



KAPITEL 4 / CHAPTER 4⁴

SELECTING INDICATORS FOR MEASURING PROGRESS TOWARDS SUSTAINABLE DEVELOPMENT

DOI: 10.30890/2709-2313.2025-38-02-020

Introduction

The Sustainable Development Goals (SDGs), adopted in 2015 by all 193 United Nations member states, constitute a comprehensive global agenda comprising 17 goals and 169 targets aimed at addressing a wide spectrum of interconnected environmental, social, and economic challenges. While significant strides in economic development have been made, pressing global issues—such as persistent extreme poverty, rising inequality, biodiversity loss, and escalating climate change impacts—remain unresolved. Notably, increasing greenhouse gas emissions continue to drive the frequency and severity of extreme weather events, underscoring the urgency of coordinated international action. Initiatives like the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework (COP15) have emerged in response, aiming to mitigate global warming and preserve ecological integrity.

To monitor progress towards the SDGs, the United Nations established a set of global indicators. However, these indicators often fail to capture local, sectoral, and organizational nuances, resulting in a lack of contextual relevance. Consequently, reporting has become fragmented, with many companies selectively focusing on indicators that portray their performance in a favorable light—while neglecting those that reveal negative externalities. This practice, widely criticized as "SDG-washing," undermines the credibility and integrity of sustainability reporting.

Existing approaches for selecting SDG indicators are frequently developed in isolation, tailored to specific contexts or sectors. This limits their scalability and comparability across different geographies and levels of governance. To address these shortcomings, the current study introduces a structured, adaptable framework designed

⁴*Authors: Mysak Ihor Vasylovych, Mysak Pavlo Vasylovych*

Number of characters: 20030

Author's sheets: 0,50



to enhance the consistency, relevance, and transparency of SDG indicator selection and evaluation.

The study adopts a threefold methodology:

- **Comprehensive review** of indicator selection criteria derived from both peer-reviewed academic sources and gray literature;
- **Development of a hierarchical framework** for systematically assessing individual indicators and indicator sets;
- **Validation through empirical case studies** to test the framework's applicability and operational value in real-world contexts.

By integrating scientific rigor with practical flexibility, the proposed framework aims to facilitate more coherent and holistic SDG performance assessments. It provides a foundation for harmonized reporting across sectors and scales, enabling more meaningful comparisons between organizations, regions, and countries. Ultimately, it contributes to closing the gap between global sustainability ambitions and the mechanisms used to track and achieve them.

4.1. Literature review and methodological approach

The methodology, follows a structured process to develop the proposed framework and its two key outcomes. First, a literature review identified studies evaluating SDG or sustainability performance and proposing criteria for indicator selection. These criteria were collected into an initial, unrefined pool. Next, the criteria were analyzed, sorted, and categorized into a refined, mutually exclusive set, ensuring comprehensive coverage of key aspects from the literature — this formed Outcome 1.

Building on this, a framework was developed to systematize indicator evaluation and selection, using Outcome 1 as its foundation. To refine the framework, it was tested on two illustrative cases:

- UN SDG indicators for a global assessment and
- a hypothetical company for an organizational-level assessment. Notably,



the framework focuses exclusively on the indicator selection process, serving as a component of broader SDG assessment methodologies, which are beyond this study's scope.

A systematic literature review was conducted using Google Scholar and Web of Science to gather a diverse, representative selection of studies discussing SDG indicator criteria. To ensure comprehensive coverage across various sectors, scales, and timeframes, the search combined keywords like "criteria," "SDGs," "indicators," and related synonyms. Given the limited number of studies directly targeting SDGs, the scope was expanded to include sustainability indicator criteria more broadly, without temporal restrictions.

Gray literature was also reviewed via Google, focusing on sources explicitly referencing SDGs. Throughout the review, synonyms such as "requirements," "principles," "filters," "guiding questions," "characteristics," and "qualities" were recognized as equivalent to "criteria." This study adopts the most common interpretation — criteria as requirements for suitable indicators — encompassing all identified synonyms.

Only studies explicitly proposing or applying criteria were included. Each criterion was documented alongside the source, with recurring criteria counted as multiple occurrences. The complete list of studies and the pooled criteria are available in the Supporting Information.

To streamline the criteria list, different versions of the same criterion (e.g., relevance, relevancy, relevant) were standardized under common terms. While a broad set of criteria enhances indicator validity, an overly extensive list increases complexity and reduces transparency [1, 2, 3]. To balance this, criteria were grouped into overarching categories drawn from the literature (e.g., data-oriented, applicability, relevance), each containing 2–4 specific criteria to ensure comprehensive representation.

The final output consisted of two distinct criteria sets:

- individual indicator criteria — for assessing single indicators, and
- indicator set criteria — for evaluating the overall performance of the



indicator set. These outputs served as key inputs for the proposed indicator selection methodology.

A stepwise framework was designed to guide indicator evaluation and selection. It consists of three main phases:

1. **Pre-steps** — Identify potential indicators for evaluation or selection.
2. **Evaluation/Selection** — The core phase, built from literature review findings.

Two hierarchies of criteria were established:

- **Primary/Mandatory criteria** — Essential for indicator acceptance.
 - **Secondary/Recommended criteria** — Non-essential but enhance indicator robustness.
3. **Reporting** — Document the finalized indicator set.

Mandatory criteria ensure consistency and scientific rigor, while recommended criteria allow flexibility for diverse applications. The framework is designed for universal use across all SDGs, regardless of specific assessment contexts or the relevance of individual goals — these considerations are outside the study's scope.

Two proof-of-concept cases validated the framework's applicability across different levels:

- The UN SDG indicators, developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) and endorsed in 2017 (revised in 2022), track global and national progress on the SDGs (United Nations, 2017, 2023). Since these indicators are pre-established, the framework was used for evaluation rather than selecting new indicators. The evaluation focused on SDG 1 (poverty reduction) and SDG 13 (climate action) — chosen for their contrasting social and environmental natures — to test the framework's versatility.
- A hypothetical Danish manufacturing company, 'DanMES,' was used to demonstrate the framework's adaptability for selecting new indicators. DanMES, headquartered in Denmark with production sites in China, the US, and Europe, aimed to define SDG indicators for monitoring sustainability performance and setting key performance indicators (KPIs)



to track progress and drive improvements.

Since DanMES had no prior SDG indicators, the **SDG Compass** database for business indicators [4, 5, 6, 7, 8] was used to curate an initial indicator set. Indicators were filtered by SDG, screened for relevance, and duplicates were removed. For the proof-of-concept, the assessment focused on SDGs 8 (decent work and economic growth), 12 (responsible consumption and production), and 13 (climate action) — covering both societal and environmental dimensions.

4.2. Framework development

A systematic literature review was undertaken to establish a robust foundation for further analysis, encompassing both scientific and gray literature on the conceptual framework of sustainable companies. Scientific sources were drawn from multidisciplinary databases, specifically Web of Science (WoS) and Scopus, employing targeted search criteria centered around corporate sustainability (CS) and associated concepts, as detailed in [9, 10, 11, 12] of the Supporting Information (SI). The search parameters were restricted to peer-reviewed, English-language journal articles published between 2013 and 2023, ensuring accessibility to full-text versions.

A complex review of another sustainability studies showed, yielding over 800 instances of indicator selection criteria across various sectors and spatial levels between 1988 and 2023 [13, 14, 15, 16]. Despite this, few studies focused specifically on SDGs, and none provided SDG-tailored approaches for indicator selection. Most relied on generic criteria, aside from occasional mentions of SDG relevance. After refining and consolidating the criteria, the list was narrowed to 80 distinct items. From these, the study proposes 18 key criteria: 12 for individual indicator performance and 6 for evaluating indicator sets, categorized into mandatory (Level A) and recommended (Level B) levels [18].

The framework emphasizes the MECE principle—ensuring indicators are **Mutually Exclusive** (avoiding redundancy and double-counting) and **Collectively**



Exhaustive (covering all relevant sustainability dimensions). For the latter, three criteria are highlighted:

1. **Life Cycle Coverage** – ensuring indicators span all stages (upstream, operation, downstream);
2. **SDG Scope Coverage** – addressing all relevant elements of an SDG goal to avoid selective interpretation;
3. **Absolute Sustainability Alignment** – enabling comparison with scientifically grounded sustainability thresholds (e.g., planetary boundaries or social foundations).

This last criterion is particularly important, as it allows assessment of whether an activity is inherently sustainable, not just relatively better. Though the framework does not define exact threshold values, it advocates for their inclusion to enhance credibility and comparability across assessments.

Together, these principles and criteria provide a structured and adaptable foundation for SDG indicator selection, supporting both context-specific flexibility and scientific robustness [14, 18].

Drawing from the reviewed literature, the framework introduces a two-tiered hierarchy of selection criteria: **Level A (mandatory)** and **Level B (recommended)**. This classification distinguishes between **intrinsic** criteria—such as relevance and overall quality—which must be strictly met, and **extrinsic** criteria—like data availability, stakeholder acceptance, and applicability—which allow more flexibility and may improve over time. Intrinsic criteria serve as initial filters: if not satisfied, further evaluation is unnecessary. Extrinsic criteria, however, are evaluated on a scale ("yes", "partly", "no") to reflect the degree of compliance.

For indicator sets, most criteria are designated as Level A to ensure scientifically robust SDG assessments. Exceptions include "reasonable number of indicators" and "comparability with absolute sustainability thresholds," which remain Level B due to practical challenges in defining universal standards for these aspects. While fulfilling criteria related to life cycle and SDG scope coverage can be complex, the framework sets minimum benchmarks to guide best practices, with room for refinement in future



applications [17].

To address issues of arbitrary target-setting and subjective indicator selection in SDG assessments, the framework incorporates an **absolute sustainability perspective**. This criterion ensures indicators are suitable for benchmarking against fixed environmental or social thresholds.

While setting such targets is complex—especially at smaller scales where ethical allocation becomes relevant—the focus here is on selecting indicators compatible with absolute reference values. Importantly, **absolute and relative sustainability** should be viewed as complementary, enabling both performance benchmarking and progress tracking.

The framework prioritizes scientifically grounded, context-independent indicators to enhance objectivity and comparability. However, **context-specific or action-oriented indicators** may still be used as **supplements**, supporting strategies for improving core SDG performance (e.g., reducing GHG emissions through operational metrics). These indicators should inform actions, not represent performance outcomes directly.

To further improve comparability and adaptability, future extensions of the framework could involve the development of **sector-specific indicator sets** with **core and optional components**. This approach balances standardization with flexibility, promoting consistency across assessments while allowing for customization where needed [17, 19, 20].

Conclusion

This study introduces a structured framework for selecting SDG indicators, comprising 18 criteria grouped into two categories: individual indicator performance and indicator set performance. These are further divided into mandatory (Level A) and recommended (Level B) criteria. The framework was successfully applied to two cases—evaluating existing global-level indicators and guiding company-level



indicator selection—demonstrating its practicality and addressing prior research gaps.

To balance scientific rigor with adaptability, the framework combines top-down and bottom-up approaches. It defines objective selection criteria while allowing flexibility in choosing context-relevant indicators. Unlike prior efforts, this framework offers a tailored approach specifically aligned with the SDG context, avoiding the limitations of overly broad or context-specific criteria lists.

Despite its utility, several limitations and future research needs are identified:

- Refining criteria definitions, especially those related to absolute sustainability and systems thinking.
- Testing the framework across real-world applications to evaluate usability and refine methodology.
- Developing sector- and scale-specific selection frameworks.
- Creating comprehensive SDG assessment protocols that integrate this framework, including scope definition, data collection, and target-setting.
- Establishing standardized, context-specific indicators to enhance cross-study comparability.

Further research is also required to explore SDG interlinkages, weighting mechanisms, and methods for defining absolute sustainability thresholds. This framework represents a foundational step toward a consistent and adaptable SDG indicator selection process, intended to be integrated into broader assessment methodologies tailored to specific contexts and scales.