

QMSS Practicum Project 2

Measuring the integration and network effect of the SDGs

Company: Joint SDG Fund - United Nations

Brief Project Description:

The 17 Sustainable Development Goals (SDG) are defined in a list of 169 SDG Targets and 231 unique SDG indicators. The 17 SDGs were designed not as separate and isolated goals, but as a network, in which links among the goals exist through targets and indicators that refer to multiple goals. With less than 10 years remain to achieve all Sustainable Development Goals (SDGs) globally, there is a growing need for integrated implementation and measurement. In this project, **the team is tasked to devise a model/tool that define and measure linkages and networks of SDGs and see how such SDG linkages/networks progress over time.**

Several researches had explored the interactions (including trade-offs and synergies) between SDGs. One approach mapped out the network including all SDGs (Le Blanc et al. 2015; Waage et al 2015). Another approach found the linkage or nexus from a particular perspective for some SDGs, such as looking for the interconnections of SDGs in the use of natural resources or the infrastructure - inequality - resilience nexus (GSDR 2016). The team could either further develop on the previously assessed linkages/network or exploring new approaches in mapping out and measuring the SDG linkages/network.

Nonetheless, these linkages/network should be evidence-based (or reasonably assumed) and measurable. The measurement of the SDG integration and network theoretically should be a universal measurement that could be applied to all countries. That said, if the team have intention to combine data from country specific data sources, especially text-based data, you could pilot the measurement in 2-3 countries first and propose a method of scaling for universal application.

Fewer research has been done on measuring SDG linkages/network. The team should find ways to quantitatively measure and present these changes in the model, for example, measuring the rate of changes of SDG indicators (trend analysis) or analyzing the change in policy documents or survey results (text analysis).

When devising the model, keep in mind who will be the **audience** and how they could benefit from it. Would it help the Joint SDG Fund or national governments make better funding and/or policy decisions on a particular area to achieve maximum positive synergies among the SDGs? Would it help the Joint SDG Fund or countries to monitor the network impact over a period of time – for instance, to monitor the strengthening of the SDG network effect after a particular policy implementation? Would it help to identify gaps or leverage points in the investment and/or movement of SDGs especially over time?

Datasets

Dataset Name	Source	Description	Data Type
SDG Indicators	UN	https://unstats.un.org/sdgs/indicators/database/	metadata
UN High Level Political Forum Voluntary National Reviews (VNRs) on the SDGs Database	UN	https://sustainabledevelopment.un.org/vnrs/	Source for NLP

Please also refer to dataset source presented in Joint SDG Fund-QMSS project 1.

What is the goal of this project?

- Define the users of the network model and keep their interests in mind when developing the models
- Pool in knowledge in general social sciences to find the connections among the key social issues such as poverty, environment protection and economic development.
- Define what the essential characteristics of a network are to be incorporated in the measurement – for instance in terms of connections, distributions, and segmentation of the network or use of methods such as Bayesian Networks
- Work as a team to share different perspectives to create innovative models that are non-linear, that can be tested, repeated and modified.
- Practice writing research papers that are clearly structure, transparent in assumptions and supported by evidences

What has been done already to achieve this goal?

1. Le Blanc, David (2015). *Towards Integration at Last? The Sustainable Development Goals as a Network of Targets*. New York. United Nations Department of Economic and Social Affairs (UN-DESA)

Summary: provides a map of direct references in SDG targets to other SDGs, based on the wording of the targets. The visual presented a “unequally knit network”, where some target displaying many linkages to other targets, whereas other appear more isolated.

Link: https://www.un.org/esa/desa/papers/2015/wp141_2015.pdf

2. Nilsson, Måns; Dave Griggs and Martin Visbeck. (2016) *Map the Interactions between Sustainable Development Goals*. Nature

Summary: Using a scoring system ranging from completely adverse relationships to perfectly supportive relationships where achieving one Goal is inextricably linked to achieving another. Can be used to

“organize evidence and support decision-making [...] that minimize negative interactions and enhance positive ones”

Link: <https://www.nature.com/articles/534320a>

3. Boas, Ingrid; Frank Biermann and Norichika Kanie (2016). *Cross-sectoral Strategies in Global Sustainability Governance: Towards a Nexus Approach*. International Environmental Agreements

Summary: Focus in both policy and research on the nexus between different Sustainable Development Goals, and finding a novel ways of cross-sectoral institutionalisation in the implementation of these goals. One example of nexus is climate-water-energy-and-food. It recognizes that population growth will lead to higher demands for food, energy and water resources, which will lead to higher greenhouse gas emissions and greater pressure on ecosystems

Link: <https://link.springer.com/content/pdf/10.1007%2Fs10784-016-9321-1.pdf>

4. Abby Butkus, Darly Collins and Alex Reddaway (2019). *Impact Pathways: A tool to measure the intricate role of digital finance in reaching the Sustainable Development Goals*. Pacific Financial Inclusion Programme (PFIP)

Summary: Find a multitude of pathways simultaneously to assess the full range of life benefits that digital finance may provide to improvement in the Sustainable Development Goals.

Links: <https://www.uncdf.org/impact-pathways/home>

6. ICSU, ISSC (2015): Review of the Sustainable Development Goals: The Science Perspective. Paris: International Council for Science (ICSU).

Summary: This scientific review aim to evaluate the proposed 17 SDGs and 169 targets themselves, assessing “ whether they are backed up by scientific evidence, whether they address the economic, social and environmental dimensions of sustainable development in an integrated way, and whether they are sufficiently specific to be effectively implemented and monitored”. Meanwhile, it also provides each goal with science-based comments on connectivity with the other 16 SDGs and their targets. For example, in commenting Goal 2 End Hunger, it reviews: “In general, this goal moves in tandem with Goals 1, 3, 4, 5, 10, and 12; but there are likely to be trade-offs between this goal and the environmentally focused targets of Goals 6, 7, 13, 14, and 15. These trade-offs need to be explored at an early stage to ensure that the costs of the trade-offs are minimized.”

Link: <https://council.science/publications/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015/>

What is the relevant background needed for this project?

- Network analysis / theory
- Time series analysis
- Dashboard / BI analytics

- Familiar with development policy, sustainable development, etc.

What deliverable do you expect from this project?

- Short research paper/brief outlining the model, its strength and limitations and possible use.
- Summary presentation or blog of the network model
- Visualization of data through: i) a dashboard or, ii) chart(s) in Python or R
- Raw codes