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Cross-Cutting Topics on UN-SDGs Methods for identifying conflicting targets and synergies

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Bundesministerium für Bildung und Forschung











UN-SDG6 TARGETS: ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

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

6.A By 2030, expand **international cooperation and capacity-building support** to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.B Support and strengthen the **participation of local communities** in improving water and sanitation management





UN-SDG 6 IN INOCOTTONGROW

Import of "virtual water" from Pakistan to Germany 365 Million m³/year		Germany	Pakistan	
	Population	82 million	208 million	
	Cotton Production	-	1.8 million tons	
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UN-SDG 6 "Clean Water and Sanitation" in 2015 (Selected Indicators)				
6.1.1 Population using safely managed drinking water		99 %	36 %	
6.2.1 Using safe sanitation, at least basic handwashing facilities		95.5 %	60 %	
6.3.2 River water bodies with good ambient water quality		35.1 %	Not reported	
6.4.2 Level of water stress		41.5 %	102.5 %	



SDG6 SYNTHESIS REPORT

"The World is Not on Track to achieve UN-SDG 6 targets on Clean Water and Sanitation by 2030 at the current rate of progress."

Key messages:

- 1. Strengthen good water governance
- 2. Water sector financing
- 3. Capacity development and international cooperation
- 4. Water resource management needs more and better data

Sustainable Development Goal 6 Synthesis Report on Water and Sanitation

2018







UN-SDG 6 INTERLINKAGES TO OTHER GOALS

SDG2: In Africa and Asia, > 80% of a withdrawls are used for agriculture

SDG3: In LMIC, 20% of healthcare facilities lack basic sanitation, 33% lack access to safe drinking water.

SDG7: Water is essential for cooling thermal power plants, grow biofuel, and hydropower.

SDG8: 1,4 billion livelihoods directly depend on water.

SDG9: Water quantity and quality is fundamental for industry.

SDG10: 159 million people need to collect drinking water from distant sources. 892 million defecate in the





UN-SDG 6 INTERLINKAGES TO OTHER GOALS

SDG11: By 2030, investments of US\$ 7.5 trillion are required in water infrastructure.

SDG13: Water-related hazards like floods and storms are likely to increase in a changing climate.

SDG14: Excess nutrient loads lead to low oxygen in coastal waters killing marine life.

SDG12: 1/3 of produced food is wasted, so is its water footprint.

SDG15: Global ecosystems purify and supply freshwater needs.

SDG17: Joint action for transboundary rivers, lakes, and aq







SDG6 INTERLINKS THE THREE DIMENSION OF SUSTAINABLE DEVELOPMENT



UN-Water (2016)

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Bundesministerium für Bildung und Forschung Methodologies identifying conflicting targets and synergies



PROPOSED METHODOLOGIES

Department of Economic & Social Affairs

DESA Working Paper No. 141 ST/ESA/2015/DWP/141

March 2015

Towards integration at last? The sustainable development goals as a network of targets

David Le Blanc

ABSTRACT

In 2014, UN Member States proposed a set of Suscitanaba Development Goals (BDGa), which will succeed the Millennium Development Goals (MDGa) as reference goals for the international development community for the period 2015-2030. The proposed goals and targets can be seen as a network, in which links among goals exist through targets that refer to multiple goals. Using network analysis techniques, we show that some thematia areas covered by the SDGa are well connected among one another. Other parts of the network have weaker connections with the sets of the System. The SDGs as a whole area more integrated system than the MDGs were, which may facilitate policy integration across sectors. However, many of the links among goals that have been documented in holphysical, consolid visionitions are not explicitly refered in the SDGs. Beyond the added visionition and social dimensions are not explicitly refered in the SDGs and whole accountic systems areas. Will have to be based on studies of the holphysical, local and eccountic systems.

JEL Classification: O1 (Economic Development), O19 (International Linkages to Development, role of International Organizations), O20 (Development Planning and Policy: General).

Keywords: Sustainable Development Goals, SDGs, policy integration, sustainable development, development, science-policy interface.

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IGES Research Report

Sustainable Development Goals Interlinkages and Network Analysis: A practical tool for SDG integration and policy coherence



Xin Zhou Principal Policy Researcher and Research Leader Strategic and Quantitative Analysis Centre

June 20

IGES





A GUIDE TO SDG INTERACTIONS: FROM SCIENCE TO IMPLEMENTATION INTERNATIONAL COUNCIL FOR SCIENCE



Le Blanc (2016)

IGES (2017)

ICSU (2017)





LE BLANC (2015): TOWARDS INTEGRATION AT LAST?

"The basis for the analysis presented here is a matrix that links every target of the SDGs to all the goals to which its wording refers." Considering 107 targets (all but those focusing on means of implementation)

Example:

SDG 12

Ensure sustainable consumption and production patterns

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 impacts on human health and the environment.







LE BLANC (2015): TOWARDS INTEGRATION AT LAST?







IGES (2017): INTERLINKAGES AND NETWORK ANALYSIS







IGES (2017): INTERLINKAGES AND NETWORK ANALYSIS

Most influential targets based on various centrality measures:

- 2.3 double agriculture productivity
- 2.4 build sustainable food production systems
- 6.1 universal access to safe drinking water
- 6.2 universal access to sanitation and hygiene
- 7.1 universal access to energy
- 9.1 develop resilient infrastructure

ICSU (2017) A GUIDE TO SDG INTERACTIONS: FROM SCIENCE TO IMPLEMENTATION

GEFÖRDERT VOM



Bundesministerium für Bildung und Forschung





ICSU (2017) METHODOLOGY

7-point scale is used to evaluate key target-level interactions between an 'entry goal' and all other goals. Score attributed based on expert judgment and literature review.

Methodology allows broad multi-disciplinary and multisectoral conversations, and helps to identify focal points (clusters of targets that need to be addressed together) for an integrated approach to implementation and monitoring

 \rightarrow Support coherent and effective decision-making.

Expert judgement somewhat ambiguous, but assessment itself triggers conversation, interpretation, and learning progress.



SDG 2,3,7,14 INTERACTIONS ANALYZED IN DETAIL

Type of Interactions

- Unidirectional:
 - A affects B, but B does not affect A.
- Bidirectional:

A affects B, and B affects A.

• Circular:

A affects B affecting C, which in turn affects A.

• Multiple:

A affects B, C, D.

Scope of Analysis

- Global scope, but regional illustrative examples
- (regional/ national/ project scope also possible)





GOAL-LEVEL INTERACTION WITH SDG6

2+6

Food production is strongly dependent on and affects the quality and availability of water, because boosting agricultural production can increase water withdrawals and worsen land and water degradation. Moreover, achieving nutrition targets requires access to clean water and sanitation. Counteracting these potential trade-offs will require sustainable agricultural systems and practices, and enhanced water governance to manage growing and competing demands on water resources.

7+6

Thermal cooling and resource extraction require substantial amounts of water; while wastewater from the energy sector releases large quantities of thermal and chemical pollution into aquatic ecosystems. In most cases, increasing the share of renewables in the energy mix and increasing energy efficiency would support the water targets. However, expanding biofuels or hydropower use could increase pressure on water resources.

3+6

In all contexts, improving water quality and access leads to improved health - without clean water and adequate sanitation it is difficult to achieve health gains. The latter are immediate in terms of decreased water-borne infections (e.g. acute diarrheal infections, viral hepatitis) and improved nutrition; improving water quality and sanitation also leads to long-term developmental gains. The interaction between these goals is strongest in parts of the developing world where water-borne infectious disease is still prevalent, but water quality and environmental pollution issues are also widespread in many high-income contexts. This relationship is essentially unidirectional, although where health is poor, it may be that water-borne pathogens themselves are adding to the poor management of water treatment systems.

14+6

Oceans and seas are major sources of water in the hydrological cycle and therefore require sustainable management through integrated water management that addresses the multiplicity and diversity of water actors. Ocean sustainability directly links to sustainable water management. Preventing marine pollution contributes to improving water quality and vice versa. Conservation of marine and coastal areas can support integrated water resource management and contribute to protecting and restoring water-related ecosystems. Sustainable aquaculture can contribute to water-use efficiency and local water and sanitation management. In return, increasing water-use efficiency may have positive feedbacks on marine and coastal ecosystems and support their conservation and sustainable use. For example,



TARGET-LEVEL INTERACTION WITH SDG6

water scarcity and pollution

SDG2 + SDG6



TARGETS	KEY INTERACTIONS	SCORE	POLICY OPTIONS	
2.4 → 6.3	Sustainable agriculture enables the improvement of water quality by reducing pollution	+1	Promote sustainable agricultural technologies that support land and soil quality improvement and the protection/restoration of water related ecosystems. For instance: more diverse rotations and associations in agriculture (including industrial agriculture) are	
2.4> 6.6	Sustainable agriculture, improving land and soil quality reinforces the protection/restoration of water- related ecosystems	+2		
2.2, 2.1 ← 6.1, 6.2	Safe and affordable drinking water and adequate and equitable sanitation are essential to address undernutrition	+2	 Often less energy-consuming and use fewer pesticides and fertilisers, lowering freshwater toxicity Promote sustainable agricultural 	
2.3> 6.1, 6.2, 6.4	Competition over water can result in trade-offs. Intensive conventional agriculture can constrain and in some cases counteract access to safe drinking water, proper sanitation, and the fight against water scarcity	-1/ -2	technologies and research/ technology activities, such as breeding of drought tolerant crops, or use of advanced irrigation technologies to reduce water use in agriculture; develop guidelines for sustainable agricultural water use to engage all sectors on the important topic of water swings	
2.3 → 6.3, 6.6	Pollution due to unsustainable agriculture can constrain or even counteract the reduction of water pollution and the protection / restoration of water and related ecosystems	-1/ -2	Enhance institutional capacity, and improve communication and coordination between public departments to design coherent water resource policies and regulatory practices to address	

SDG7 + SDG6



TARGETS	KEY INTERACTIONS	SCORE	POLICY OPTIONS
7.2 < 6.1, 6.4	Increased utilisation of unconventional water supply options to satisfy growing demands for safe, affordable freshwater supplies could constrain renewable energy deployment if those options (e.g. desalination] are highly energy-intensive	-1	Ensure that unconventional water supply options (e.g. desalination, wastewater recycling and inter-basin water transfers) do not generate excessively high bads on regional power systems, particularly if the goal is to integrate high shares of renewables into those systems
72, 73 - 61, 64	Increased electricity demands from the water sector could enable the intagration of variable wind and solar resources, if developed in combination with real-time demand-side power management of water-related infrastructure and equipment	+1	Better integrate water and energy systems development planning in order to capture the benefits of real-time demand-side power management of water process equipment for the integration of intermittent solar and wind resources. Coupling water and energy markets, which have historically managed their operations separately, could also be potentially beneficial
7.2, 7.3 → 6.1, 6.4, 6.5	Renewables and energy efficiency will, in most instances, reinforce targets related to water access, scarcity and management by lowering water demands for energy production (compared to a less-efficient fossil energy supply system)	+2	Ensure that energy policies and water resource management plans for renewable energy options, such as bioenergy and hydrogower, do not result in adverse side effects either nationally or beyond national borders, particularly in water- scarce regions
			Take care that policies promoting energy efficiency in the electricity generation, buildings, transport agriculture and industry sectors do not temper growth in water demand. Pay particular attention to energy-intensive operations with significant lighting, heating and cooling loads
7.2, 7.3 → 6.3, 6.6	Renewables and energy efficiency will, in most instances, reinforce targets related to water pollution and equatic ecosystems by reducing levels of chemical and thermal pollution (compared to a	+2	Align energy and water- management policies so that negative effects on aquatic ecosystems are minimised (such as thermal and chemical pollution). Policies limiting once-through

cooling offer an example

less-efficient fossil energy supply

system)



ICSU (2017) METHODOLOGY

GOALS SCORING

INDIVISIBLE

The strongest form of positive interaction in which one objective is inextricably linked to the achievement of another. Reduction of air pollution (12.4) is indivisible from improved health and reducing non-communicable diseases (3.4).

REINFORCING

One objective directly creates conditions that lead to the achievement of another objective. Increasing economic benefits from sustainable marine resources use (14.7) reinforces the creation of decent jobs and small enterprise in e.g. tourism (8.5 and 8.9)

ENABLING

The pursuit of one objective enables the achievement of another objective. Developing infrastructure for transport (9.1) enables participation of women in the work force and in political life (5.5)

CONSISTENT

A neutral relationship where one objective does not significantly interact with another or where interactions are deemed to be neither positive nor negative. By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution (14.1) is consistent with target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.

CONSTRAINING

A mild form of negative interaction when the pursuit of one objective sets a condition or a constraint on the achievement of another. Conserving coastal areas (14.5) and development of safe affordable housing and basic services (1.1) may constrain each other

COUNTERACTING

The pursuit of one objective counteracts another objective. Ensuring access to safe, nutritious and sufficient food can counteract sustainable water withdrawals (6.4) and reduction of chemicals releases (12.4)

agriculture is a necessary

to improve food security.

entail increased and/or

increased use of agro-

chemical inputs.

In many places, this might

better irrigation as well as

(but not sufficient) condition

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. A choice has to be made between the two. Developing infrastructure (9.1) could be cancelling the reduction of degradation of natural habitats in terrestrial ecosystems (15.1)

Outdoor and indoor air pollution is responsible for 7 million deaths annually, as well as respiratory and cardiovascular disease but also increases in perinatal deaths. In 2012, ambient (outdoor) air pollution was responsible for 3 million deaths, representing 5.4% of the total deaths. Worldwide, ambient air pollution is estimated to cause about 25% of the lung cancer deaths. Major urban centers in low and middle-income countries are the most exposed to this burden. (WHO, 2016).

Sustainable and diversified strategies for using the marine resource base open up opportunities for small enterprises in fisheries or other harvesting and associated value-addition activities, as well as activities related to tourism. Many SIDS and LDCs that are rich in these resources also have poor, vulnerable and marginalized coastal communities. Affordable public transport promotes social inclusion, more equal access to different parts of the city, and enabling employment for marginalized groups. In many places, women do not have access to a car and depend on public transport, walking or bicycling to get around, to work places and to social or political activities (NCE, 2016; GSDR, 2016)

There is no significant interaction between the two

targets.



Establishing protection areas in the coastal zone and expanding urbanization, infrastructure or transport risks spatial competition especially in densely populated areas. Integrated coastal zone management and marine spatial planning tools are readily available to mitigate spatial competition.



-3

In underdeveloped regions, developing roads, dams, and power grids might be a high priority, although it will cause some unavoidable fragmentation of habitats and compromising the integrity of the natural ecosystem, leading to risks to biodiversity as well as social risks.

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PROPOSITION OF WORKING GROUP: CONFLICTING TARGETS AND SYNERGIES

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PROPOSITION OF WORKING GROUP ON CONFLICTING TARGETS AND SYNERGIES

Background

UN-SDG 6 arguably does currently not receive sufficient political attention in the international community.

Aim

Working group aims at employing the **regional expertise** available in the GRoW consortium to demonstrate the **importance of SDG 6 in achieving other SDGs.**

Outcome

- Policy Paper: illustrative examples and best practices
- Contribution to World Water Week 2019





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BMBF-GROW PROJECT FAMILY







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