figure 1 can be summarized as follows. Infrastructure affects inequality through three main channels: the provision of basic services such as water, sanitation and electricity; broad (macro-level) increases in productivity that result from the presence of infrastructure such as irrigation, electricity, ICT, and roads; and (micro-level) effects of infrastructure on the access of people to goods, services and job opportunities. In general, the literature has found a positive relationship between infrastructure and reduced inequality. However, the specific channel (or combination thereof) through which this occurs is complex, as shown by a large number of econometric, microeconomic and other empirical studies covering those channels. Inequality is affected by the quality, design, coverage, accessibility and distribution of infrastructure. Key elements in this regard are where infrastructure is located, and whom it is intended to benefit.

Inequality affects infrastructure through its effect on the balance of political power, which in turn affects government decisions on the provision of infrastructure. That may result in disproportionately low share of investment being directed to infrastructure that benefits the most disadvantaged, reinforcing and perpetuating social and spatial inequalities. Breaking that vicious cycle may be critical for the implementation of the 2030 Agenda.

The effect of infrastructure on resilience is an area of the nexus that has received much attention by the scientific community. In particular, the literature has focused on how the quality, design, distribution, interrelation and operation of infrastructure affect its resilience to natural disasters, which in turn influences people's resilience to shocks. There is considerable knowledge about resilience to more predictable and lower intensity events, but much less on how to make infrastructure resilient in the case of the more severe disasters. There is also a significant focus of research on critical infrastructure, such as transport networks and electricity infrastructure, which are particularly vulnerable to chain reaction effects during crises.

Inequality of opportunity and discrimination affect resilience through their impacts on social norms, interactions and networks, which have an effect on the ability of people to adapt to shocks. In that context, vulnerable populations are usually the most severely affected. Much of the research focuses on the role of social capital in building resilience. Yet, in general, this interlinkage seems to have received less attention from the scientific community than others in the nexus.

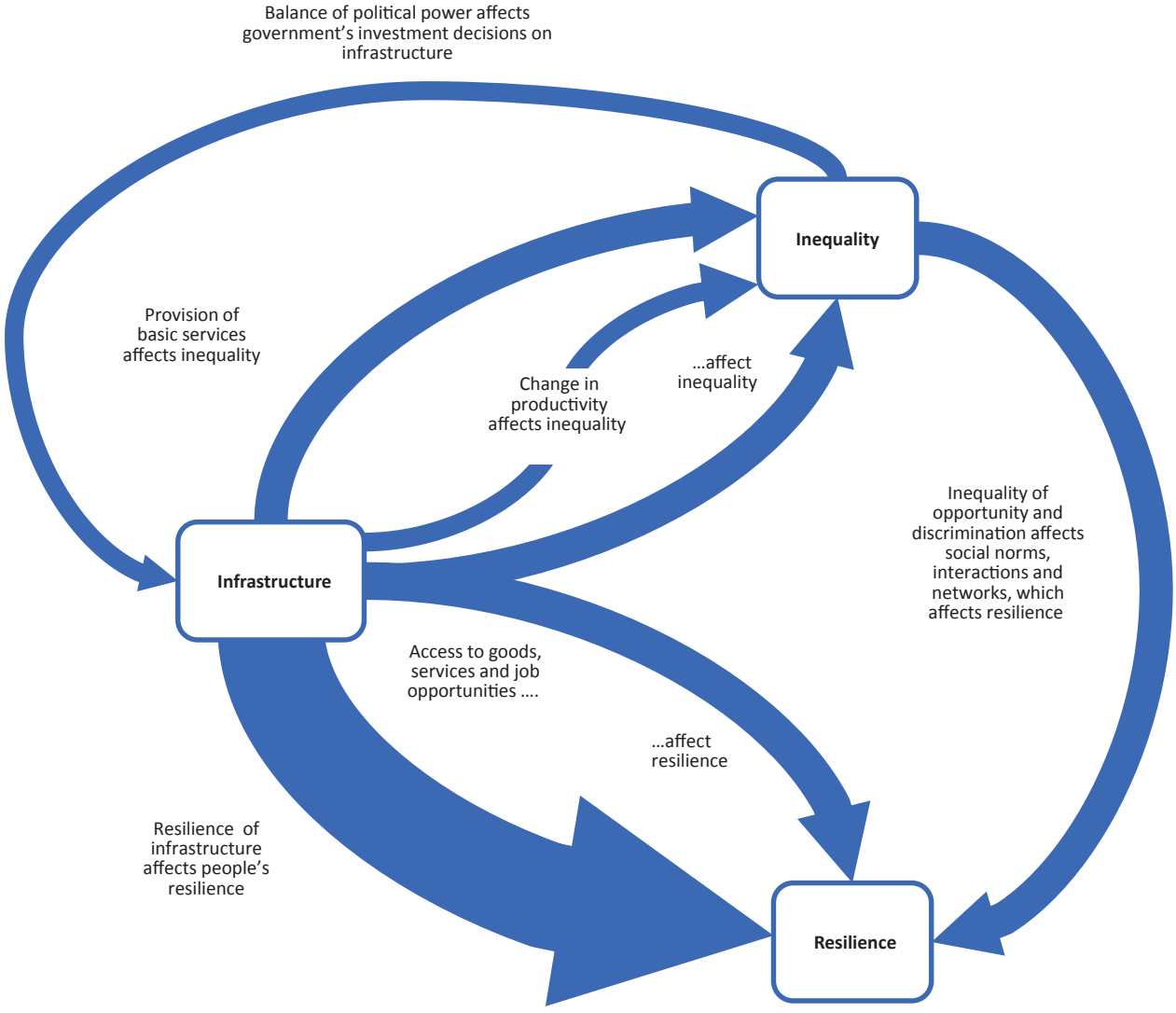
As in any nexus, harnessing synergies and addressing trade-offs is critical for policy-making. In this regard, contributing experts have noted that reducing inequalities in any of its dimensions also contributes to better infrastructure provision and increased resilience by, for example, increasing the likelihood of infrastructure investment that benefit vulnerable groups. In relation to infrastructure policies, a focus on both efficiency and equity is needed to harness the synergies in the nexus. An important policy component is geographic equity in the provision of basic services infrastructure. In order to increase synergies between infrastructure and resilience, regulation and incentive mechanisms need to be in place to integrate disaster risk

reduction into all phases of the infrastructure life cycle, and to ensure the resilience of critical infrastructure to natural disasters. It has been suggested that participatory processes that involve local communities and their various segments can be useful ways to ensure that considerations related to economic, social and environmental dimensions are taken into account when planning for infrastructure investment.

Contributing experts noted the need to further disaggregate the analysis between rural and urban contexts to be able to provide more specific policy recommendations. In rural areas, infrastructure investments are essential to connect individuals to livelihoods and opportunities. Urban areas provide easier connectivity, but tend to face challenges such as fragmented governance structures, congestion, and high disparities in access to services, especially in informal settlements and peri-urban areas. The report provides examples of policies that have been found to address synergies in the nexus. For example, labour-based programs in infrastructure projects can expand job opportunities and reduce inequalities, while at the same time improving resilience to natural disasters.

Further cross-disciplinary collaboration and engagement between researchers, practitioners, decision-makers and other stakeholders could be a way of achieving the mutual learning and transfer of information that would enable scientific knowledge to be transformed into practical strategies to harness the synergies and address the trade-offs between the three areas of the nexus.

Figure 1: Evidence map of the infrastructure – inequality – resilience nexus



Source: Authors' elaboration based on inputs by experts and literature review.

Perspectives of scientists on technology and the SDGs

Chapter 3 of the GSDR presents a range of perspectives of scientists on the role of technology for the achievement of the SDGs. Understanding the role of technology for SDGs is critical because technology has greatly shaped society, economy and environment and vice versa. In fact, technology, society and institutions co-evolve. Hence, technology progress requires institutional adaptations and may be constrained by social issues. Policy actions to achieve the SDGs and ensure that no one is left behind need to consider these interlinkages.

Technology is essential for achieving the SDGs and reaping the benefits of synergies among them, as well as for minimizing trade-offs among goals. Shared appreciation of this importance of technology is reflected in its significant presence in the Sustainable Development Goals and targets. Indeed, technology is not only captured in SDG17 as a key means of implementation. Among the 169 targets, 14 targets explicitly refer to "technology" and many other targets relate to issues that are often largely discussed in technology terms. In general terms, the targets most closely related to technology fall in three categories: those that relate to significant overall technology performance improvement; targets for universal access to specific technologies; and targets that delineate elements of global effective innovation systems for sustainable development. The technology-related SDG targets are much less quantitative than corresponding targets proposed in the scientific literature.

While technology offers solutions to many sustainable development challenges, it has also continuously added new challenges. In particular, technology change can be a source of conflict or a tool for social inclusion and greater cooperation, and all technologies consume resources, and may use land and pollute air, water and the atmosphere, albeit to varying degrees. Examples of relatively new technologies considered in the report that illustrate this dual feature include digital automation, nanotechnology, biotechnology and genomics, and synthetic biology. These technologies are becoming driving forces for science, research and increasingly for economic activity. All hold great promises in terms of improving well-being and solving development challenges, but all of them present possible challenges.

For example, technology gaps exist in all sectors, and their nature and severity in terms of being a constraint to development differ greatly. New gaps often emerge with the application of new technologies, such as big data, the Internet of Things, 3D printing, massive online open courses and digital automation. All these could have wide-ranging implications that increase, rather than decrease, existing inequalities. While such technologies are in an embryonic stage, it is important for countries to understand them, identify potential implications, and use foresight activities to guide policy planning exercises.

Chapter 3 provides an overview of perspectives of scientists on technology and the SDGs. It synthesizes contributions from 57 scientists and experts with research affiliations in 20 countries and representing more than forty sustainability science disciplines, who responded to two specific questions: What are the most promising actions or policy elements for optimal leveraging of technology for the SDGs and leaving no one behind? Which technologies and what level of their performance and deployment will be most crucial until 2030?

Many submissions from scientists received for the report point to a need for making simultaneous progress on equity issues (especially technology access), on overall technology system performance, and on supporting institutional change - strategies focusing only on one of these components have proven ineffective in the long-run. Policy actions must support both research and development to spur technology performance at the technology frontier, as well as promote the diffusion and adaptation of existing technologies in developing countries and among marginalized groups in all countries – one supports the other and vice versa.

What constitutes an effective technology policy differs between countries and depends on their levels of diversification and technological capabilities. Technology policy actions are most effective when they are firmly grounded in scientific knowledge and take into account the complexities of technology change, transfer and diffusion and the unique circumstances of the country in question. Innovation systems, understood as the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies, perform sub-optimally if only one or the other of these elements is supported. Policy actions must support both incremental, gradual technological and institutional improvements, as well as radical, Schumpeterian "gales of creative destruction". Both are necessary – one requires the other. In this regard, education and infrastructure are essential pre-requisites for technology change.

In order for technology to support the realization of the SDGs, scientists who contributed to the report typically proposed policies and actions that encompassed not only one but several of the following areas: research, development and demonstration; technology transfer and diffusion; the establishment of goals, targets and mandates for specific technologies or technology systems (e.g., mandating a minimum share of renewable power generation); policy environment and market incentives; knowledge sharing and capacity building; and stakeholder participation and governance. They tended to highlight policies and actions

that are far beyond their own disciplinary expertise, which illustrates the relevance of integrated systems views for thinking of technology in the context of the 2030 Agenda.

Scientists emphasized a need for national and international action plans and technology roadmaps. Promising technological trajectories and new industries can be identified by each country. Scientists suggested the importance of investing at the same time in new and old technologies; in increased performance of advanced technologies and technology adaptations for underserved communities; in large-scale infrastructures and small-scale technologies with large numbers of units. They also suggested that science roadmaps should include measures relating to affordability and inclusion, which should be built into R&D processes from the outset. Other notable key actions or policy elements suggested by scientists include: effective national science-policy interfaces; foresight and scenarios; facilitation of learning across communities, including underserved communities; and cluster analysis. The latter analyses networks of firms linked to each other (through production chains, or geographically concentrated and making use of related buyers, suppliers, infrastructure and workforce, or of similar nature), with a view to addressing systemic imperfections of innovation systems.

Looking forward towards 2030, scientists identified crucial emerging technologies for the SDGs, which fall into the bio-tech, digital-tech, nano-tech, neuro-tech and green-tech categories. However, little information appears to exist on the level of performance and deployment of these technologies that would need to be achieved by 2030. While some quantifications exist in this regard, further collaboration on SDG scenarios and roadmaps that explicitly incorporate technology will be essential. Long-term technology roadmaps can support business development and policy planning.

Inclusive institutions: the example of national councils for sustainable development and parliaments

There is clear awareness that understanding institutions is important for delivering on the imperative to leave no one behind. Institutions are essential enablers of inclusiveness, even though not the sole ones. The 2030 Agenda does not prescribe institutional models for the national level, but outlines governance principles that institutions should strive to achieve, such as "effectiveness, inclusiveness, and accountability" (SDG 16), responsive, inclusive, participatory and representative decision-making at all levels" (target 16.7) and "policy coherence" (target 17.14).

Institutions can trigger behaviours and trends that can have positive or negative impacts for development outcomes, and in particular for inclusiveness. Inclusive institutions bestow equal rights and entitlements and enable equal opportunities, voice and access to resources and services. They can be based on principles of universality (e.g. universal access to justice or services), non-discrimination (e.g. inheritance laws that protect widows' land rights), or targeted action (e.g. affirmative action to increase the proportion of women political representatives). On the other hand, power holders can shape institutions for the benefit of some rather than all groups of society. Institutions that are not inclusive potentially withhold rights and entitlements, can undermine equal opportunities, voice and access to resources and services and perpetuate economic disadvantage. They can also have a negative impact on non-economic dimensions of poverty, including lack of access to services, lack of voice in decision-making, and vulnerability to violence and corruption.

From a science-policy perspective, a natural question to ask is what types of institutions are necessary for achieving inclusive goals. Achieving any particular target will require a combination of factors, including: legal, regulatory components; multiple institutions intervening at various levels; and potentially broader societal changes, e.g. in social norms, which themselves can be spurred by changes in institutions. For example, the advancement of gender equality requires a range of actions at all these levels, and the intervention of a range of institutions with different mandates and purposes. Conversely, individual institutions, especially those with broad mandates, can contribute to inclusiveness in many different areas as well as society-wide. It is important to assess both how inclusive institutions are, and whether and how they foster inclusiveness through their actions. In this vein, the report explores two specific types of institutions: national councils for sustainable development (NCSDs) and national parliaments. More in-depth assessment of research is needed on other types of institutions and how they contribute to inclusiveness in the context of the new Agenda, and this should be a critical component of future GSDRs.

NCSDs were first identified as important institutional components in Agenda 21 in 1992. During the past two decades, many countries have experimented with versions of them, with various levels of success. Lessons learned from that phase can be useful for the implementation of the 2030 Agenda. Research reviewed for the report suggests that, if provided with adequate resources, NCSDs can be effective mechanisms for stakeholder participation and engagement across the whole policy cycle, to: (1) inform and educate the public at large on sustainable development related topics; (2) stimulate informed public debates; (3) engage key stakeholders in formulating policy recommendations; and (4) involve stakeholders in various parts of implementation and progress reviews. In practice, governments' attitude regarding stakeholder involvement influences the functioning of NCSDs and the resources provided to them. The composition of NCSDs usually

reflects the political system and culture in which they exist. In general, the more the NCSD is dominated by the government, the more it tends to have communication of government policy to various stakeholders as its main role. The more independent the NCSD, the more role it tends to play in the decision-making process.

As legislatives bodies, parliaments are very important for the implementation of the 2030 Agenda and SDGs. Parliaments engagement is guided by each country's institutional regime and sovereign decisions. Parliaments approve laws and oversee their execution by the government; they also oversee national policies and strategic plans and approve budgets. In turn, governments are expected to report back to parliaments, which have at their disposal evaluations and assessments from bodies such as audit institutions. While countries differ in their parliamentary systems, all of them require parliamentary approval on legislation pertaining to the SDGs.

Chapter 4 of the report makes the distinction between inclusiveness of institutions, and inclusiveness through institutions. The former refers to whether institutions themselves are designed in a way that is conducive to inclusive representation and voice of all sections of society (or all countries). The latter refers to whether institutions, through their actions, directly support or enable more inclusive outcomes. In the case of parliaments, this means examining both how parliaments themselves are inclusive in their representation of all segments of society, including of marginalized groups, and how, when adopting legislation, they take into account the needs of these groups. For example, parliaments are in a unique position to enact legislation to contribute to the elimination of gender-based discriminatory norms and practices, foster women's participation in decision-making processes, and ensure equal access to resources, basic services, education, economic resources, land, and new technology, all of which are specifically highlighted in the targets of the SDGs.

In this regard, Chapter 4 looks specifically at women, indigenous peoples, persons with disabilities, and children and youth. Research reviewed for the report suggests that progress has been made with respect to the representation of these groups in national parliaments. However, gaps still exist. Similarly, while progress has been made in terms of codifying the rights of marginalized groups, there is still a long way to go in this respect, and parliaments will have a key role to play in ensuring that no one is left behind.

Identifying emerging issues for the HLPF

The identification of new and emerging issues warranting policy makers' attention is a critical function of the science-policy interface. Building on the 2014 and 2015 reports, this year's report provides an overview of existing approaches to identify emerging issues for sustainable development.

Policymakers are exposed to a broad range of analyses, rankings, and advice concerning emerging issues; consequently a categorization of existing material, informed by a sustainable development perspective, could contribute to improved policymaking. The process of identifying emerging issues can be usefully guided by criteria during the "scanning" phase of issues across a range of sources. Criteria can help to make explicit what counts as emerging issues. Impact and probability are common starting points. Additionally, criteria such as persistence, irreversibility, ubiquity, novelty, and potential for mobilization could also be considered. Priority, a criterion that is meant to capture an issue's importance in terms of social and cultural norms or impact on already vulnerable and marginalized groups, can accommodate principles such as "ensuring that no one is left behind".

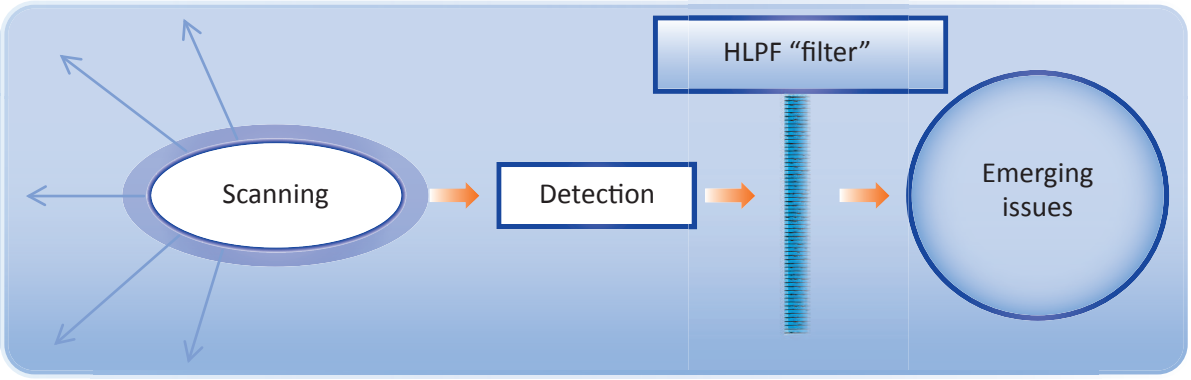
The report presents a sample of emerging issues from a variety of sources, such as global UN initiatives and national academies of sciences. The latter coordinate and define research priorities in all scientific fields of interest and importance to the particular country. Leading academic journals are an important source for the emerging issues as well, as they contain peer-reviewed academic contributions.

Additionally, a crowdsourcing initiative collected short science-policy briefs from scientists and researchers around the world, highlighting a specific issue, finding, or research with a bearing on sustainable development policy. The open call for this year's report resulted in 62 accepted briefs from all regions, following 202 briefs accepted in 2014 and 2015. The science briefs received since 2014 cover all the SDGs and address many of the linkages among them.

Even a guided scanning process for emerging issues is likely to generate a large number of issues. Some form of clustering or categorization of issues is necessary to facilitate analysis. Several commonly used frameworks were considered for this report. Largely due to its simplicity, the STEEP (Social, Technological, Economic, Environmental and Political) framework proved to be more suitable than others in enabling an initial categorization of a broad-ranging list of sustainable development issues. However, expert input highlighted the usefulness of taking an additional step to differentiate between issues that relate to values, threats, opportunities, causal mechanisms and responses.

While a set of issues may satisfy a number of criteria, a function of the science-policy interface consists of a second step: identifying a smaller subset of issues that are policy relevant. In the context of the HLPF, this entails identifying emerging issues that are appropriate for policymakers at the global level, by filtering out issues of primarily local or national significance. Naturally there are no neat, clear divides; what is local today can escalate across borders tomorrow. There is scope for enhanced dialogue between

Figure 2: Schematic representation for identifying emerging issues for the HLPF



Source: Authors' elaboration.

scientists and policy-makers at the HLPF in two areas. One is the process by which a large number of issues are filtered to produce a smaller list for consideration by the HLPF. The second are the substantive contours of the issues that the high-level political forum could consider.

Work done for the report included an attempt to operationalize such a filtering process on a pilot basis, actually going through the steps of producing a short list of issues that the HLPF could consider. This was done through a multi-disciplinary consultation of experts with knowledge and experience of various processes of identification of emerging issues. The exercise involved an initial list of issues, drawn up based on an online survey, which was discussed by experts in a face-to-face meeting. The top-ranking twenty issues resulting from a collective prioritization by scientists cover a broad range of areas (see Box 1).

The report demonstrates that a wide range of sources – document analysis, crowdsourcing, and expert meetings – can usefully be drawn on when identifying emerging issues in the context of sustainable development. The involvement of experts provided a valuable contribution to the discussion in not only in building a list of emerging issues, but in contextualizing the process of issue identification.

The report confirms once again the complexity and inter-disciplinarity of sustainable development issues, which involve complex relationships between economic, social and environmental dimensions. Scientific expertise can shed new light on the complexity and interconnectivity of emerging issues, in the process strengthening the science-policy interface and possibly leading to more timely responses to emerging threats or the exploitation of new opportunities.

Taking stock from three editions of the Global Sustainable Development Report

Since UN Member States foresaw a Global Sustainable Development Report as an instrument to strengthen the science policy interface for sustainable development at Rio+20, the report has become a platform and process for engaging scientists and experts in the UN deliberations on sustainable development. It has been open for participation to all interested UN entities, organized science institutions and programmes, and individual scientists – the only requirement being that contributions needed to be grounded in science. To date, 35 UN entities and more than one thousand scientists have contributed to the Report. The open call for science-policy briefs alone resulted in 589 scientists from all parts of the world submitting 264 briefs. The International Council for Science (ICSU) has played a crucial role in encouraging scientific contributions.

Taken together, the three reports published so far have contributed to the science-policy interface in two main ways. Firstly, they have provided specific suggestions on how the HLPF could operationalize the science-policy interface in practice in years to come. Chapter 1 of the 2015 edition suggested a range of ways for the HLPF to enable constructive interactions between science and policy-making at the UN. Actions that the HLPF might consider spanned the space between science and policy, from the provision of policy-relevant data, analysis and information, to actions that the HLPF could take to support enhanced dialogue between science and policy, to the translation of the results of science-policy dialogue into policy-making. All three editions devoted space to the identification of new and emerging issues, from their identification by all areas of science to how existing scanning processes may be combined to provide the HLPF with a usable list of topics for addressing in that forum.

Box 1. Emerging issues from a multi-disciplinary expert prioritization exercise

- Establishing governance mechanisms for the SDGs, from global (UN) to regional, national, and local levels.
- Coping with the increasing impacts of climate changes.
- Political instability and social unrest from increased income and wealth inequalities.
- Ensuring access to affordable, sustainable, and reliable modern energy services for all, and
- Accelerating the implementation of environmentally-friendly renewable energy.
- The need to develop alternative economic models that decouple economic growth resource use and minimize environmental degradation.
- The need to protect and restore ecosystems.
- Persistence of poverty globally, including the poor in rich countries.
- Strengthen and enhance the means of implementation and global partnership for sustainable development.
- Highly unequal distribution of household wealth across and within nations.
- Enhancing social protection and environmental protection in developing countries as a means to decrease inequalities and combat environmental degradation and climate change.
- Integrated assessment of sustainable development pathways.
- Increasing the sustainability, inclusiveness, safety, and resilience of cities and human settlements.
- The depletion of ocean fish stocks and the exploitation of marine resources.
- Time lags of several decades between scientific findings and policy action.
- Migration and all forms of movement of people across borders due to changes in demographics, weather patterns, and other causes.
- Promotion of sustainable industrialization.
- Reduction of future agricultural yields due to climate change, especially in Africa.
- Inadequate funding for health systems, especially in developing countries.
- Putting in place the blend of governance forms and approaches required for the 2030 Agenda.

Secondly, the reports have explored different perspectives on the SDGs as an integrated and indivisible set of goals, and translated those in chapters that adopted a diversity of focuses and approaches. The 2014 edition provided templates for looking at progress made on sustainable development over the long term, as well as for synthesizing insights from sustainable development scenarios undertaken by leading institutions covering a wide range of thematic areas. This also included the examination of four nexuses of issues (climate, land, energy and water; oceans and livelihoods; industrialization and sustainable consumption and production; and infrastructure, inequality and resilience), as well as cross-cutting issues (disaster risk reduction, innovative data and measurement approaches, technology). These contributions provide illustrations of how policy-relevant conclusions can be gleaned from scientific assessments.

As the Global Sustainable Development Report moves to a new phase after the HLPF 2016, these concrete contributions and the collaboration that has been built with more than one thousand scientists can provide, along with the experience from other science-policy interfaces, an interesting base on which to build an ambitious yet actionable multi-year report for the benefit of the HLPF.

Acknowledgements and Disclaimer

The terms 'country' and 'economy' as used in this Report refer, as appropriate, to territories or areas; the designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. In addition, the designations of country groups are intended solely for statistical or analytical convenience and do not necessarily express a judgement about the stage of development reached by a particular country or area in the development process. Major country groupings referred to in this report are informed by the classification of the United Nations Statistical Division. Reference to companies and their activities should not be construed as an endorsement by the United Nations of those companies or their activities. The boundaries and names shown and designations used on the maps presented in this publication do not imply official endorsement of acceptance by the United Nations.

The views expressed in this publication are those of the authors and do not necessarily reflect those of the United Nations or its senior management, or of the experts whose contributions are acknowledged. The valuable comments provided by the United Nations Department of Economic and Social Affairs Editorial Board are gratefully acknowledged.

The Report benefitted from additional resources provided by the General Assembly through the Revised estimates resulting from the decisions contained in the Addis Ababa Action Agenda of the Third International Conference on Financing for Development and the outcome document of the United Nations summit for the adoption of the post-2015 development agenda, entitled "Transforming our world: the 2030 Agenda for Sustainable Development (A/70/589)". It also benefitted from the Expert Group Meeting that was organised by the Division for Sustainable Development on the report and was held in New York from 5 to 6 April 2016.

Authors

This Report was prepared by a team of United Nations staff based on inputs from expert contributors. The team comprised David Le Blanc, Richard Roehrl, Clovis Freire, Friedrich Soltau, Riina Jussila, Tonya Vaturi, Meng Li and Kebebush Welkema (UN Division for Sustainable Development), Vito Intini (United Nations Capital Development Fund, on chapter 2) and Ingeborg Niestroy (IISD Associate, on chapter 4). Research assistance and contributions was provided by Anastasia Kefalidou, Esther Lho, Crispin Maconick, Nelya Rakhimova and Lina Roeschel.

The coordinators for the chapters were David Le Blanc (Chapter 1, conclusion), Clovis Freire (Chapter 2), Richard Roehrl (Chapter 3), Irena Zubcevic (Chapter 4), and Friedrich Soltau (Chapter 5).

Contributing Organizations

Danish Institute for Human Rights, Food and Agriculture Organization of the United Nations (FAO), Health Poverty Action, International Council for Science (ICSU), Inter-Parliamentary Union (IPU), International Trade Centre (ITC), International Telecommunication Union (ITU), International Trade Union Confederation (ITUC), Minority Rights Group International, Overseas Development Institute (ODI), Office of the United Nations High Commissioner for Human Rights(UNOHCHR), Office of the Special Representative of the UN Secretary General on Violence against Children, International Civil Aviation Organization (ICAO), International Labour Organization (ILO United Nations Capital Development Fund (UNCDF), United Nations Conference on Trade and Development (UNCTAD), United Nations Department of Economic and Social Affairs (Division for Policy Analysis and Development, Division for Public Administration and Development Management, Division for Social Policy and Development, Statistics Division, Financing for Development Office, Population Division), United Nations Development Programme (UNDP), United Nations Economic Commission for Europe (UNECE), United Nations Economic Commission for Latin America and the Caribbean (ECLAC), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Environment Programme (UNEP), United Nations Industrial Development Organisation (UNIDO), United Nations Institute for Training and Research (UNITAR), United Nations Conference on Trade and Development (UNCTAD), UN Women, World Bank Group (WB), UN-Water, the UNESCO World Water Assessment Programme (WWAP), WHO / UNICEF Joint Monitoring Programme on water and sanitation.

Individual contributors by chapter:

Chapter 1

Marcia Tavares (UNDESA), Abdelkader Bensada (UNEP), Ana Persic (UNESCO), Anna Rappazzo (FAO), Babatunde Omilola (UNDP), Astrid Hurley (UNDESA), Chantal line Carpentier (UNCTAD), Chris Garroway (UNCTAD), Claire Thomas (Minority Rights Group International), Clare Stark (UNESCO), Clarice Wilson (UNEP), Devika Iyer (UNDP), Doris Schmitz-Meiners (Office of the United Nations High Commissioner for Human Rights), Edoardo Zandri (UNEP), Elena Proden (UNITAR), Fackson Banda (UNESCO), Fanny Demassieux (UNEP), Halka Otto (FAO), Ines Abdelrazek (UNEP), Irmgarda Kasinskaite(UNESCO), Isabel Garza (UNCTAD), Isabell Kempf (UNEP), Jacqueline McGlade (UNEP), Jason Gluck (UNDP), Jean-Yves Le Saux (UNESCO),

Jillian Campbell (UNEP), Joerg Mayer (UNCTAD), Katrin Fernekess (ITC), Kathryn Leslie (Office SRSG on Violence against Children), Kirsten Isensee (UNESCO), Konstantinos Tararas (UNESCO), Lucas Tavares (FAO), Ludgarde Coppens (UNECP), Lulia Nechifor (UNESCO), Mara Murillo (UNEP), Maria Martinho (UNDESA), Mariann Kovacs (FAO), Marie-Ange Theobald (UNESCO), Marion Jansen (ITC), Marta Pedrajas (UNDP), Matthias Eck (UNESCO), Michael Clark (FAO), Michael Stanley-Jones (UNEP), Monika Macdevette (UNEP), Natalia Linou (UNDP), Natalie Sharples (Health Poverty Action), Nicholas Bian (WB), Nina Atwal (Minority Rights Group International), Patrick Keuleers (UNDP), Pedro Conceicao (UNDP), Pedro Manuel Monreal Gonzalez (UNESCO), Piedad Martín (UNEP), Ranwa Safadi (UNESCO), Renato Opertti (UNESCO), Renata Rubian (UNDP), Salvatore Arico (UNESCO), Solene Ledoze (UNDP), Sylvia Hordosch (UN Women), Tim Scott (UNDP), Tina Farmer (FAO), Trang Nguyen (UNEP), Verania Chao (UNDP), Vinícius Carvalho Pinheiro (ILO).

The chapter was peer reviewed by Lucilla Spini, Head of Science Programmes, International Council for Science (ICSU).

Chapter 2

Ana Paula Barcellos (State University of Rio de Janeiro, Brazil), Ana Persic (UNESCO), Ananthanarayan Sainarayan (ICAO), Andrew Fyfe (UNCDF), Antonio A. R. Ioris (University of Edinburgh, United Kingdom), Chantal line Carpentier (UNCTAD), Chris Garroway (UNCTAD), Clare Stark (UNESCO), Daniel Albalate (Universitat de Barcelona, Spain), David Seekell (Umeå University, Sweden), Dominic Stead (Delft University of Technology, the Netherlands), Edsel E. Sajor (Asian Institute of Technology, Thailand), Epo Boniface Ngah (University of Yaoundé II, Cameroon), Florence Bonnet (ILO), Gail Ridley (University of Tasmania, Australia), Geraldo Mendoza (ECLAC), Gwen DiPietro (Carnegie Mellon University, United States), Holger Schlör (Institute of Energy and Climate Research, Germany), Isabel Garza (UNCTAD), Jean-Yves Le Saux (UNESCO), Jimena Blumenkron (ICAO), Joerg Mayer (UNCTAD), Julie-Maude Normandin (École nationale d'administration publique, Canada), Kash A. Barker (University of Oklahoma, United States), Kristen Isensee (UNESCO), Kristen MacAskill (University of Cambridge, United Kingdom), Lulia Nechifor (UNESCO), Mara Keller (ICAO), Maria Ortiz (ECLAC), Marie-Ange Theobald (UNESCO), Marie-Christine Therrien (École nationale d'administration publique, Canada), Michael Rütimann (Biovision Foundation for Ecological Development, Switzerland), Miguel Esteban (The University of Tokyo, Japan), Mike Muller (University of the Witwatersrand, South Africa), Nikki Funke (The Council for Scientific and Industrial Research, South Africa), Nicholas Bian (WB), Paolo Bocchini (Lehigh University, Unites States), Ranwa Safadi (UNESCO), Remi Lang (UNCTAD), Romain Zivy (ECLAC), Samuel Choritz (UNCDF), Silvana Croope (Delaware Department of Transportation, United States), Simona Santoro (UNCDF), Sophie Browne (UN Women), Stig Ole Johnsen (SINTEF, Norway), Sylvia Hordosch (UN Women), Thomas Poder (Université de Sherbrooke and CIUSSS de l'Estrie - CHUS, Canada), Thomas Ummenhofer (Karlsruhe Institute of Technology, Germany), Tim Zinke (Karlsruhe Institute of Technology, Germany), Tirusew Asefa (Tampa Bay Water, United States), Valérie Ongolo Zogo (Ministry of Transport, Cameroon), Vinícius Carvalho Pinheiro (ILO), Wang Xiaojun (Nanjing Hydraulic Research Institute, China).

Chapter 3

Bert de Vries (Utrecht University, The Netherlands); Thomas Reuter (University of Melbourne, Australia); Birama Diarra (Agence Nationale de la Météorologie, Mali); Erick R. Bandala (Division of Hydrologic Sciences, Desert Research Institute, Las Vegas, USA); E. William Colglazier (Center for Science Diplomacy, American Association for the Advancement of Science, USA); R.B. Singh (Delhi School of Economics, University of Delhi, India); Bartlomiej Kolodziejczyk (Department of Mechanical Engineering, Carnegie Mellon University, USA); V.N. Attri (IORA, University of Mauritius, Mauritius); Muhammad Saidam (Royal Scientific Society, Amman, Jordan, and International Council for Science, ICSU); H-Holger Rogner and Nebojsa Nakicenovic (IIASA, Austria); Nicholas Robinson (Pace University, New York USA); Franz W. Gatzweiler (ICSU-IAMP-UNU Urban Health and Wellbeing Programme, and Institute of Urban Environment, Chinese Academy of Sciences, Xiamen, China); Muhammad Yimer (Department of Civic and Ethical Studies, Arba Minch University, Ethiopia); Moshe C Kinn (The University of Salford, Manchester, UK); Oliver Mutanga (Bloemfontein, South Africa); Robert Brinkmann (Director of Sustainability Studies, Hofstra University, USA); Pan Jiahua (Institute for Urban & Environmental Studies, Chinese Academy of Social Sciences, China); Matteo Pedercini and Steve Arquitt (Millennium Institute, USA); Adriaan Kamp (Energy for One World, Oslo, Norway); Akiko Okabe (The University of Tokyo, Japan); Alice C. Hughes (Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, China); Qinqi Dai and Yu Yang (School of Humanities, Southeast University, Nanjing, China); Sigrid Kusch (ScEnSers Independent Expertise, Germany); Emmanuel Letouzé and Anna Swenson (Data Pop Alliance, Harvard Humanitarian Initiative, MIT Media Lab and Overseas Development Institute, USA); Antje Bruns and Rossella Alba (Governance and Sustainability Lab, Trier University, Germany); Zachary Donnenfeld (Institute of Security Studies, Pretoria, South Africa); Vania Aparecida dos Santos (Forest Institute - IF / SMA / SP, Brazil); Patrick Paul Walsh, Caroline O'Connor and Purity Mwendwa (University College Dublin, Ireland); Mahua Mukherjee (Department of Architecture and Planning, Indian Institute of Technology Roorkee, India);

Claudio Huepe Minoletti (Centro de Energía y Desarrollo Sustentable, Universidad Diego Portales, Chile); Anita Shankar (Johns Hopkins University, Bloomberg School of Public Health, Maryland, USA); Lucilla Spini (International Council for Science, France); Laura Diaz Anadon, William C. Clark and Alicia Harley (Kennedy School of Government, Harvard University, USA); Gabriel Chan, (Humphrey School of Public Affairs, University of Minnesota, USA); Kira Matus (Department of Science, Technology, Engineering and Public Policy, University College London, UK); Suerie Moon (Harvard Kennedy School of Government and Harvard T.H. Chan School of Public Health, Harvard University, USA); Sharmila L. Murthy (Suffolk University Law School, Suffolk University, USA); Keigo Akimoto (Research Institute of Innovative Technology for the Earth, Kyoto, Japan); Ambuj Sagar (Indian Institute of Technology Delhi, India); Chijioke Josiah Evoh (UNDP and Economic & Urban Policy Analysts, Yonkers, USA); Deepak Sharma (Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia); Melika Edquist (Sustainable Development Solutions Network, USA); Richard Watson, Alex Ayad, Chris Haley and Keeren Flora (Imperial College London, UK); Lawrence Whiteley (Wond.co.uk); Dušan Jasovský (ReAct - Action on Antibiotic Resistance, Uppsala University, Sweden); Magdalena Muir (Arctic Institute of North America, University of Calgary, Canada); Jill Jaeger (Vienna, Austria); Manuel Montes (The South Centre); Prof. Xiaolan Fu (Technology & Management for Development Centre, University of Oxford, UK); Steve Sparks (School of Earth Sciences, University of Bristol, UK); Javier Garcia Martinez (University of Alicante, Spain); Stewart Lockie (The Cairns Institute, Australia), Dong Wu (UNCTAD), Claudia Contreras (UNCTAD), Bob Bell (UNCTAD), and Arun Jacob(UNCTAD).

In addition, the following 97 individuals provided science-policy briefs on technology issues which were also considered:

Manish Anand, Shailly Kedia (TERI, India); Erick R. Bandala (DRI, USA); Ashantha Gooetilleke (QUT, Australia); Lindy Weilgart (Dalhousie University, Canada); Ashish Jha, Nicholas Zimmermann (Harvard University, USA); Ilona Kickbusch (Graduate Institute, Switzerland); Peter Taylor (IDRC, Canada); Kamran Abbasi (The BMJ, UK); Friedrich Soltau (UN-DESA); Bartlomiej Kolodziejczyk (IUCN CEM, Switzerland); Raymond Saner (CSEND, Switzerland); Steven A. Moore (University of Texas, USA); Carole-Anne Sénit, Henri Waisman (IDDRI, France); Ademola A. Adenle (UNU); Klaus Ammann (University of Bern, Switzerland); Zeenat Niazi, Anshul S. Bhamra (Development Alternatives, India); Ivana Gadjanski (BioIRC. Serbia); Ying Qin, Elizabeth Curmi, Zenaida Mourao, Dennis Konadu, Keith S. Richards (University of Cambridge, UK); Thematic Group on Sustainable Agriculture and Food Systems; Carl Mas, Emmanuel Guerin (UN-SDSN); Timothy O. Williams, Javier Mateo-Sagasta, Pay Drechsel, Nicole de Haan, Fraser Sugden (IWMI, Sri Lanka); Karumuna Kaijage, Pamela Flattau (PsySiP, USA); Karl Aiginger, Michael Boeheim (AIER, USA); James Ehrlich, Sanjay Basu (Stanford University, USA); David Acuna Mora, Arvid de Rijck, Daphne van Dam, Mirle van Huet, Stan Willems, Carmen Chan, Guilia Bongiorno, Janne Kuhn, Hein Gevers (Wageningen University, Netherlands); Hyosun Bae, Zoraida Velasco, William Daley, Rajiv Nair, Elizabeth A. Peyton, Margeret McKenzie (Tufts University, USA); Lucy Fagan (Global Health Next Generation Network, UK); Adrian Paul Jaravata Rabe, Sharon Lo, Luca Ragazzoni, Frederick M. Burkle; Ali J Addie (Center of Advanced Materials, USA); Moa M. Herrgard (UN Major Group for Children & Youth); Charles Ebikeme, Heide Hackmann, Anne-Sophie Stevance, Lucilla Spini (International Council for Science, ICSU); Simon Hodson, Geoffrey Boulton (ICSU CODATA); Jari Lyytimaeki (Finnish Environment Institute, Finland); Alessandro Galli, David Lin, Mathis Wackernagel, Michel Gressot, Sebastian Winkler (Global Footprint Network, USA); Ibrahim Game, Richaela Primus, Darci Pauser, Kaira Fuente, Mamadou Djerma, Aaron Vlasak, Brian Jacobson, Ashley Lin (SUNY-ESF, USA); Normann Warthmann (The Australian University, Australia); Claudio Chiarolla (PSIA, France); Coli Ndzabandzaba (Rhodes University, South Africa); Alexander Gloss, Lori Foster (SIOP, USA); Davide Rasella, Romulo Paes Souza (UNDP), Daniel Villela (PROCC, Brazil), Delia Boccia (London School of Hygiene and Tropical Medicine, UK), Ana Wieczorek Torrens, Draulio Barreira (Brazilian National Tuberculosis Control Program, Brazil), Mauro Sanchez (University of Brasilia, Brazil); Pedro Piqueras, Ashley Vizenor (CE-CERT, USA); and V.N. Attri (IORA, Republic of Mauritius).

The chapter was peer reviewed by Dr. William E. Kelly (Committee on Sustainability, American Society of Civil Engineers, USA) and Prof. Dr. Gueladio Cisse, Head of the Ecosystem Health Sciences Unit, Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Switzerland.

Chapter 4

Simen Gudevold and Elie Hobeika, Division for Public Administration and Management, DESA.

The chapter was peer reviewed by Raymond Saner, Professor, Basle University, Sciences Po (Paris), University of Applied Sciences and Arts Northwestern Switzerland (FHNW)

Chapter 5

Gueladio Cisse (Swiss TPH and ICSU); William Colgazier (AAAS); Carl Dahlmann (OECD Development Centre);

Roberta D'Allesandro (Leiden University and ICSU); Zachary Donnenfeld (ISS); Gerlis Fugmann (APECS); Claudio Alberto Huepe Minoletti (Universidad Diego Portales); Stewart Lockie (James Cook University and ICSU); Cheikh Mbow (ICRAF); Manual Montes (Senior Advisor on Finance and Development South Centre); MantaDevi Nowbuth (University of Mauritius); Muhammad Saidam (Royal Scientific Society, Jordan, and ICSU); Anita Shankar (Johns Hopkins University); Oyewale Tomori (Nigerian Academy of Science and ICSU); Patrick Paul Walsh (University College Dublin); Robert Lindner (UNU-IAS); Nicholas Robinson (Pace University Law School); Chantal Line Carpentier (UNCTAD); Lud Coppens (UNEP); Ana Persic (UNESCO); Dino Corell (ILO); Liisa Haapanen, Petri Tapio (University of Turku); Luca Sabini (Newcastle University Business School); V.N. Attri (IORA); Donovan Guttieres, Gusti Ayu Fransiska Sri Rahajeng Kusuma Dewi (UN Major Group for Children and Youth); Shikha Ranjha (DLGS-IOER-TU Dresden); Simon Hodson, Geoffrey Boulton, (ICSU-CODATA); Charles Ebikeme, Heide Hackmann, Lucilla Spini (ICSU); Ivonne Lobos Alva, Jes Weigelt (IASS); Sigrid Kusch (ScEnSers); Hung Vo (UN Major Group for Children and Youth); Nicola Martinelli (Technical University of Bari), Gabrielle Calvano, Angelo Tursi (Bari University), Giovanna Mangialardi (University of Salento); M.B. Wehbe, M.P. Juarez, I.E. Tarasconi, J.M. Quiroga (Rio Cuarto National University, Argentina); Pranab J. Patar (WCPA), Ms. Surbhi (Earthwatch Institute India); Qinqi Dai, Yu Yang (Southeast University, China); Florian Koch, Kerstin Krellenberg, Sigrun Kabisch (Helmholtz Centre for Environmental Research); Bolysov, Sergey, Nekhodtsev, Vladimir (Moscow State University); Shikha Ranjha (DLGS-IOER-TU Dresden); Erick R. Bandala (Desert Research Institute), Ashantha Goonetilleke (Queensland University of Technology); Pedro Piqueras, Ashley Vizenor (University of California, CE-CERT); Saul Billingsly (FIA Foundation); Chijioke J. Evoh, Owen Shumba (UNDP); Moa M. Herrgard (UN Major Group for Children and Youth), Adrian Paul Jaravata Rabe, Sharon Lo, Luca Ragazzoni, Frederick M. Burkle; Lucy Fagan (Global Health Next Generation Network); Davide Rasella, Romulo Paes Souza (UNDP), Daniel Villela (PROCC), Delia Boccia (London School of Hygiene and Tropical Medicine), Ana Wieczorek Torrens, Draulio Barreira (Brazilian National Tuberculosis Control Program), Mauro Sanchez (University of Brasilia), Sanjay Basu (Stanford University); Karlee Johnson, Darin Wahl, Frank Thomalla (Stockholm Environment Institute); Annisa Triyanti, Eric Chu (University of Amsterdam); Sara Al-Nassir (DLGS-IOER-TU Dresden); Hamidul Huq, Shafiqul Islam, Khalid Bahauddin (University of Liberal Arts Bangladesh); Nitya Rao (University of East Anglia), Daniel Morchain (OXFAM); Houria Djoudi (CIFOR); Anne M. Larson, Therese Dokken, Amy E. Duchelle (CIFOR); Pham Thu Thuy, Maria Brockhaus (CIFOR); Yong long Lu (Chinese Academy of Sciences), Nebosja Nakicenovic (IIASA), Martin Visbeck (GEOMAR Helmoltz Centre for ocean Research), Anne-Sophie Stevance (International Council for Science); Matteo Pedercini, Gunda Zullich, Kaveh Dianati (The Millennium Institute); H. Suenaga, D.K.Y. Tan, P.M. Brock (University of Sydney); Manish Anand, Shailly Kedia (TERI, New Delhi); Ali J. Addie (Center of Advanced Materials); Bartlomiej Kolodziejczyk (IUCN CEM); Lindy Weilgart (Dalhousi University); Saeko Kajima (UN DESA); Salvatore Arico (UNESCO); Assem Barakat (Alexandria University and ICSU); Tom Beer (ICSU); David Black (ICSU); Lucien Chabason (IDDRI); Chad Gaffield (University of Ottawa and ICSU); Gisbert Glaser (ICSU); Fumiko Kasuga (Future Earth and ICSU); Jinghai Li (Chinese Academy of Science and ICSU); Johannes Mengel (ICSU); Julia Nechifor (UNESCO); Zitouni Ould-Dada (UNEP); Katsia Paulavets (ICSU); Emmanuelle Quillerou (Independent Consultant); Claire Weill (Université Pierre et Marie Curie); Denise Young (ICSU).