LOOKING AHEAD
NEXT STEPS

The conceptual framework and assessment of key interactions of the four goals presented in this report are intended as a starting point for further work towards a more complete understanding of how the sustainable development goals (SDGs) fit together. The proposed framework guides a more detailed analysis and enables structured deliberations on how to implement the 2030 Agenda coherently, in order to maximise development outcomes. Making interactions explicit and understanding the full impacts of policies and actions across goals stimulates important knowledge gathering and learning processes, and has very concrete and tangible value for achieving efficiency and effectiveness in SDG implementation, for driving meaningful multi-stakeholder partnerships, and for country level monitoring, evaluation and review. The SDGs as an internationally-agreed single agenda with a 2030 time horizon integrating many policy dimensions provides a convergence point to support collaboration across scientific, policy and practitioner communities.

REFLECTIONS ON THE SEVEN-POINT SCALE AND METHODOLOGY

The report presents a typology and an approach to scoring SDG interactions that can be replicated and refined for each and every goal, and importantly, at different geographical scales, whether global, regional, national or sub-national, with varying data and evidence availability.

The framework on which this work is based identifies causal and functional relations underlying progress or achievement of the sustainable development goals and targets: positive interactions are assigned scores of +1 ('enabling'), +2 ('reinforcing') or +3 ('indivisible'), while interactions characterised by trade-offs are scored with -1 ('constraining'), -2 ('counteracting'), or -3 ('cancelling'). By systematically assessing the interactions and relationships between goals and targets, this report supports horizontal coherence across sectors.

The approach taken relied on an interpretive analytical process whereby research teams combine their knowledge and expert judgment with seeking of new evidence in the scientific literature and extensive deliberations about the character of different specific interactions. A potential caveat emerged in that even when starting from similar understandings about interactions and the main conceptual underpinnings of the framework, the different teams landed in somewhat varying interpretations of how to apply the framework and score interactions. This poses a challenge in terms of replicating the study.

Nevertheless, a strength of the approach was that it generated a highly iterative process for deepening the understanding of target interactions. Each team had valuable debates about the terms of the scale and several revisions were made to scores in different chapters over the course of the work. In fact, in many respects it could be argued that the process of deciding on the score was

possibly more valuable than the final result, since it required a detailed study of the literature, a consideration of the issues and potential context dependencies, a review of limitations and gaps in current knowledge, and discussion with others. To this extent, the assessment becomes a vehicle for triggering dialogue interpretation and learning process.

Based on this assessment, there should be ample potential for carrying out similar interaction assessment exercises among governments and other societal stakeholders concerned with SDG implementation, as well as in the country or regional contexts where there are limited data and evidence.

RECOMMENDATIONS TO POLICYMAKERS

Based on the analysis, four recommendations to better identify and manage interactions across SDGs to inform planning and implementation stand out:

1. SYSTEMATICALLY IDENTIFY THE INTERACTIONS BETWEEN AND AMONG THE 17 GOALS TO INFORM PRIORITY-SETTING IN A GIVEN CONTEXT

This could take the form of a matrix including the 17 goals where at each intersection the most significant interactions at target-level are identified and scored using the seven-point scale. Identifying *a priori* the most relevant interactions requires bringing together a wide range of expertise spanning goals, disciplines and sectors.

Building such an exercise into the planning for national implementation of the SDGs would provide a useful overview of key interfaces between goals, and support the management of interactions across government departments, for example, through early identification of potential conflicts. Key interlinking targets that operate as connectors or enablers can also be identified – even if they may not be singled out initially as key priorities in a particular context – thus helping to develop a more joined-up narrative of what it will take to achieve the SDGs as a whole.

It would help governments in their priority-setting by emphasising where the achievement of one objective will not be possible without simultaneous or even preliminary action on others, thus informing how to plan sequencing of actions for optimal impact, and highlighting needs for integration between policy areas or jurisdictions. For instance, tackling urban air pollution requires determined action to move away from fossil fuels as well as achieving energy efficiency targets in the transport, housing and industrial sectors.

Beyond the particular scores determined in such an assessment exercise, the *process* of collectively mapping interactions and scoring the degree of interdependency is valuable in itself. By providing a common terminology and methodology, it encourages cross-sectoral and cross-disciplinary conversations that go beyond a traditional, siloed approach.

2. MAP EXISTING INSTITUTIONS AND ACTORS TO ASSESS STRENGTHS AND WEAKNESSES OF STATUS QUO FOR DELIVERING THE SDGS

Mapping the existing institutional landscape in a particular country/context and identifying key actors for implementing the SDGs is needed to assess the extent to which the existing institutional set-up is fit for purpose to deliver on the SDGs and address their interactions. If certain targets are in conflict with progress in targets under other goals, then governance mechanisms must be put in place to manage these interactions and address potential tensions and conflicts. For example, if the Ministry of Agriculture puts food security through agricultural intensification as its key SDG2 target, while the Ministry of Water's target is to dramatically reduce agricultural water pollution under SDG6 and SDG14, and the Ministry of Environment's target is to reduce biodiversity loss and expand conservation zones under SDG15, then mechanisms must be put in place to negotiate how the sets of targets should be moved forward.

Moreover, it is widely recognised that while the responsibility of achieving the 2030 Agenda lies with countries, non-state actors have a key role to play. Understanding how the SDGs interact with one another can enable a better understanding of the roles stakeholders can play and harness meaningful partnerships for delivering on the SDGs. Based on key intervention points identified through the assessment of interactions, clusters of issues can be identified and provide a framework for cross-sectoral collaboration around a set of common priority issues.

Governments focus on multiple concurrent 'public good' goals, for which there are multiple beneficiaries and where the goods or services are not adequately provided by the private sector or non-profit sector. This is even more true of international goals, for example those designed to address global problems such as climate change and conflict. For example, when the United Nations Framework Convention on Climate Change works together with other international agencies such as the World Trade Organization, this global level of governance can be used for setting priorities based on critical global outcomes and provide a framework for nested and subsidiary levels of governance and policy.

3. ENACT CHANGE TO ENABLE HORIZONTAL MANAGEMENT OF SDGS

The SDGs' ambition and emphasis on integration, challenge current institutional and governance arrangements and require new mechanisms for driving policy integration and coherence. Leadership and the development of cross-cutting coordination mechanisms will be key to achieving this in practice. Some countries have already developed cross-ministerial and consultative mechanisms such as in Germany, Colombia or Finland. But this also needs to be aligned with decision-making and implementation processes, whether for resource allocation, data and information collection and sharing, support for research and innovation, or institutional and individual capacity development. How these processes develop will be country-specific.

4. APPLY AN INTEGRATED PERSPECTIVE TO MONITORING, EVALUATION AND REVIEW

Beyond the monitoring of individual targets and goals, what is needed is an integrated perspective to monitor progress towards achievement of the SDGs. At the outset, it is recommended to draw up an initial matrix of interactions to serve as a baseline. Data and information systems should be integrated in order to monitor interactions between targets. Ideally, there should be a definition of headline indicators to monitor progress across various SDG domains.

Assessment and scoring of interactions should be conducted at various stages in the planning and implementation of policies, as well as in the evaluation of policy outcomes. Using the initial matrix of interactions as a baseline, comparisons should be made in order to identify synergies and trade-offs within the implementation processes and to establish the extent to which it was possible to minimise trade-offs and maximise synergies.

The seven-point scale can therefore provide a basis for review and impact assessment, and makes it possible to identify important cross-cutting gaps in data and knowledge.

NEXT STEPS FOR THE SCIENTIFIC COMMUNITY

The scientific community has been focusing for a long time on deepening its understanding of social and ecological systems, and their interlinkages. This report represents a contribution towards this broad array of scholarly work. The following sections outline possible next steps and a few examples of ongoing initiatives that seek to develop the knowledge and solutions for addressing the SDGs in an integrated way.

1. CONTINUE TO GROW THE SCIENTIFIC EVIDENCE BASE

The SDGs highlight the need for more integrated research for sustainable development across natural, social, health sciences, economics and engineering. They also require a stronger drive towards transdisciplinary research. This report draws on the scientific literature on interactions related to the four SDGs explored in detail, and identifies a number of knowledge gaps. An important contribution that could be made by the scientific community is to continue growing and critically assessing new knowledge on individual or clusters of SDGs through observations, data sharing and integration, empirical research and context-sensitive analysis, theory development, modelling, and scenario development.

One way that scientists are organising themselves is through Future Earth, a ten-year international research initiative that aims to develop the knowledge for responding effectively to the

risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades. Future Earth mobilises the global scientific community while strengthening partnerships with policy-makers and other societal actors to co-design and co-produce new knowledge and solutions.

The growing body of sustainability science literature poses a challenge in itself in bringing synthetic, authoritative, timely and policy-relevant insights. The SDGs could be used as a knowledge management framework to mobilise and structure key scientific evidence in support of the SDGs. This could also take the form of thematic assessments, to support the implementation of all SDGs and make the scientific literature on interactions more accessible.

The scoring approach and synthesis work undertaken within this report points also to a need for a broad-based assessment of scientific knowledge on the SDGs and their interactions. Such comprehensive synthesis could build on the Global Sustainable Development Report, a United Nations report published every four years with the contributions of the scientific community.

2. APPLY A SYSTEMS APPROACH

This report has mostly focused on an examination of binary interactions. In other words, interactions between target A and target B, recognising that interactions can be far more complex, multidimensional and dynamic with feedbacks and unforeseen consequences. Further work on interactions could usefully apply a systems-approach.

A systems approach can be taken at various organisational levels depending on the goals and targets and the spillover to other goals and targets. For example, where policies such as agricultural intensification can have unintended consequences, such as nitrate or *E. coli* pollution of freshwaters, national governments then need to consider appropriate policy instruments.

One project that seeks to address the full spectrum of transformational challenges related to achieving the 17 SDGs in an integrated manner so as to minimise trade-offs and maximise benefits, is The World in 2050 (TWI2050). This global research initiative brings together a large consortium of researchers, modelling teams, and policymakers around the world to explore science-based transformational and equitable pathways to sustainable development combining quantitative and qualitative analysis.

Strengthening integrated science to deliver the knowledge and implementation pathways will require capacity building to work across disciplines and include non-scientists in research processes. It will also mean that scientists will need to work harder to bridge disciplines, knowledge systems, and find efficient ways to link and share datasets from diverse sources.

3. EMBED INTERACTIONS IN MONITORING AND REVIEW

Throughout the development process of the Sustainable Development Goals in the UN's Open Working Group, the importance of considering the SDGs as a whole rather than in isolation was emphasised. The Inter-Agency and Expert Group on Sustainable Development Goals Indicators tasked with providing a proposal for a global indicator framework for the follow-up and review of the 2030 Agenda highlighted the new data requirements for the monitoring of the SDGs and their 230 indicators agreed in March 2016 as well as the importance of interlinkages. Subsequently a working group has been established to look at interlinkages between goals and targets, and within the statistics underlying the indicators with a view to build a more integrated analysis of the economic, social and environmental developments related to the SDGs. The working group will conduct its work between 2016 and 2018.

One approach towards more integrated reporting is the proposal to develop a set of Essential Sustainability Variables (ESVs). The aim of these ESVs would be to provide a minimum set of integrated, headline indicators in which the indicators themselves focus on interactions between SDG goals and targets to ensure that they are addressed in an integrated fashion.

4. STRENGTHEN THE SCIENCE-POLICY INTERFACE

The scope of the ambition set by the 2030 Agenda calls for a wide mobilisation of expertise, resources, competences, and enthusiasm from the global to the national and local levels. One important dimension of this much-needed science-policy-society interface is the need to strengthen science advisory mechanisms to decision-makers at both the global and the national-level to support evidence-based decision-making and solution-building. Strengthening science systems at the national level and connecting scientists to decision-makers as well as strengthening capacities of scientists to engage in a timely and adequate manner to allow scientific evidence to be effectively used will be a critical enabler to navigate the complexity and the urgency of the SDGs.