



EVALSDGs INSIGHT #8

Evaluating the SDGs: Challenges and the Potential of Big Data



PURPOSE: This EVALSDGs Insight identifies some of the special challenges that evaluators face when assessing the progress of the SDGs and argue that most common evaluation methods are not well suited to address these challenges. We conclude by briefly illustrating some of the ways that big data can contribute. A companion Insight on Big Data EI# 9, builds upon this discussion to illustrate some data collection and analysis tools and techniques for Big Data that can potentially strengthen our evaluation toolkit.

ISSUES: Special challenges for evaluating the SDGs

A number of factors challenge the ability of evaluators to understand and assess the SDGs. Although not exhaustive, the following list identifies key challenges.

- a. **The SDGs are complex** – the different SDGs are interdependent and progress on one SDG is significantly influenced by other SDGs, as well as a variety of social and environmental factors. A previous Insight EI #1 presented the complexity in evaluating the 17 SDGs, access it [here](#).
- b. **Causal processes for the SDGs are non-linear** – the SDGs and the contexts in which they are pursued are dynamic, and conventional methodologies using counterfactuals for impact and attribution analysis have limited application.
- c. **The SDGs involve different levels of actors** – they are implemented through networks of international, national and local actors and stakeholders, who may not agree on goals, and how to monitor and evaluate. Different actors also interact in complex ways.
- d. **The number of SDGs** and respective outputs and outcomes requires a large number of sub-goal indicators all of which must be measured consistently over time and place.
- e. **The sustainability of SDG outputs and outcomes** must also be assessed, often over long periods of time.

DIFFICULT SDG EVALUATION DATA REQUIREMENTS

Given the challenges discussed above, SDG evaluations can have heavy data requirements, that are particularly challenging in countries that have limited M&E capacity to collect even basic SDG data. Key data challenges include:

- a. The need for larger sample sizes than are used in most conventional evaluations.
- b. Multiple types of quantitative and qualitative data (including audio and visual data, satellite images etc.) must often be combined into integrated data platforms.
- c. The need for longitudinal data on programs that continue over multiple years requires attention to sustained data collection over longer periods of time than is possible within many evaluation frameworks.
- d. It is necessary to measure and track complex implementation processes and not just outcomes.
- e. As the 2030 Agenda for Sustainable Development pledges to 'leave no one behind,' SDG data must include remote and difficult to reach groups, many of whom are "invisible" and are often not captured in government statistics.

INSUFFICIENT CAPACITY TO ADDRESS SDG EVALUATION CHALLENGES

Most government evaluation offices and most conventional evaluation methods are unable to fully address the SDG data and evaluation challenges. Most conventional evaluation methods are designed to evaluate projects

and programs where it is assumed that there is a direct, linear causal relationship between a limited number of program inputs and a small number of intended outputs or impacts. It is also assumed that there are only a relatively small number of intervening variables. Even the most “rigorous“ experimental and quasi-experimental designs only match the group affected by the project with a matched comparison group (counterfactual), and are designed to exclude the influence of external contextual factors. Also, due to the very high cost of data collection, most evaluations are only able to use relatively small samples of a few hundred cases. Unfortunately, none of these designs work well for evaluating the SDGs because programs are implemented in a complex environment, with interactions among many SDGs, with large numbers of sub-goals that must be assessed, and where relationships are non-linear. For instance, even the basic kinds of complexity-responsive analysis required to evaluate the SDGs often require sample sizes that are much larger than could be afforded with conventional methods of data collection.

THE POTENTIAL OF BIG DATA

Big data is often defined as data that is too large to handle on a normal office computer. It is generated quickly, produces huge volumes of different types of data, and often generates continuous data over long periods of time. Big data will be discussed in more detail in the second Insight, but the following are some of exciting benefits for evaluation, particularly for complex programs like the SDGs:

- Many kinds of big data are affordable and fast to collect.
- Very large volumes of data are collected that cover the total population of interest [not just as small sample].
- Big data can be analyzed quickly and provide rapid, real-time and continuous feedback.
- Big data can combine multiple sources of data into an integrated data platform, i.e. surveys, text – including huge PDF files, audio-visual data, satellite and drone images, photographs, and social media outlets.
- Big data allows much more sophisticated types of analysis, including predictive modeling, machine learning and artificial intelligence, the integration of multiple data sets, and the analysis of complex programs.
- Big data can also generate continuous records, starting in some cases, several years before a program began, and continuing after the program ends.

EvalSDGs Insight # 9 - Using big data to strengthen evaluation of the SDGs provides examples of the application of different sources of big data, including the use of satellite images and drones, social media analysis, mobile phones, integrated data platforms, the Internet, machine learning and Artificial Intelligence.

For further details on big data, check out Bamberger’s “Introducing big data” resource note [here](#).

About EVALSDGs INSIGHTS

EVALSDGs is a global network committed to adding value and learning to the SDGs, as well as support processes to integrate evaluation into global and national SDGs review systems. EVALSDGs Guidance Group is a sub-group of EVALSDGs made up of evaluators ready to support you in the evaluation of the 17 SDGs which is complex and requires strong collaborations and partnerships. It produces INSIGHT publications, training materials, and information on opportunities to strengthen global and national evaluation capacity. It shares good cookies around the impact and sustainability of the SDGs and suggests which competencies you need. EVALSDGs INSIGHTS are short, light and easy to digest notes on topics related to evaluation and the SDGs. They present ideas and new information and stimulate thinking to strengthen evaluation capacity. This EI has been jointly produced by UNITAR and EVALSDGs Guidance Group.

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