# BEYOND PRIORITY AREAS AND SECTORS

## The Integrated Approach of Agenda 2030 for Sustainable Development

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# SUMMARY

This paper introduces a framework and tool for mapping the interlinkages among the different Sustainable Development Goal (SDG) targets, and for understanding and better addressing potential trade-offs and synergies derived from them. The paper presents the approach based on identified interlinkages between nature-focused SDG targets and others in the Asian context, but it can easily be replicated for other topics and regions. Mapping the interlinkages among the SDG targets can support and orient partners, counterparts and GIZ staff to identify potential risks and opportunities in the implementation of country strategies, programmes and projects in an integrating manner, contributing to the goals of the Agenda 2030.

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# 01 INTRODUCTION

The 2030 Agenda for Sustainable Development is "a plan of action for people, planet and prosperity" adopted at the United Nations Sustainable Development Summit on 25 September 2015. The 17 Sustainable Development Goals (SDGs) and 169 targets urge nations to embark on a new development pathway balancing the three dimensions of sustainability – economic, social and ecological. The SDGs and their targets seek to guide developmental policy making and stimulate actions over the next thirteen years. The integrated approach is recognised as one of the five main implementation principles for the SDGs. (Figure 1)

Two aspects shape the integrative character of the SDGs. First, the social, economic and ecological dimensions of sustainability - as interdependent factors - are given equal importance. Second, the 2030 Agenda takes into account the numerous interactions between the goals and their targets. There are synergies between the goals and targets, but there are also trade-offs. The idea is that no goal may be implemented at the expense of another.

How can we achieve such an ambitious global agenda? The experiences made in the Millennium Development

Goals (MDGs) 2015 provide some insight. If we look back at the flagship target under the MDG of reducing extreme poverty rates by half we can observe that it was achieved ahead of the 2015 deadline. The main advances were carried out by rapid economic growth in high-population countries like China and India, and some other developing countries. However, while a single track focus on economic growth did reduce poverty, this growth took place at high costs, such as degradation of natural resources and environment, water and air pollution, increased emission of greenhouse gases and increased inequalities. Recognising these limitations, there is broad consensus that in order to achieve the SDGs, there will be a need to go beyond the business-as-usual approach of selective sectorial focus and interventions.

**Figure 1: Five principles of the 2030 Agenda**

**Universality:** The 2030 Agenda is universally applicable to all countries – to developing, emerging and industrialized countries.

**Integrated approach:** The 17 SDGs are integrated and indivisible. No goal may be implemented at the expense of another.

**Leave no one behind:** The Agenda focuses on marginalized groups as well as the poorest of the poor. Those with the fewest development opportunities should be reached first.

**Shared responsibility:** The challenges of the global community cannot be overcome by governments alone. Its implementation can only be successful if all relevant stakeholders make their contribution.

**Accountability:** The implementation measures and their effects are regularly monitored and reviewed on a national, regional and global level.

Breaking down sectoral barriers will, no doubt, be a challenge. Governments as well as development agencies are structured to work in sectors (e.g. energy, infrastructure, agriculture) and find adapting to the integrated approaches demanded by the SDGs highly challenging. Understanding the interlinkages among SDGs and their targets is therefore crucial for coherent policy making to support SDG implementation. Donor organisations are increasingly asking the implementing agencies to conceptualize and design their programmes with this new integrated approach. Development organisations are required to assess the sectoral synergies and trade-offs within their country or region of operations to design coherent interventions.

Several tools and approaches to assist in this integrative approach to planning and reporting have been developed by research institutes such as the International Council for Science (ICSU) and the Institute for Global Environmental Strategies (IGES). These tools aim to improve understanding about these relationships between SDGs and their targets, map interlinkages and identify trade-offs and synergies.

In this paper, we review and summarise some of the SDG interlinkages from the perspective of renewable natural resources and biodiversity. In doing so, we also apply selected tools to look at the interlinkages between nature-related SDG targets in Asia. Mapping these links can support and orient GIZ staff and partners to take an integrative approach to identifying potential risks and opportunities in the implementation of country strategies, programmes and projects, and to better contribute to the goals of the 2030 Agenda. Based on the analysis, we draw some conclusions and recommendations for our future work in international cooperation.

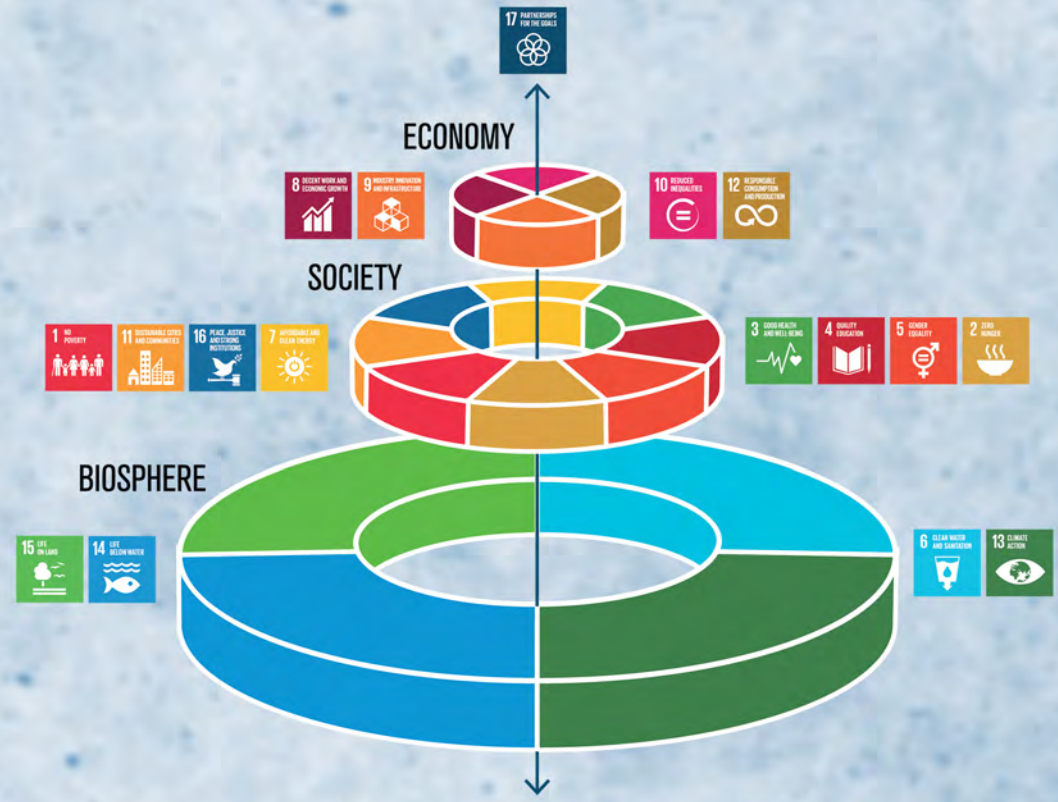



Figure 2: Economy and society are dependent on a healthy biosphere. Source: J. Lokrantz/ Azote in Rockström & Sukhdev (2016), Stockholm Resilience Centre

# 02 THE CAKE AND THE DONUT: UNDERSTANDING THE THREE DIMENSIONS OF SDGs

While there is no hierarchy or prioritisation of goals in the SDGs, structuring or clustering them along the three dimensions of sustainability helps in understanding the interlinkages for moving towards policy coherence. It also underlines the key role of the natural environment and the biosphere in achieving social and economic development and wellbeing goals. This kind of thinking can provide a useful tool for better understanding the importance of integrating renewable natural resources and biodiversity into sectoral and development planning.

Two conceptual frameworks are particularly useful in this regard. The Stockholm Resilience Centre proposed a "wedding cake" illustration for viewing the economic, social and ecological aspects of the SDGs, wherein economies and societies are seen as embedded parts of the biosphere (Figure 2) (Stockholm Resilience Center 2016). A 2016 discussion paper by the German Development Institute (DIE) (Niestroy 2016) proposed a framework inspired by the "donut" model (Raworth,

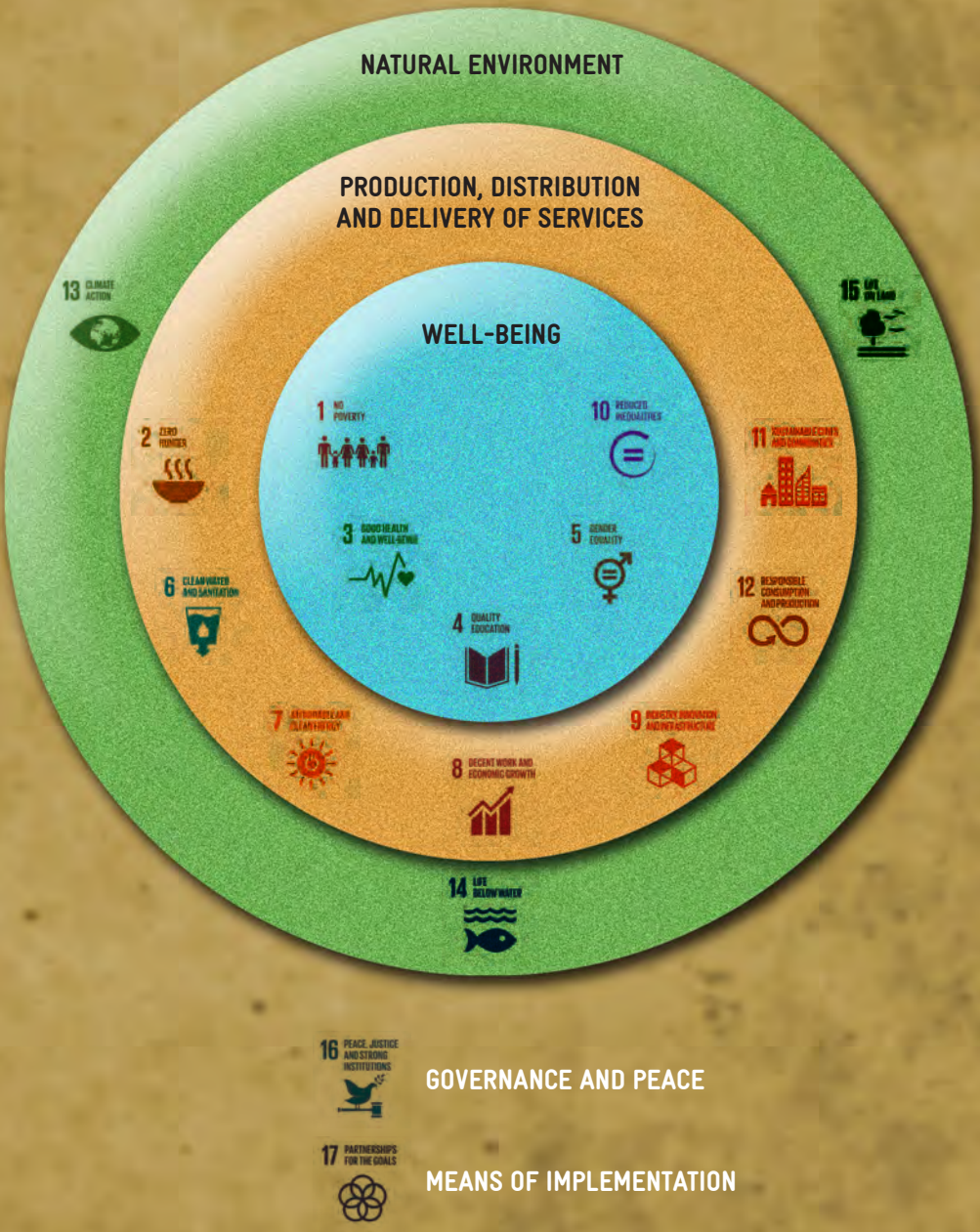



Figure 3: Framework for clustering SDGs. Source: Niestroy 2016, DIE

2012) based on the concept of planetary boundaries (Rockström et al., 2009) (Figure 3). Between the social foundation and the environmental ceiling lies an "environmentally safe and socially just space" in which humanity can thrive, which it is argued also defines the space in which inclusive and sustainable economic development takes place (Raworth 2012).

In Niestroy's model, 'people centred' goals are in the inner circle: well-being through ending poverty; improved health and education; reduced inequality (including gender) within and between countries (SDGs 1, 3, 4, 5, 10). These people centred goals are embedded in the "middle circle" of 'production, distribution and delivery of goods and services', and their achievement relies on the realisation of the SDGs: delivery of food, water, energy (SDG 2, 6, 7), as well as economic growth and employment, infrastructure, resources and waste management (SDGs 8, 9, 11, 12). The middle circle is again embedded in and depends on the conditions of the natural environment that represent the basis for life and all human activities. This outer circle hence comprises the three SDGs relating to natural resources and ecosystems: climate, oceans, biodiversity and land (SDGs 13, 14, 15). Peace, justice and strong institutions and partnerships (SDGs 16, 17) are placed outside the circle as these are enablers and underlying goals for means of implementation.

Targets for some of the goals are spread across different levels, pointing to the interlinkages between the goals and targets. For instance, the targets of SDG 6 Clean Water and Sanitation address the outer circle (intact water-related ecosystems are required to provide the resource water), the middle circle (useable capacity, efficient use, water quality), as well as the inner well-being circle (sanitation). Similarly, the agriculture-related targets of SDG 2 Zero

Hunger are linked to the outer circle (climate resilience, maintain genetic diversity), the middle circle (sustainable agriculture, productivity) and the inner well-being circle (end hunger).

Such spread of interlinked targets across several goals demonstrates the "integrated and indivisible" nature of the SDGs. It also indicates that the conventional approach of selectively focusing on sectoral goals will no longer be effective for achieving the transformation envisioned by the SDGs. Both models call for a transition from the current sectorial approach of addressing social, economic and ecological concerns separately. They work towards a framework logic where the economy serves society so that it evolves within the safe operating space of the planet.

# 03

## NATURE IN 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Conventional sectoral approaches would usually focus only on directly 'relevant' goals for achieving a certain dimension of sustainable development. A reading of the SDGs would indicate that, for example, nature and the living environment are subject matter of SDG 14 Life below water and SDG 15 Life on land. However, when we analyse the wording of all of the SDG targets, we find that 41 targets under 9 goals have direct reference to natural resources, nature or the benefits that society derives from them. In addition to SDG 14 and 15, nature-related targets are formulated under SDG 1 No Poverty, SDG 2 Zero Hunger, SDG 6 Clean Water and Sanitation, SDG 8 Decent work and economic growth, SDG 11 Sustainable cities and communities, SDG 12 Responsible consumption and production and SDG 13 Climate action. A listing of these goals and targets can be found in Annex-1.

When all the indirect contributions from nature to economy and human wellbeing are considered, well-functioning ecosystems are found to be relevant for achieving each and every one of the SDGs. Some of these contributions are illustrated in Figure 4 (SIDA 2016, SwedBio 2016). The reason for the interconnectedness of well-functioning ecosystems throughout the three dimensions and all global goals lies within the numerous services and contributions of nature to people such as water purification, soil fertility and pollination (Diaz et al 2017). These interlinkages have been well illustrated by the Millenium Ecosystem Assessment 2005 (Figure 5).

Figure 4: Well-functioning ecosystems are relevant for achievement of all Global Goals (SIDA 2016)

Biodiversity is crucial for all humanity and essential for the poorest as it contributes directly to economic development and local livelihoods. (See targets 1.4 & 1.5)

A rich biodiversity is the foundation of food security. Crop varieties and animal breeds are based on genetic diversity, and biodiversity upholds basic functions such as pollination, soil fertility and pest control. (See targets 2.1, 2.3, 2.4, 2.5 & 2.a)

Functioning ecosystems help mitigate the spread and impact of certain types of air, water and soil pollution. Many medicines originate from natural substances. A varied diet from a diversity of crops and animals is more nutritious. (See target 3.9)

Biofuels and hydropower investments increase access to clean energy but can put pressure on biodiversity and ecosystems. (See target 7.2)

Biodiversity and ecosystem services are crucial for long-term sustainable economic growth. (See targets 8.4 & 8.9)

Many future innovations will be nature based. Biodiversity and healthy ecosystems provide cost-effective natural infrastructure, such as wetlands for bio-filtration and improved water quality, or forests for storm and water management. (See targets 9.1, 9.4, 9.5 & 9.a)

Healthy ecosystems provide us with ecosystem services that are the basis for sustainable consumption and production. Sustainable consumption and production is also needed in order to ensure their long-term availability. (See targets 12.2, 12.4, 12.8 & 12.a)

This goal explicitly deals with marine and coastal ecosystems and biodiversity. Sound management of these ecosystems is essential for the sustainable use of ocean resources. (See all targets under Goal 14)

This goal explicitly deals with terrestrial ecosystems and biodiversity. Achievement of this Goal underpins success for all the SDGs. (See all targets under Goal 15)

Addressing the drivers of biodiversity loss requires behavioural change; awareness and learning about the values of biodiversity are therefore important. (See targets 4.7 & 4.b)

Understanding the different roles of men and women is essential when working with natural resources. Strengthening women's rights and access to natural resources are often critical for food security. (See targets 5.1, 5.5 & 5.a)

Biodiversity and healthy ecosystems contribute to the provision of clean drinking water and regulate water availability, including during the extremes of drought and flood. Natural water infrastructure including the conservation and restoration of ecosystems, such as forested watersheds and wetlands, is part of an integrated approach to water management. (See targets 6.3, 6.4, 6.5 & 6.6)

Analysis of who benefits from ecosystems, and who bears the burden of negative impacts, is needed to reduce inequality within and among countries. (See targets 10.1, 10.2, 10.5, 10.6 & 10.b

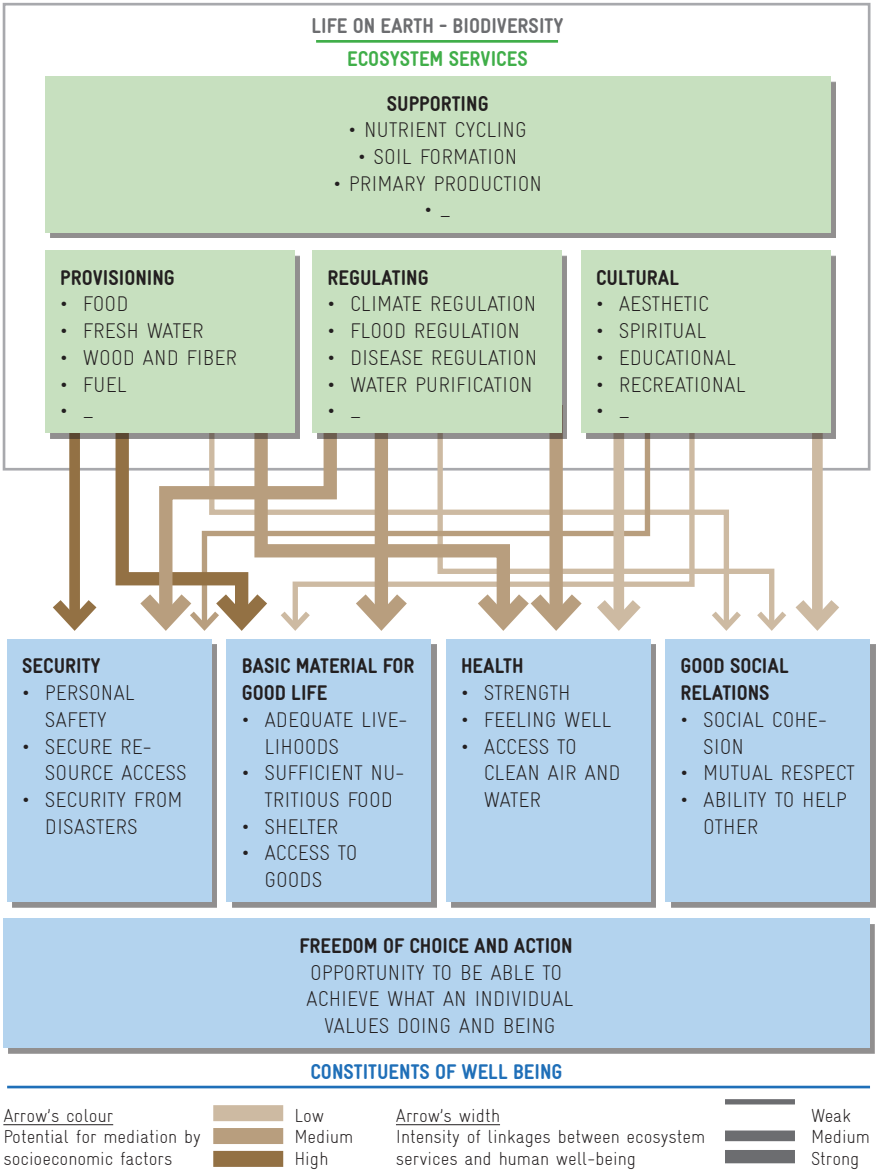
Biodiversity and ecosystem services are essential in urban planning, underpinning functions such as water and food supply, regulating temperature, and reducing flooding and other disaster risks. Nature-based solutions will become increasingly important as the world's urban population rapidly grows. (See targets 11.3, 11.4, 11.7, 11.a & 11.b)

Healthy ecosystems provide us with ecosystem services that are the basis for sustainable consumption and production. Sustainable consumption and production is also needed in order to ensure their long-term availability. (See targets 12.2, 12.4, 12.8 & 12.a)

Most poor people's livelihoods depend on access to natural resources. Equity in access to these benefits, and to justice and accountable institutions, are vital to exercise rights to food, water, etc. (See targets 16.3, 16.5, 16.6, 16.7 & 16.8)

The Addis Ababa Action Agenda on Financing for Development refers to the CBD and its strategy for resource mobilisation that includes phasing out harmful subsidies, and introducing positive incentives and mechanisms such as Payment for Ecosystem Services, Green Markets, and synergies with climate financing, along with safeguards considering e.g. access to resources and livelihoods. (See e.g. target 17.7)

Figure 5: Linkages between well-functioning ecosystems and human well-being (MEA 2005)



# 04 UNDERSTANDING THE INTERLINKAGES IN SDGs

Analysing all the possible interlinkages between the many different targets of the SDGs can be both complex and confusing. Therefore, it is crucial to have a framework and tools that are able to unravel the diversity of connections in a structured and solution-oriented way. The scientific community has been developing frameworks and tools for analysing the SDG interlinkages. However, there is as yet no study which presents all the interlinkages between all the goals and targets. We have reviewed and summarised below three frameworks that we find to be particularly relevant for our work in development cooperation.

The DIE study advocates the "nexus approach"[1] for analysing the SDG interlinkages. It presents five types of interlinkages between the goals and targets, ranging from synergies to trade-offs (see Table 1). However, the study does not present a practical tool for analysing the causality and degree of interlinkages amongst the SDGs and targets for deriving implementable policy measures.

Table 1: Types of interlinkages in SDGs (Niestroy 2016, DIE)

| | |
|---|---|
| Synergy | One goal facilitates or reinforces the fulfilment of another goal |
| Compatible | One goal is not influenced, positively or negatively, by another goal |
| Conditional / Dependence | One goal is dependent on the fulfilment of another goal (or limited by another goal, which is then often already a conflict) |
| Confict / Trade-off | One goal is in conflict with another goal |
| Dilemma | One goal hinders the fulfilment of another goal |

The International Council for Science (ICSU) has developed a more systematic framework that identifies categories of causal and functional relations between the goals and targets (ICSU 2017). The ICSU framework uses a 7-point scale for assessing synergies and constraining interactions between the goals and targets (see Table 2). The positive interactions or synergies are assigned scores of either +3 (indivisible), +2 (reinforcing), +1 (enabling), while the negative interactions or trade-offs are scored with -1 (constraining), -2 (counteracting), and -3 (cancelling). A score of 0 (consistent) is assigned in case there is no significant positive or negative interaction. The interactions between the goals or targets can be unidirectional (i.e. A affects B; but B does not affect A), bidirectional (i.e. A affects B, and B affects A), circular (i.e. A affects B, which affects C, which in turn affects A) and multiple (i.e. A affects B, C and D). The magnitude and direction of the score provides indication on how influential a particular goal or target is on another. (ICSU 2017).

The ICSU framework can help in systematically analysing SDG interactions and identifying sectors that are positively or negatively affected by a given intervention. Interactions with positive scores represent opportunities to create partnerships, whereas negative scores point to the existence of trade-offs that may require additional

measures to bridge the divide. For example, sustainable fisheries, healthy and productive oceans (14.2) are inextricably linked to food and nutritional security (2.1 and 2.2). Therefore, the interaction score between these targets will be high positive (+3). On the other hand, developing infrastructure and industries (9.1, 9.2) in forested landscapes in underdeveloped regions could be cancelling the targets for reduction of degradation in terrestrial ecosystems (15.5). Therefore, the interaction score will be high negative (-3).

It is important to understand that such interactions among the goals and targets are not universal. The interactions are highly context specific, and the strength and direction of the interactions will depend upon a number of factors, such as location, assessment time-frame, level of development (economic, social and technological), condition of natural resources, governance, political and economic interests, and social and cultural attitudes. For example, developing countries with higher population densities such as Singapore will face stronger trade-offs between infrastructure and industrial development targets and biodiversity conservation targets. Therefore, a global assessment of the interactions among the goals and targets can be done at best only at a conceptual level. Country and location specific assessment of the interactions will be necessary for developing coherent policies and measures for achieving SDGs.

The Institute for Global Environmental Strategies (IGES) applies Social Network Analysis (SNA) techniques to visualise a quantified network of SDG interlinkages (IGES 2017). The IGES study identified binary linkages[2] between each pair of all the SDG targets, based on extensive review of existing scientific literature and relevant documents of international policy processes on

Table 2: ICSU framework of SDG interlinkages

| SCORE | INTERACTION TYPE | EXPLANATION |
|---|---|---|
| +3 | Indivisible | The strongest form of positive interaction in which one objective is inextricably linked to the achievement of another |
| +2 | Reinforcing | One objective directly creates conditions that lead to the achievement of another objective |
| +1 | Enabling | The pursuit of one objective enables the achievement of another objective |
| 0 | Consistent | A neutral relationship where one objective does not significantly interact with another or where interactions are deemed to be neither positive nor negative |
| -1 | Constraining | A mild form of negative interaction when the pursuit of one objective sets a condition or a constraint on the achievement of another |
| -2 | Counteracting | The pursuit of one objective counteracts another objective |
| -3 | Cancelling | The most negative interaction is where progress in one goal makes it impossible to reach another goal and possibly leads to a deteriorating state of the second |

Source: Adapted from ICSU, 2017

| EXAMPLE | POLICY OPTION |
|---|---|
| Sustainable fisheries, healthy and productive oceans (14.2) are inextricably linked fish availability and food security (2.1) | Strengthen and implement laws and policies to ensure responsible and sustainable fisheries; develop co-management approaches with local communities |
| Minimising and addressing the impacts of ocean acidification (14.3) will improve fish stocks, livelihoods and incomes (1.1, 1.2) | Strengthen climate change mitigation measures and sustainable management of coastal and marine ecosystems as poverty reduction strategy |
| Combating desertification, restoring degraded land (15.3), reducing degradation of natural habitat and halting the loss of biodiversity (15.5), ensuring better access to genetic resources and fair and equitable benefit sharing (15.6), reducing impacts of invasive species (15.8) will enable sustainable agriculture and food production (2.3, 2.4) | Develop policies and implement measures for landscape level natural resource management approaches. Set up monitoring systems at appropriate scale to understand the link between agriculture, land degradation and biodiversity loss |
| Preventing and reducing marine pollution (14.1) is consistent with prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol (3.5) | |
| Conserving coastal areas (14.4) and development of safe affordable housing and basic services (11.1) in coastal cities may constrain each other | Implement integrated coastal zone management and marine spatial planning to mitigate spatial competition |
| Technical climate adaptation solution (e.g. dyke construction) for coastal protection (13.1) can counteract to sustainable coastal ecosystems (mud flats, salt marshes, mangroves) (14.2) | Develop nature based solutions that promote coastal and marine conservation and sustainable urban development in integrated manner |
| Developing infrastructure and industries (9.1, 9.2) in underdeveloped regions could be cancelling the targets for reduction of degradation of natural habitats and biodiversity in terrestrial ecosystems (15.5) | Strategic environmental assessment and landscape level spatial planning will help in countering some of the trade-offs |

SDGs and indicators. The qualitative information on binary interlinkages (positive or negative) between the targets for all the goals was used to construct a directed network of SDG interlinkages assumed to present the causal links between the targets.

Based on the Sustainable Development Solutions Network (SDSN) proposed Global Monitoring Indicators (SDSN, 2015), the IGES study covered nine Asian countries[3], and mapped 51 indicators with trackable data against all the SDG goals and targets. One target was mapped with one indicator at most, while each indicator was mapped with one or more targets. The study could map only 108 targets with corresponding indicators due to lack of trackable data. The causal links were further quantified based on correlation analysis of the country-specific time-series data of the indicators corresponding to relevant targets. The correlation coefficients (ranging between '-1, 1') indicate the linear relationship between each pair of targets. Positive coefficient value indicates positive linear relation (i.e. synergy) and negative coefficient value indicates negative linear relation (i.e. trade-off). Larger absolute value of the coefficient (e.g. 0.9) indicates stronger relationship and the smaller coefficient value (e.g. 0.2) indicates weaker relationship. Based on the identified causal links between the SGD targets and quantification of the links for individual countries, a directed and weighted network of the interlinkages between the targets was constructed for each country. Figure 6 summarises the analytical framework for the SDG interlinkages and indicator-level data analysis.

The findings of the study have been used to develop a web-based tool on SDG interlinkages and data visualisation, accessible online at http://sdginterlinkages.iges.jp. The tool allows users to visualise interlinkages between

SGD targets and explore indicator level data for the nine selected Asian countries (Figure 7). However, the IGES web tool has some limitations, as it is based on just 51 indicators for 108 targets, with some of the indicators mapped to more than one target. Some proxy indicators also have been used due to lack of data availability. In addition, 61 targets have been left out from the assessment as the chosen indicators could not be mapped to them due to their own specificities. In our opinion the IGES

**Figure 6: Analytical framework for SDG interlinkages and indicator level data analysis (IGES 2017)**

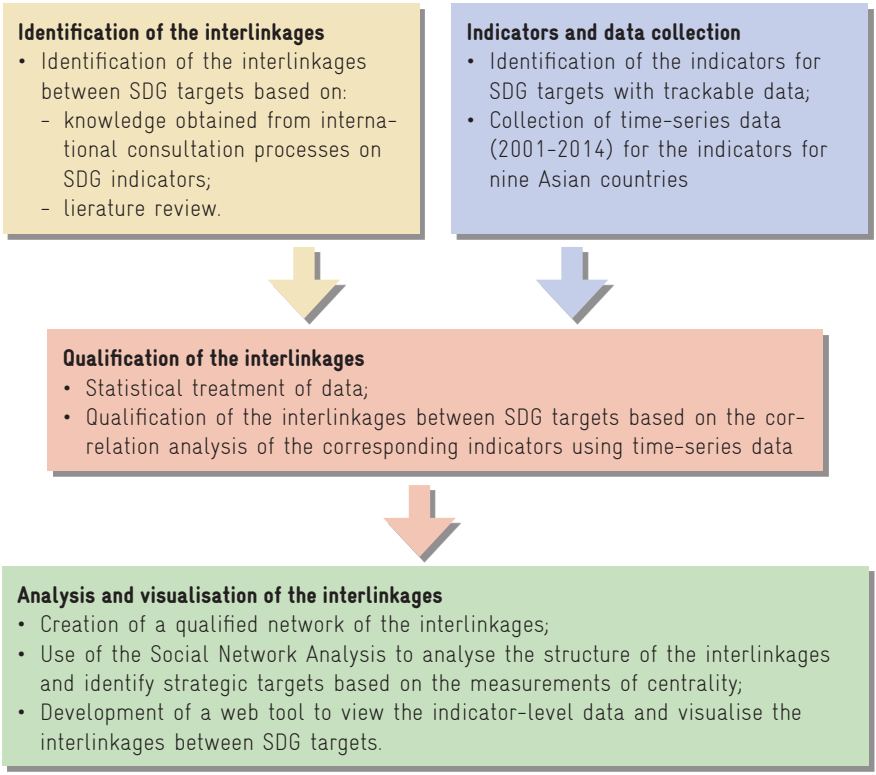
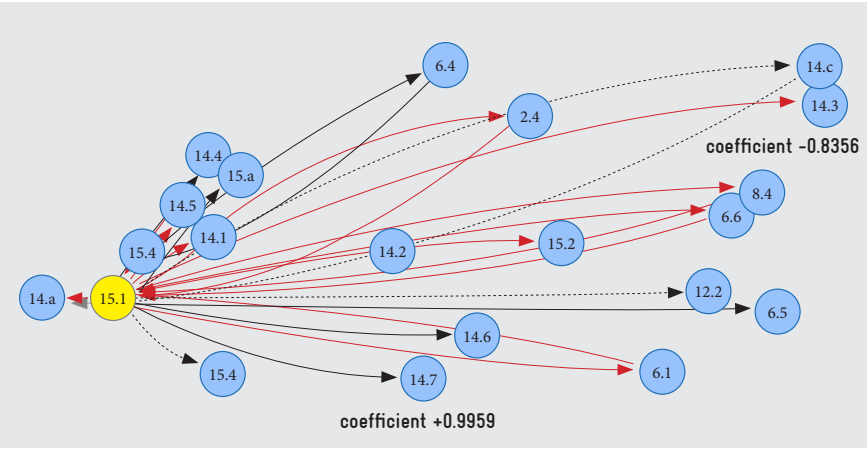


Figure 7: Visualisation of potential reinforcing (in black) and conflicting (in red) interlinkages between Target 15.1 and others in India.
Source: http://sdginterlinkages.iges.jp/ (IGES 2017)




web tool may not give perfect information on country level causal interlinkages as the interlinkages depend on multiple country specific factors. Still, it could be a starting point for exploring and understanding the SDG interlinkages in their respective context, particularly in the nine Asian countries included in the IGES study. With the finalization of SDG target indicators and future improvement in data availability for them, the web tool could be improved by incorporating more indicators.

# 05 APPLYING THE SDG INTERLINKAGES TOOLS FOR WELL-FUNCTIONING ECOSYSTEMS

While the ICSU framework for SDG interlinkages presents a conceptually sound analytical framework for synergies and trade-offs between SDGs and their targets, the IGES web tool offers a practical, user-friendly and interactive tool for exploring the SDG interlinkages for nine Asian countries. We applied a combination of both to explore the interactions of ecosystems related targets with other targets. Our objectives were to see whether the quantitative results of more user-friendly IGES web tool could be interpreted using the systematic ICSU analytical framework for addressing SDG interlinkages, and whether such a combination of tools could provide useful guidance for the integrative approach necessary for achieving the SDGs.

In order to keep the analysis simpler, out of the 169 targets, we selected the ones that directly relate to well-functioning ecosystems, which are:

- SDG 14 Life below water: 10 Targets related to the improvement of terrestrial ecosystems
- SDG 15 Life on Land: 12 Targets related to the improvement of marine ecosystems
- SDG 2 No Hunger: Target 2.4 Sustainable food production systems that help maintain ecosystems,

strengthen climate change adaptation and progressively improve land and soil quality
- SDG 6 Clean Water and Sanitation: Target 6.6 Protect and restore water-related ecosystems

A total of 18 out of the 24 targets listed above were included in the analysis[4], 16 out of the 22 targets under SDG 14 and SDG 15 have direct results at the level of ecosystems. The remaining 6 targets (14.a, 14.b, 14.c, 15.a, 15.b and 15.c) are targets for enablers, and so were excluded from the analysis.

For the purpose of this paper, we focused on four out of the nine Asian countries presented in the IGES web tool: India, Indonesia, Philippines and Vietnam. These are four countries in which GIZ is particularly active. For every country the target linkages vary according to the respective time-series data of the country. The correlation coefficients for each pair of the targets were taken from the IGES web tool to indicate the strength and direction of the linkages in each of the four countries.

The correlation coefficients of interactions of the 18 ecosystems targets in the IGES web tool for the four countries were interpreted applying the ICSU 7-point scale (see table 2 above). In this analysis, we find over 100 strong or very strong positive relationships of the ecosystems targets and about 50 strong negative relationships in all the four countries (see Table 3). The country wise interlinkages of the 18 ecosystems targets are presented in Figure 8 to 11.

The large number of strong positive relationships shows that well-functioning ecosystems are important for achieving many SDGs and targets. Strong negative relationships indicate that there are significant trade-offs between some of the targets and ecosystems, and narrowly focused sectorial approaches to achieve such targets may jeopardise

achieving SDG 14 and SDG 15. We also observe that there are significant variations in the number and type of interlinkages in different countries. This indicates that the interlinkages between SDG targets are affected by country specific factors. Some of the country differences in interlinkages in the IGES web tool also might be due to variations in data availability in different countries.

We observe that the IGES web tool indicates negative correlation between some targets for well-functioning ecosystems under SDG 14 and SDG 15. Some of such negative correlation is due to the choice of proxy indicators and data availability (e.g. correlation between proportion of total water resource use as indicator for target 15.1 and share of protected area as indicator for target 15.2). Some of such internal trade-offs may also be real. For example, expanding coastal and marine protected areas (target 14.5) may constrain the access of small fishers to marine resources (target 14.b). Protecting and restoring water related ecosystems (target 6.6) may put limiting conditions on expansion of affordable water supply (target 6.1). Therefore, synergies and trade-offs need to be analysed not just between targets under different goals, but also between different targets within a goal.

**Table 3: Interactions of 18 ecosystems targets in the four countries**

| Country | Number of interlinkages of the selected 18 ecosystems targets on ICSU score | | | | | | | No data |
|---|---|---|---|---|---|---|---|---|
| | +3 | +2 | +1 | 0 | -1 | -2 | -3 | |
| India | 104 | 2 | 1 | 0 | 16 | 15 | 35 | 83 |
| Indonesia | 99 | 4 | 3 | 2 | 13 | 0 | 58 | 110 |
| Philippines | 93 | 19 | 3 | 0 | 7 | 12 | 40 | 115 |
| Vietnam | 100 | 2 | 19 | 25 | 10 | 5 | 17 | 103 |

Figure 8: India - interlinkages of ecosystems targets

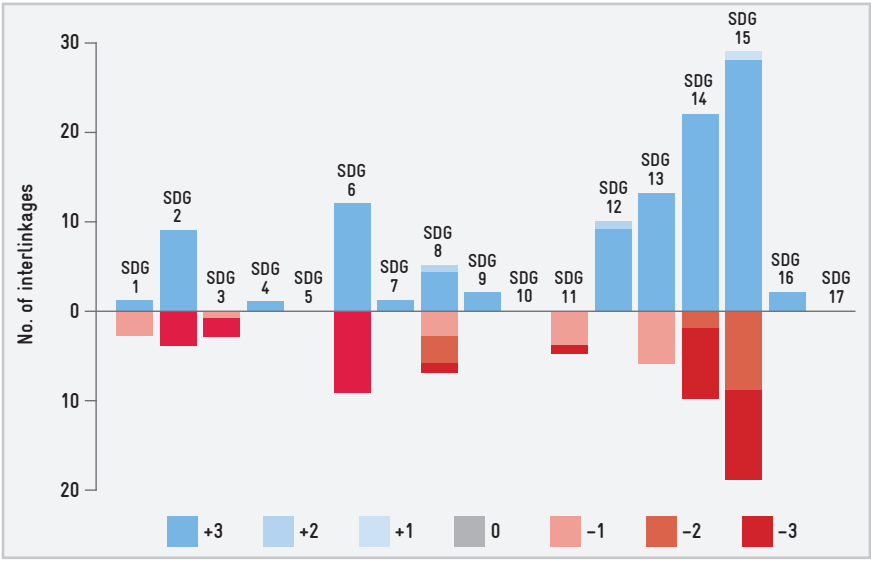



Figure 9: Indonesia - interlinkages of ecosystems targets

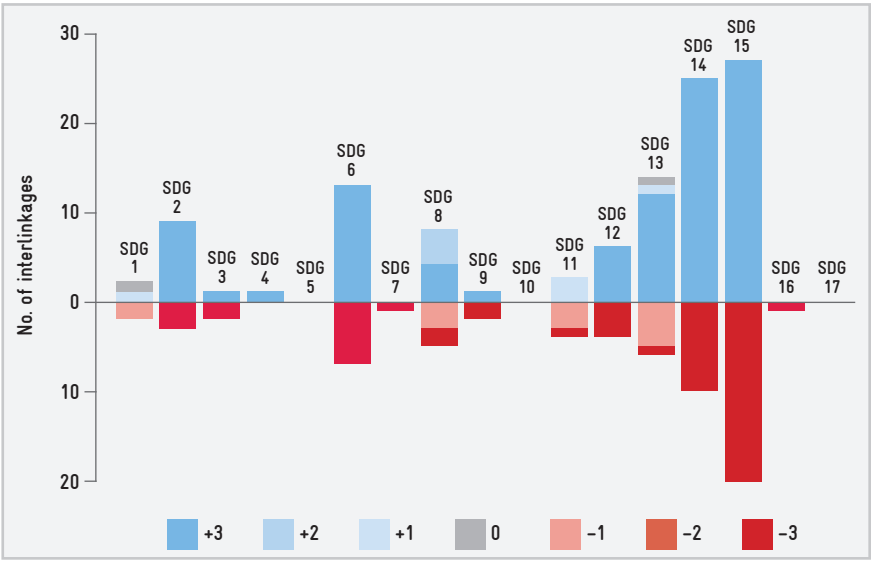


Figure 10: Philippines - interlinkages of ecosystems targets

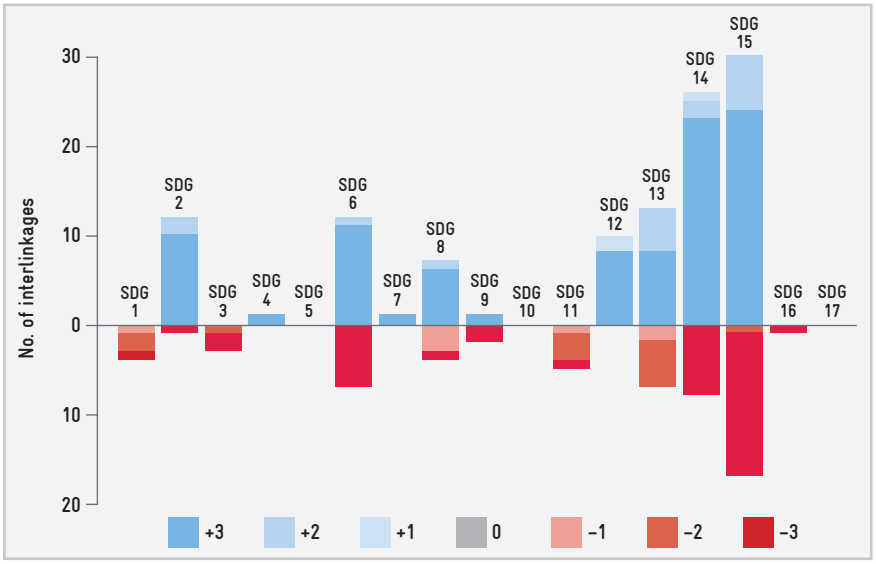
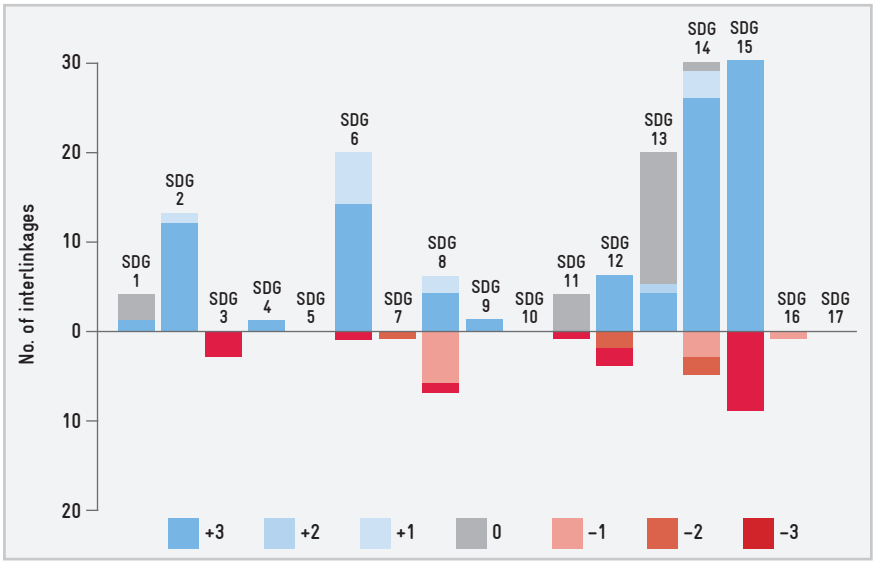



Figure 11: Vietnam - interlinkages of ecosystems targets



While the IGES web tool for SDG interlinkages and data visualisation look user-friendly, we feel it has some serious limitations in its current form that restrict its usability for decision making. Some of the limitations are discussed below:

- Identification of all the SDG interlinkages at country level is a challenging task. No such extensive study exists as of now. IGES web tool draws information on causal linkages from existing global scientific literatures that do not capture the country specificities of the nine selected countries. Therefore, the web tool may not give perfect information on country level causal interlinkages. Also, it may be biased towards SDGs for which more focused and in-depth studies exist (e.g. energy-water-food nexus), while neglecting those sectors and goals for which interlinkages have not been studied well (e.g. poverty reduction and ecosystems).
- The IGES web tool considers just 51 indicators (including many proxy indicators) for 108 targets. As a result, some indicators are mapped to multiple targets. 61 targets have been left out from the assessment as the chosen indicators could not be mapped to them due to their own specificities. The statistical measure of interlinkages produces some strange results that have not been vetted for causal relationships. For instance, for India the IGES web tool suggests strong negative correlation between target 15.1 (conservation and sustainable use of terrestrial and inland freshwater ecosystems) and target 14.2 (sustainably manage and protect marine and coastal ecosystems), whereas logically these two targets should be in synergy. This is due to the proxy indicators used for these two targets. With the limited indicators and data sets, the IGES

web tool does not provide robust causal relationships for decision making.

- The IGES web tool only deals with linear relationships. It does not capture well the non-linear relationships (e.g. circular or consequential) among SDG targets.

As the SDG target indicators get finalised and data on these indicators becomes available, the IGES web tool will have to incorporate them to overcome some of its limitations. In addition, country specific studies will be required to establish sound causal relationships between targets. With such development, the web tool could become a quick reference point for SDG interlinkages.

# 06 CONCLUSIONS AND WAY FORWARD

The integrated approach in the Agenda 2030 for Sustainable Development is its most positive aspect for promoting a more holistic development paradigm. It is however also the most challenging one to operationalise in terms of programme and project planning, implementation and monitoring.

It has become clear that a conventional sectorial development approach is no longer useful or appropriate in the context of the SDGs. In fact, it could prove detrimental to achieving some of the goals.

A new approach to sustainable development will require analysing all the potential interlinkages across all SDGs. This is necessary in order to seek synergies

between targets, avoid trade-offs and minimise conflicts for maximising developmental outcomes.

Organisations working in the area of sustainable development, such as GIZ, can make significant contributions towards developing integrated and unified decision making and implementation approaches at national and sub-national levels. Some of the key considerations driving this future work are presented below, as they relate to development organisations and practitioners.

## MAINSTREAMING NATURE FOR THE AGENDA 2030

Well-functioning ecosystems are not just about environmental sustainability. They are the basis for achieving sustainable, equitable and effective economic and social development. Continued loss of biodiversity and natural resources will limit the pursuits towards achieving poverty reduction, food security, economic development and social wellbeing.

The spread of ecosystems-related targets across 9 of the 17 SDGs also indicates the critical role of well-functioning ecosystems for achieving the 2030 Agenda. The number of positive interactions or synergies of the ecosystems related targets are much higher than the negative interactions or trade-offs. Leveraging these synergies will result in increased developmental outcomes. However, these synergies could be leveraged only when the ecosystems trade-offs are also mitigated. This could be achieved by mainstreaming conservation and sustainable use of ecosystems and their benefits in economic and social sectors, across governments, businesses and society.

Development organisations need to demonstrate successful mainstreaming approaches through their sectoral

strategies, programmes and projects. Programmes and people working in the environmental sectors (biodiversity, natural resources management, climate change, etc.) should take up the task of making the ecosystems interlinkages across SDGs more explicit and work closely with other sectors towards mainstreaming nature for achieving SDGs. Biodiversity and nature conservation related programmes also need to be aware that if they selectively focus on SDG 14 and SDG 15, they may potentially be creating constraining conditions for some other SDGs. Therefore, an integrated approach to implementing SDGs is as much needed in the environmental sectors as in economic and social sectors.

## PRACTICAL TOOLS FOR ANALYSING SDG INTERLINKAGES

The SDG interlinkages are context specific. Therefore, the interlinkages analysis needs to be conducted at national and sub-national levels. While analytical frameworks have been developed for the SDG interlinkages (such as the IGES and ICSU approaches), practical tools that could help in analysing the interlinkages at national and sub-national levels are not yet available.

Development organisations should adapt and test the existing analytical frameworks (e.g. ICSU 7-point scale) to map and analyse SDG interlinkages at national and sub-national levels within their programmatic context. As time series data on SDG target indicators may not be available in most of the countries, the interlinkages analysis could be based on expert knowledge and experiences in the respective countries. Multi-disciplinary experts and stakeholders dialogues could be organised for systematically identifying the interactions between and among the 17 SDGs.

A systems approach will be required to analyse all the interlinkages as many of the interactions among the targets will be multidimensional. Based on the experiences of interlinkages analysis, simpler and practical steps, matrices and processes could be designed. This could serve as a toolbox for interlinkages analysis at national and sub-national levels.

## INTEGRATION BEYOND PRIORITY SECTORS

Development cooperation, as well as their partner countries, usually have some priority sectors and focus. Limiting analysis and intervention to the sector related SDGs and targets may be detrimental to some other targets. For instance, an agriculture programme may invest in increasing irrigation and use of agrochemicals for doubling the agricultural productivity (target 2.3). This may counteract to ensuring sustainable withdrawal and supply of freshwater (target 6.4) and protection of water related ecosystems and aquifers (target 6.6). In addition, by not analysing the interlinkages beyond the sectoral targets, the opportunities to leverage the potential synergies may also be missed, e.g. contribution of sustainable fisheries to food security. While the priority sectors could be the starting point, analysing all the interlinkages of the sectoral goals and targets with other goals and targets will help prioritise interventions and measures that could leverage the synergies and minimise the trade-offs for effectively achieving sustainable developmental outcomes. Development cooperation organisations should invest in understanding and integrating the SDG interlinkages into their programmes and implementation approach. The integrative approach needs to be built into the sector strategies, country strategies, sector programmes, project

and programme appraisals, prioritisations of interventions, project and programme implementation and monitoring.

## AFFIRMATIVE ACTION BEYOND SAFEGUARDS

Governments and development organisations apply social and environmental safeguard standards to identify potential risks and unintended negative impacts of their planned interventions, to draw up risk prevention measures and promote gender equality. While the safeguard standards do take care of some of the potential trade-offs, they will be insufficient for implementing the integrative approach of SDGs.

In order to identify all the potential risks and trade-offs in the context of SDG interlinkages, the scope of the safeguard standards need to be expanded to include all the potential negative interlinkages between and among SDGs and their targets. In addition to such an expanded safeguard standards to take care of the potential conflicts and trade-offs among SDG targets, tools and measures will be required for proactively identifying and leveraging the synergies and complementarities among the SDG targets for maximising the developmental outcomes of policies and programmes.

## CAPACITY DEVELOPMENT

The integrative approach embodied in the 2030 Agenda calls for the development and mobilisation of knowledge, expertise, competencies, resources and institutions from international, national and sub-national levels. Once interlinkages are being recognised and understood by sectoral experts, policy makers and stakeholders will feel

the need to go beyond their sectoral silos and reach out to other technical areas and departments to work together for creating possible win-win scenarios.

Rather than convincing or even competing with other technical areas, an attitude of welcoming other experts' ideas and feedback needs to be fostered. Development cooperation is well-positioned to strengthen the capacities of individuals, institutions and networks for implementing the integrative approach of SDGs. Some organisations, including GIZ, have already gained some experience in developing and offering trainings on SDGs. A training focusing on the SDG interlinkages and integrative approach will be in high demand from development organisations as well as governments across the world.

The integrated approach to SDG implementation is about finding developmental pathways that consider synergies and trade-offs among the 17 goals and 169 targets. Merely aggregating independently-formulated policies and interventions by sectoral agencies will not result in sustainable development outcomes. Breaking the sectoral silos is the first and foremost requirement for achieving an integrated approach. It will help ensure policy coherence across all the dimensions of SDGs, so that synergies are leveraged while ensuring that policies and interventions in one area do not undermine the desired outcomes in others.

Development cooperation has an important role to play by demonstrating the integrated approach into global, regional and country strategies and programmes. Strengthening the science-policy interface will be necessary for developing practical tools and to implement the integrated approach. While governments as well as development cooperation may continue prioritising and focusing on selected sectors, implementation of the integrated

approach must ensure that all the SDG interlinkages with potential synergies and trade-offs have been analysed and incorporated into the developmental policies and programmes. The experiences and lessons learnt in implementing the integrated approach should be widely shared and used for capacity development across regions, sectors and levels of governance.

## ENDNOTES

1 Nexus approach integrates management and governance across sectors and scales. Understanding of sectoral interdependencies is at the heart of the nexus approach.
2 '0' assigned to the pair targets which do not connect with each other and '1' assigned to those pair targets which have potential relationship between them.
3 Bangladesh, Cambodia, China, India, Indonesia, Japan, Republic of Korea, Philippines and Vietnam
4 The 18 selected targets are 2.4, 6.6, 14.1 to 14.7, and 15.1 to 15.9. The complete list and wording of these targets are shown as shaded targets in Annex-1.

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# Annex-1

SDGs and targets with direct reference to safeguarding natural resources and biodiversity. The targets selected for analysis in the report are shaded green.

| SDG | Targets |
|---|---|
| Goal 1: End poverty in all its forms everywhere | 1.4: By 2030, ensure that all men and women, in particular 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 |
| | 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 |
| Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture | 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 |
| | 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed |
| Goal 6: Ensure availability and sustainable management of water and sanitation for all | 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally |

| | |
|---|---|
| | 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity |
| | 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate |
| | 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes |
| Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | 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 |
| Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable | 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage |
| | 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations |
| | 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management |
| | 11.a: Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning |

| | |
|---|---|
| Goal 12: Ensure sustainable consumption and production patterns | 12.2: By 2030, achieve the sustainable management and efficient use of natural resources |
| | 12.4: By 2020, achieve the 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 in order to minimize their adverse impacts on human health and the environment |
| | 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature |
| Goal 13: Take urgent action to combat climate change and its impacts | 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries |
| | 13.2: Integrate climate change measures into national policies, strategies and planning |
| | 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning |
| Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development | 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution |
| | 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans |
| | 14.3: Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels |

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| | 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics |
| | 14.5: By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information |
| | 14.6: By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation |
| | 14.7: By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism |
| | 14.a: Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries |
| | 14.b: Provide access for small-scale artisanal fishers to marine resources and markets |
| | 14.c: Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want |

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|---|---|
| Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss | 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements |
| | 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally |
| | 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world |
| | 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development |
| | 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species |
| | 15.6: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed |
| | 15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products |
| | 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species |

| | |
|---|---|
| | 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts |
| | 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems |
| | 15.b: Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation |
| | 15.c: Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities |

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