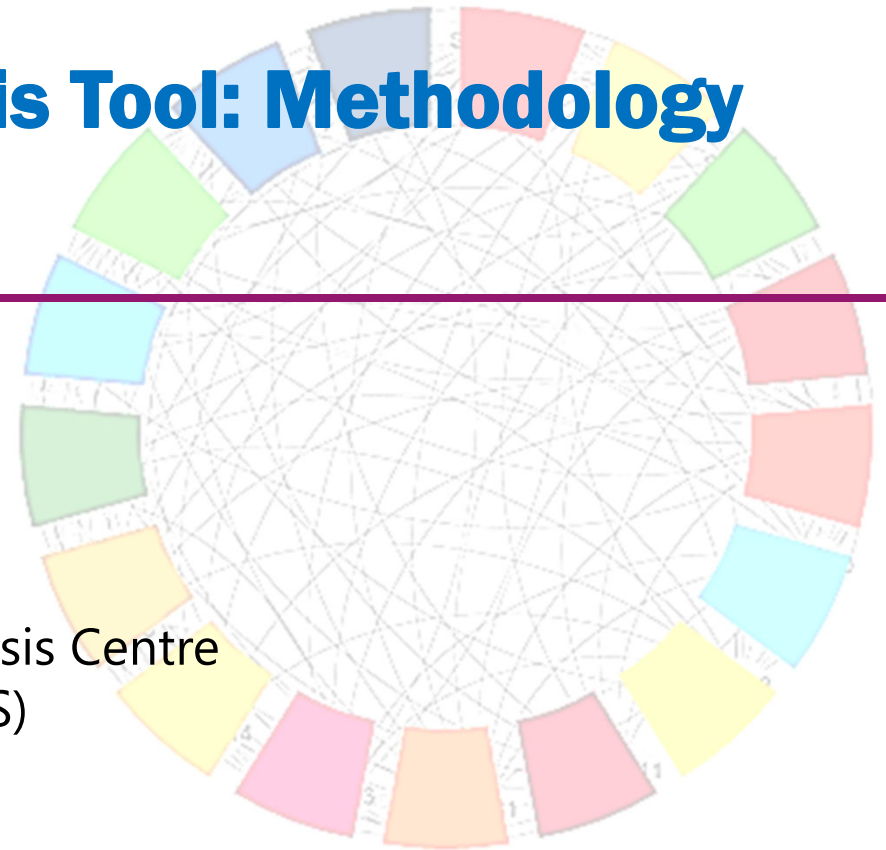


IGES SDG Interlinkages Analysis Tool: Methodology and applications

Dr. Xin Zhou

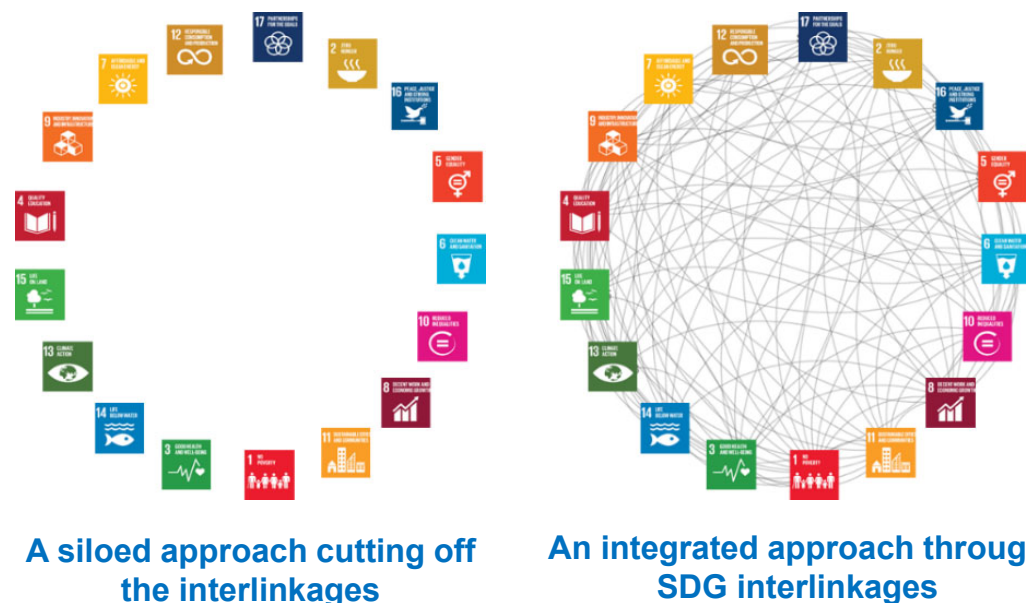
Research Leader, Strategic and Quantitative Analysis Centre
Institute for Global Environmental Strategies (IGES)



Expert Group Meeting on Sustainable and Clean Energy in North and Central Asia
9-10 June 2021, virtual meeting

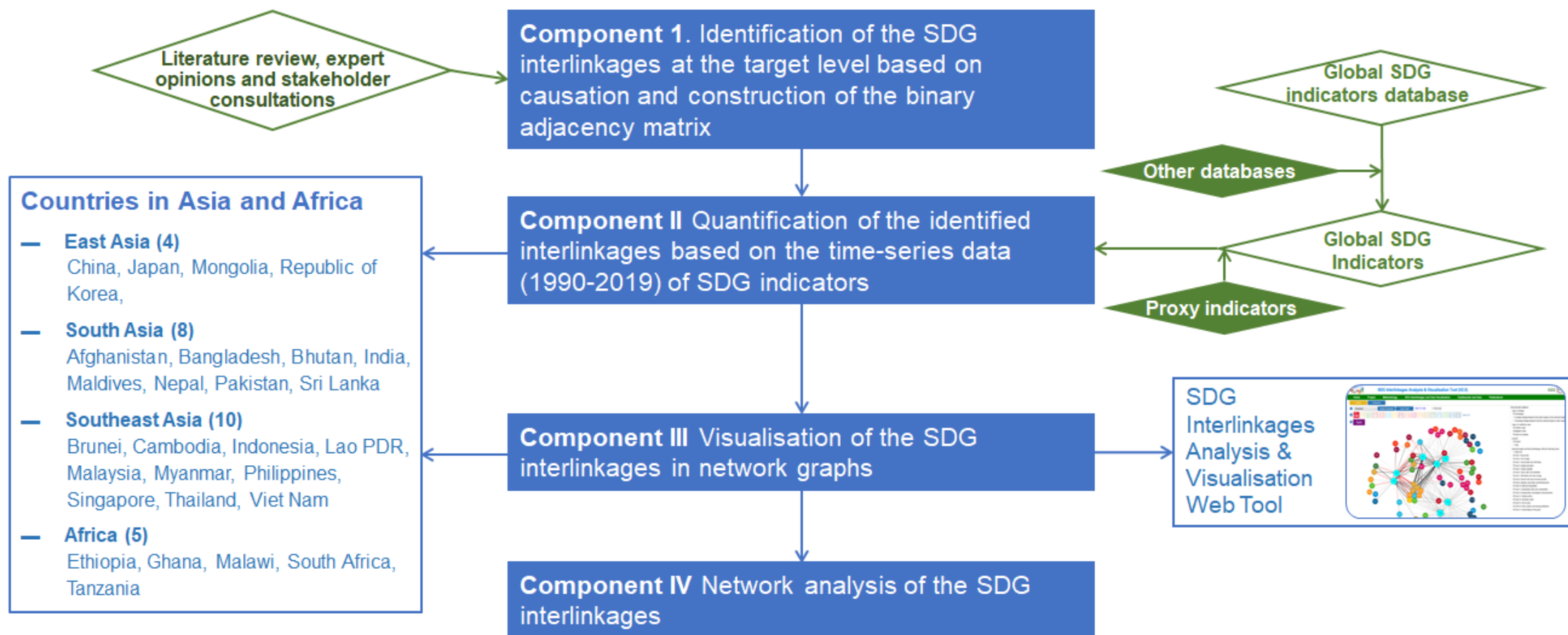
SDGs framework and the importance of taking an integrated approach through an SDG interlinkage perspective

- SDGs covering 17 goals and 169 targets is a complex system.
- Shifting from a siloed approach to an integrated approach is needed for achieving the SDGs.
- Understanding the SDG interlinkages is important to help address the following issues:



- *How will achieving one target impact on achieving others and how strong are the impacts?*
- *Where are the synergies or trade-offs between the SDG targets?*
- *How countries are different in terms of SDG interlinkages?*
- *What are the policy implications for planning and institutional arrangement, etc.*

IGES SDG Interlinkages Tool for the analysis of SDGs synergies and trade-offs at the national level



Source: SDG Interlinkages Tool (V3.0) <https://sdginterlinkages.iges.jp/methodology.html> (Zhou, et al., 2019)

Applications and publications (1)

- The methodology was used for a scientific work on the urban-rural linkages and the SDGs implications for Ghana focusing on sustainable infrastructure development in Africa.
- A paper entitled “**Urban-rural linkages: Effective solutions for achieving sustainable development in Ghana from an SDG interlinkage perspective**” was published in 2021 in *Sustainability Science (Springer)*.

Sustainability Science
https://doi.org/10.1007/s11625-021-00929-8

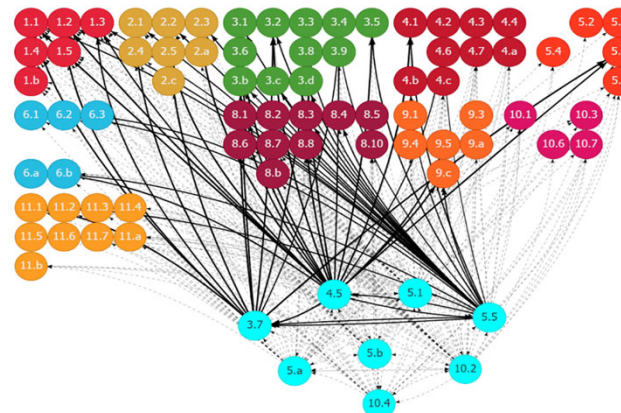
TECHNICAL REPORT



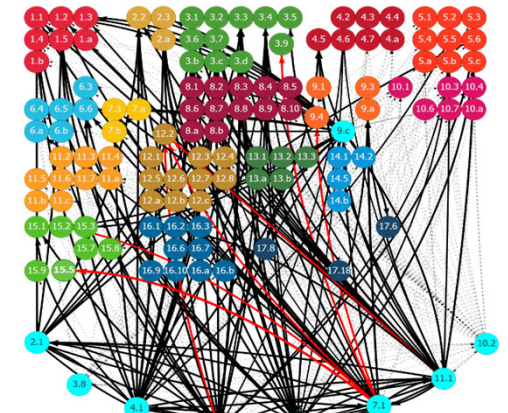
Urban–rural linkages: effective solutions for achieving sustainable development in Ghana from an SDG interlinkage perspective

Gideon Baffoe¹ · Xin Zhou² · Mustafa Moinuddin² · Albert Novas Somanje³ · Akihisa Kuriyama² · Geetha Mohan^{3,4} · Osamu Saito^{2,4} · Kazuhiko Takeuchi^{2,4}

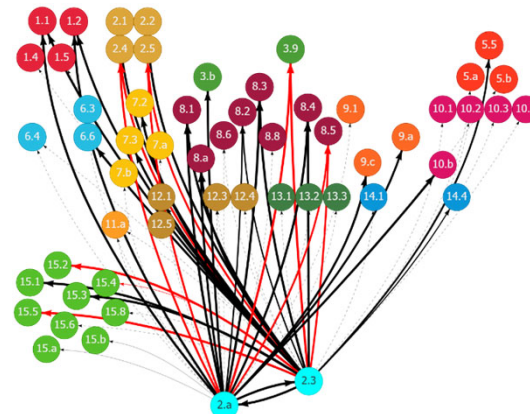
Received: 10 July 2020 / Accepted: 4 February 2021
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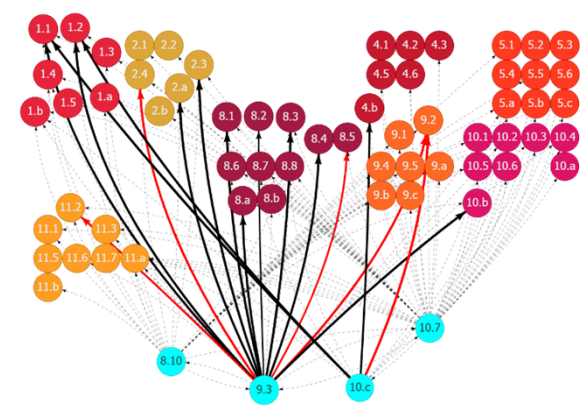
Gender inclusiveness



Basic services and infrastructure



Sustainable agriculture systems



Innovative financial inclusion systems

Applications and publications (2)

The methodology was used for the analysis of the impacts of COVID-19 and its recovery on SDGs.

A chapter (Ch24) is included in the Elsevier book (2021) – ***Environmental Resilience and Transformation in Times of Covid-19: Climate change effects on environmental functionality***



CHAPTER

24

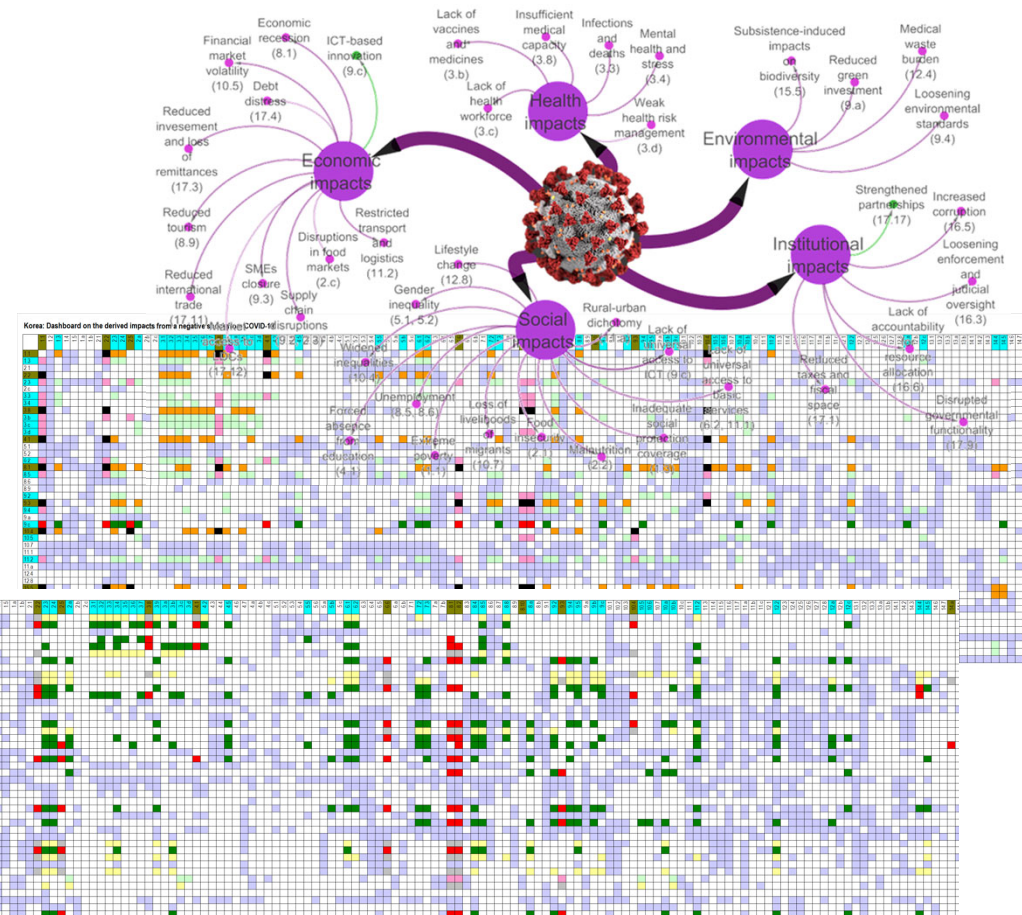
Impacts and implications of the COVID-19 crisis and its recovery for achieving Sustainable Development Goals in Asia

A review from an SDG interlinkage perspective

Xin Zhou, Mustafa Moimuddin

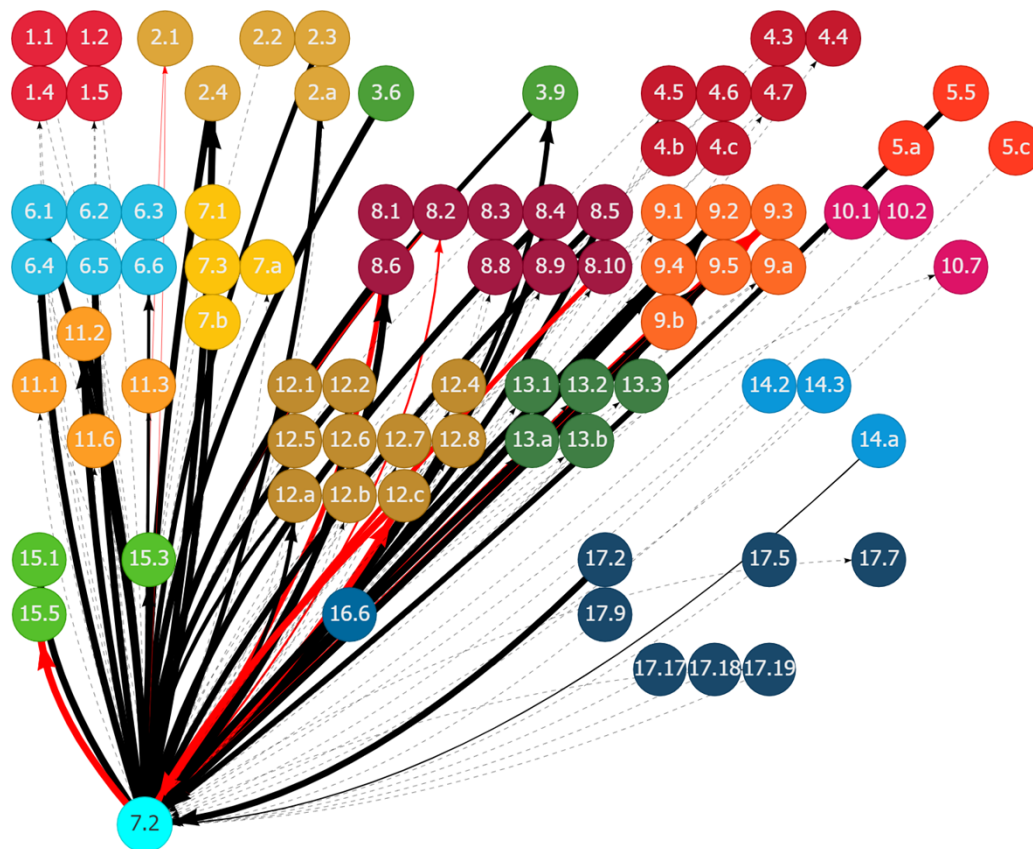
Institute for Global Environmental Strategies (IGES), 2108-11 Kamiyamaguchi, Hayama, Kanagawa, Japan

24.1 Introduction



Impacts of COVID-19 on SDGs and the implications of proposed COVID-19 recovery measures on SDGs in ROK.

An example: Synergies and trade-offs of renewable energy development in Japan by using the SDG Interlinkages Analysis Tool



- Development of Japan's renewable energy (**Target 7.2**) may generate many synergies with other SDG areas. These include sustainable agriculture (**2.4**), water access (**6.1**, **6.2**) and conservation of water-related ecosystems (**6.6**), energy efficiency improvement (**7.3**), sustainable transport (**11.2**), resource use efficiency improvement and decoupling (**12.2**, **8.4**), job creation (**8.5**, **8.6**), industrial upgrading and sustainable industrialisation (**9.2**, **9.4**, **9.5**), reduction in human health damage (**3.9**), gender equality (**5.5**), etc.
- However, there are also some trade-offs or barriers which need to be taken into account in relevant policy-making. These include potential impacts on biodiversity (**15.5**), competitiveness of small and medium-sized enterprises (**9.3**), economic costs and impacts on economic growth (**8.1**, **8.2**), food security due to land use competition (**2.1**), and energy subsidies (**12.c**), etc.

Note: Black lines: Synergies; Red lines: Trade-offs. Source: IGES SDG Interlinkages Web Tool (<https://sdginterlinkages.iges.jp/visualisationtool.html>).

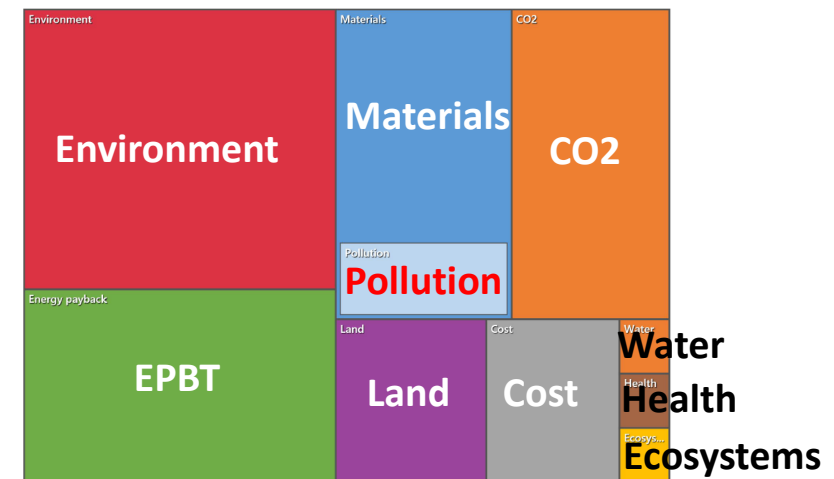
IGES recent work on the synergies and trade-offs of renewable energy development (Target 7.2)

- A systematic review conducted on the impacts of RE systems (solar PV, wind energy, hydropower, geothermal energy, biomass-based energy);
- Identifying major impacts using machine-based text mining techniques (e.g. word cloud analysis, word association analysis, etc.).
- Stakeholder engagement for validation and customisation.

An example of solar PV systems





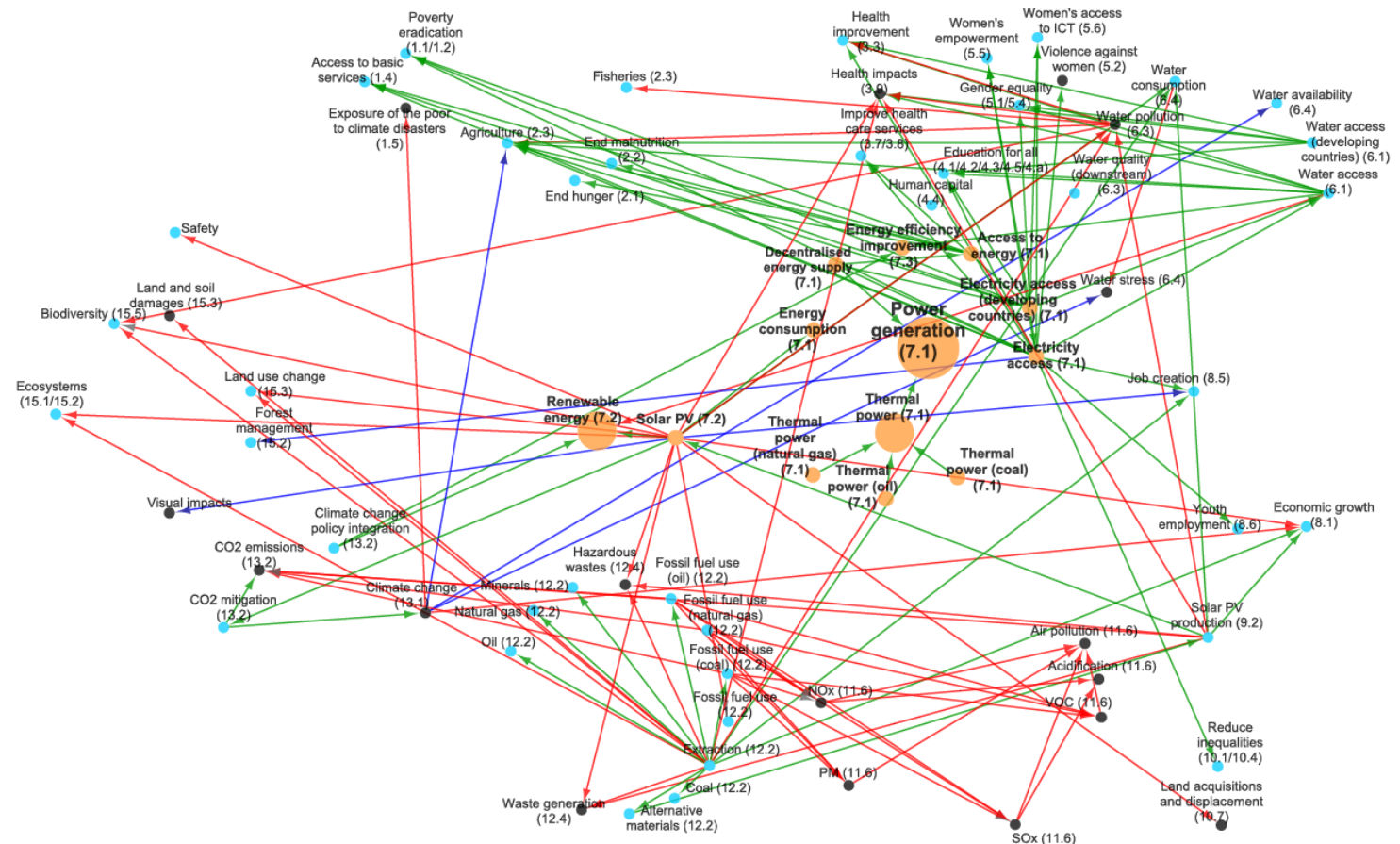
Word cloud of included references



Major issues covered by included references

Preliminary results: An example of solar PV and SDG synergies and trade-offs

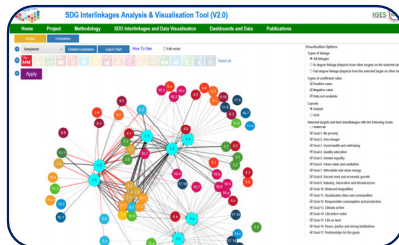
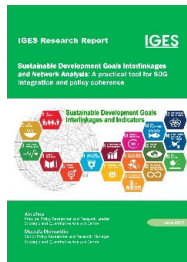
-  Solar PV systems contribute to decentralised energy supply and access to electricity which help achieve multiple social goals (poverty eradication, access to basic services, water, education, ICT services, health care services, etc.) and women empowerment and reduction in inequalities.
-  However, solar PV in its lifetime interacts with the environment and local communities in various ways: Land acquisition and displacement; land clearing and ecological degradation and loss of biodiversity; rare metals, other minerals, fossil fuels used in the upstream production, hazardous wastes after use, etc.



Source: A network chart generated based on the systematic literature review using software Cytoscape (Zhou, 2021).

Thank you!

Contact: zhou@iges.or.jp



Zhou, X., Moinuddin, M., 2017. Sustainable Development Goals Interlinkages and Network Analysis: A practical tool for SDG integration and policy coherence. IGES Research Report. Hayama: IGES. Available at:
https://sdginterlinkages.iges.jp/files/IGES_Research%20Report_SDG%20Interlinkages_Publication.pdf.

Zhou, X., Moinuddin, M., Li, Y., 2017. SDG Interlinkages and Data Visualisation Web Tool. Hayama: IGES. Available at:
<https://sdginterlinkages.iges.jp/visualisationtool.html>.