

Indicators for the SDGs: Identifying inter-linkages

Issue Brief

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The 46th Session of the UN Statistical Commission marked an important moment in the development of an SDG monitoring system. The Commission provided recommendations on a roadmap for developing indicators, including the establishment of a multi-stakeholder process, via an Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs). The work of the IAEG-SDG is now well underway, with two work streams established on the conceptual framework and inter-linkages between the goals and targets.

SDSN has been working to develop an integrated, comprehensive set of SDG indicators for more than 18 months. Our final proposal, [Indicators and a Monitoring Framework for the SDGs](#), was informed by two global public consultations, as well as extensive dialogue with leading experts from National Statistical Offices (NSOs), UN agencies, as well as academics, civil society, and private sector representatives. During this process, we moved from an initial long-list of over 900 indicators to a concise set of 100 global monitoring indicators, which can comprehensively track all 169 OWG targets.

This note is offered as a contribution to the IAEG-SDG's deliberative process, alongside the issue brief entitled: *"Developing a robust statistical framework for SDG monitoring"*. This note attempts to sketch out a means for identifying inter-linkages between targets and to propose multi-purpose indicators that adequately track two or more targets across goals.

I. INTERLINKAGES IN MEASUREMENT

The IAEG-SDGs second work-stream, on identification of inter-linkages across goals and targets, is currently developing a methodology to encourage a cross-sectoral monitoring of the goals and targets. In doing so, the group hopes to move from the current indicator long-list towards a reduced, more integrated set.

Several approaches to identifying inter-linkages have been proposed, including semantic or text analysis, cause-effect analysis, or the "nexus" approach, in which issues with particular interdependence are singled out e.g. food, water and energy systems. These approaches highlight conceptual links between the goals and targets, which are currently captured in the right-hand inter-linkages column of the current long-list of IAEG-SDG indicators. For instance, they rightly connect target 1.1 on extreme poverty to target 2.3 on the agricultural productivity and incomes of small-scale farmers, as poverty is often intimately connected to small-scale farmers' ability to produce and sell their products, and to earn a fair wage.

However the complexity of sustainable development is such that a huge number of the targets are interlinked, creating a web of complex relationships which can not be adequately or comprehensively tracked without a vast number of indicators, or the use of complex composite indicators.¹

Furthermore, examining intersectionalities and connections between dimensions of sustainable development does not necessarily result in a clearer understanding of shared measurement methods, for example extreme poverty and agricultural productivity are undoubtedly interlinked, but you can not measure them with the same indicator.

A more pragmatic approach to the question of inter-linkages is not to examine causal relationships but to look at dimensions of sustainable development with shared measurement approaches, which will not only encourage cross-sectoral monitoring and collaboration, but will help to ease the total number of indicators, that countries are expected to compile.

In the report *Indicators and a Monitoring Framework*, SDSN proposes a simple two-stage approach to reviewing the goals, targets and indicators, and identifying those critical dimensions that share measurement. First, we consider whether the target is measuring inputs, outputs, or outcomes. The indicator chosen should attempt to reflect the target's ambition, whether on process or final outcome. Then we consider the core, underlying issue to be measured, before framing the best possible corresponding indicator. For example, if a target is focused on technological upgrading an appropriate proxy indicator might be an index on ICT maturity. The same indicator could also be a good measure of access to modern infrastructure (target 9.1) and access to science, technology and innovation (target 17.6). Several examples of this approach, based on the SDSN indicator report, are provided in the tables below.

This streamlined approach focuses on the core dimension at the heart of each target, and ensures that each and every issue covered is addressed by one or more indicators. It also helps to ensure that all targets are treated equally. In practice, due to the complex and multi-issue nature of the targets, some targets will be tracked by several indicators, without increasing the overall number of global indicators, as illustrated below.

¹ SDSN strongly believes that composite indices should be avoided where possible since they require more complex data collection methods, and often rely on imputation for missing variables and arbitrary weighting. Moreover, composite indices do not lend themselves easily to policy recommendations, and they expand the number of (underlying) variables that need to be collected through official statistical systems, which might undermine the feasibility of a monitoring framework. Instead, Global Monitoring Indicators should rely as much as possible on metrics that consist of one variable only.

II. EXAMPLES OF MULTIPURPOSE INDICATORS

SDG Targets	Shared issue & suggested Indicator
1.b ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation to provide adequate and predictable means for developing countries, in particular LDCs, to implement programmes and policies to end poverty in all its dimensions	<p>International development cooperation as an input measure is the common core issue for these 10 targets, so they could all be tracked by the same indicator measuring development assistance financial flows. For example, SDSN proposes “Official development assistance and net private grants as percent of GNI” as the shared indicator for all these targets.</p>
2.a increase investment, including through enhanced international cooperation , in rural infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular in least developed countries	
4.c by 2030 increase by x% the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially LDCs and SIDS	
7.a by 2030 enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies	
9.a facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, LLDCs and SIDS	
10.b encourage ODA and financial flows, including foreign direct investment, to states where the need is greatest, in particular LDCs, African countries, SIDS, and LLDCs, in accordance with their national plans and programmes	
15.a Mobilize and significantly increase from all sources financial resources to conserve and sustainably use biodiversity and ecosystems	
15.b Mobilize significantly resources from all sources and at all levels to finance sustainable forest management, and provide adequate incentives to developing countries to advance sustainable forest management, including for conservation and reforestation	
17.2 developed countries to implement fully their ODA commitments , including to provide 0.7% of GNI in ODA to developing countries of which 0.15-0.20% to least-developed countries	

SDG Targets	Shared issue & suggested Indicator
1.4. by 2030 ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership, and control over land and other forms of property , inheritance, natural resources, appropriate new technology, and financial services including microfinance	<p>These five targets share a core issue of equal access to land, property and resources, and can thus be measured by the same outcome indicator.</p> <p>Based on the consensus from a broad expert coalition working on land indicators since 2012, SDSN proposes “Percentage of women, men, indigenous peoples, and local communities with secure rights to land, property, and natural resources, measured by (i) percentage with documented or recognized evidence of tenure, and (ii) percentage who perceive their rights are recognized and protected.”</p>
2.3 by 2030 double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land , other productive other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment	
5.1 end all forms of discrimination against women and girls everywhere	
5.a undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property , financial services, inheritance, and natural resources in accordance with national laws	
10.2. by 2030 empower and promote the social, economic and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	

SDG Targets	Shared issue & suggested Indicator
<p>1.5 by 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters</p>	<p>These four targets are all related to the impact of disasters and disaster risk reduction, therefore they can all be tracked by the same indicator. SDSN proposes: “Losses from natural disasters, by climate and non-climate-related events (in US\$ and lives lost)”</p>
<p>2.4 by 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality</p>	
<p>11.5 by 2030 significantly reduce the number of deaths and the number of affected people and decrease by y% the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations</p>	
<p>13.1 strengthen resilience and adaptive capacity to climate induced hazards and natural disasters in all countries</p>	

SDG Targets	Shared issue & suggested Indicator
<p>2.a increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular in least developed countries</p>	<p>These six targets all relate to technology infrastructure and can therefore be measured by the same outcome indicator. SDSN proposes the “Index on ICT maturity,” developed in partnership with Ericsson.</p>
<p>8.2 achieve higher levels of productivity of economies through diversification, technological upgrading and innovation, including through a focus on high value added and labour-intensive sectors</p>	
<p>9.1 develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</p>	
<p>9.4 by 2030 upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, all countries taking action in accordance with their respective capabilities</p>	
<p>9.c significantly increase access to ICT and strive to provide universal and affordable access to internet in LDCs by 2020</p>	
<p>17.6 enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation, and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, particularly at UN level, and through a global technology facilitation mechanism when agreed</p>	

SDG Targets	Shared issue & suggested Indicator
<p>2.3 by 2030 double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment</p>	<p>These five targets are all related to sustainable agricultural productivity, and also the effects of agricultural inputs. SDSN proposes “Nitrogen use efficiency in food systems” which is an indicator that measures fertilizer efficiency, addresses the environmental impact of excessive fertilizer use, and contributes directly to understanding a key driver of marine nutrient pollution.</p>
<p>2.4 by 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather</p>	
<p>8.4 improve progressively through 2030 global resource efficiency in consumption and production, and endeavour to decouple economic growth from environmental degradation in accordance with the 10-year framework of programmes on sustainable consumption and production with developed countries taking the lead</p>	
<p>12.4 by 2020 achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse i</p>	
<p>14.1 by 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution</p>	