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Interim report of the Intergovernmental Working Group on the Future Strategic Framework

Assessment of the indicators for national reporting on the strategic objectives of the 2018–2030 Strategic Framework of the United Nations Convention to Combat Desertification

Note by the Secretariat

Summary

At its sixteenth session, the Conference of the Parties (COP) decided to establish the Intergovernmental Working Group on the Future Strategic Framework (IWG-FSF) of the Convention. As mandated in decision 4/COP.16, the IWG-FSF is tasked, inter alia, with conducting a thorough analysis of current indicators for national reporting on the strategic objectives of the 2018–2030 Strategic Framework of the United Nations Convention to Combat Desertification (UNCCD) with a view to making them more responsive for a post-2030 strategic framework of the Convention, while ensuring that future methodologies are feasible, simple to understand and within the capacities of Parties.

This document contains the preliminary findings of an independent assessment of the UNCCD indicator framework, undertaken by an external consultant to generate evidence and options for the IWG-FSF as it develops recommendations for the post-2030 strategic framework. The technical summary of the indicator assessment is contained in document ICCD/CRIC(23)/4/Add.1. As the IWG-FSF has not yet had the opportunity to review the findings, this document is shared with Parties solely to provide an initial overview of the assessment process. These materials are preliminary inputs to inform Parties and should not be interpreted as outputs, conclusions or agreed positions of the IWG-FSF.

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I. Introduction

1. At its sixteenth session, the Conference of the Parties (COP) decided to establish the Intergovernmental Working Group on the Future Strategic Framework (IWG-FSF) of the Convention. As mandated in decision 4/COP.16, the IWG-FSF is tasked, inter alia, with conducting a thorough analysis of current indicators for national reporting on the strategic objectives (SOs) of the 2018–2030 Strategic Framework of the United Nations Convention to Combat Desertification (UNCCD) with a view to making them more responsive for a post-2030 strategic framework of the Convention, while ensuring that future methodologies are feasible, simple to understand and within the capacities of Parties.

2. This document contains the preliminary findings of an independent assessment of the UNCCD indicator framework, undertaken by an external consultant to generate evidence and options for the IWG-FSF as it develops recommendations for the post-2030 strategic framework. The technical summary of the indicator assessment is contained in document ICCD/CRIC(23)/4/Add.1. As the IWG-FSF has not yet had the opportunity to review the findings, this document is shared with Parties at the 23rd session of the Committee for the Review of the Implementation of the Convention (CRIC 23) solely to provide an initial overview of the assessment process. These materials are preliminary inputs to inform Parties and should not be interpreted as outputs, conclusions, or agreed positions of the IWG-FSF.

A. Background

3. Established in 1994, the UNCCD is the only legally binding instrument focused on desertification, land degradation and drought (DLDD). With 197 Parties, it links land stewardship to livelihoods, tackling biodiversity loss and climate change.

4. To promote a more coherent and results-based approach to implementation and monitoring, in 2017 the COP adopted the UNCCD 2018–2030 Strategic Framework through decision 7/COP.13. The 2018–2030 Strategic Framework re-oriented implementation around five SOs, introducing comparable, indicator-based, national reporting, and marking a shift away from narrative monitoring to results-oriented, evidence-based monitoring aligned with the Sustainable Development Goals (SDGs) and the other Rio conventions (i.e. the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD)).

5. Since then, COP decisions and guidance by the CRIC have progressively refined the set of indicators, default datasets and digital reporting via the performance review and assessment of implementation system (PRAIS). The current set includes a total of 17 indicators adopted across decisions 7/COP.13, 9/COP.13, 11/COP.14 and 4/COP.16 (see table below).

B. Indicator set overview

6. The 17 indicators capture both biophysical (e.g. land cover change, drought hazard, soil carbon stocks) and socioeconomic (e.g. poverty, water access, financial flows) dimensions. This multidimensional approach enables an integrated view of the drivers and impacts of DLDD.

7. The hierarchical structure of the UNCCD indicator and monitoring framework makes it possible to distinguish what to measure (progress indicators) and how to measure it (metrics/proxies).

8. Furthermore, it includes both progress indicators (measuring outcomes under SO1–SO4, such as land cover change, drought vulnerability and biodiversity trends), and means of implementation indicators (under SO5, measuring financial and non-financial support, partnerships and enabling conditions). Progress indicators track the state and trends of land and ecosystem health, while means of implementation indicators capture the resources and mechanisms mobilized to achieve these outcomes. Together, they provide a system linking environmental change with the enabling conditions required for effective action.

Table

United Nations Convention to Combat Desertification 2018–2030 Strategic Framework, as adopted in decision 7/COP.13, with indicators reviewed and adopted through decisions 11/COP.14 and 4/COP.16, and associated metrics.

Vision

A future that avoids, minimizes, and reverses desertification/land degradation and mitigates the effects of drought in affected areas at all levels and strives to achieve a land degradation-neutral world consistent with the 2030 Agenda for Sustainable Development, within the scope of the Convention.

Strategic objective (SO)	**Expected impacts**	**Indicators**	**Metrics**
SO1: To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality	1.1 Land productivity and related ecosystems services are maintained or enhanced. 1.2 The vulnerability of affected ecosystems is reduced and the resilience of ecosystems is increased. 1.3 National voluntary land degradation neutrality targets are set and adopted by countries wishing to do so, related measures are identified and implemented, and necessary monitoring systems are established. 1.4 Measures for sustainable land management and the combating of desertification/land degradation are shared, promoted and implemented.	SO1-1 Trends in land cover SO1-2 Trends in land productivity or functioning of the land SO1-3 Trends in carbon stocks above and below ground SO1-4 Proportion of land that is degraded over total land area	SO1-1 Land cover change SO1-2 Land productivity dynamics SO1-3 Soil organic carbon stocks SO1-4 Proportion of land that is degraded over total land area
SO2: To improve the living conditions of affected populations	2.1 Food security and adequate access to water for people in affected areas is improved. 2.2 The livelihoods of people in affected areas are improved and diversified. 2.3 Local people, especially women and youth, are empowered and participate in decision-making processes in combating desertification, land degradation and drought. 2.4 Migration forced by desertification and land degradation is substantially reduced.	SO2-1 Trends in population living below the relative poverty line and/or income inequality in affected areas SO2-2 Trends in access to safe drinking water in affected areas SO2-3 Trends in the proportion of the population exposed to land degradation, disaggregated by sex	SO2-1 Proportion of the population below the international poverty line OR Income inequality SO2-2 Proportion of the population using safely managed drinking water services SO2-3 Proportion of the population exposed to land degradation, disaggregated by sex

SO3: To mitigate, adapt to and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems	3.1 Ecosystems' vulnerability to drought is reduced, including through sustainable land and water management practices. 3.2 Communities' resilience to drought is increased.	SO3-1 Trends in the proportion of land under drought over total land area SO3-2 Trends in the proportion of the total population exposed to drought SO3-3 Trends in the degree of drought vulnerability	SO3-1 Proportion of land in each drought intensity class, as defined by the Standardized Precipitation Index SO3-2 Proportion of the population exposed to drought, disaggregated by sex SO3-3 Drought Vulnerability Index
SO4: To generate global environmental benefits through effective implementation of the UNCCD	4.1 Sustainable land management and the combating of desertification/land degradation contribute to the conservation and sustainable use of biodiversity and addressing climate change. 4.2 Synergies with other multilateral environmental agreements and processes are enhanced.	SO4-1 Trends in carbon stocks above and below ground SO4-2 Trends in abundance and distribution of selected species SO4-3 Trends in protected area coverage of important biodiversity areas	SO4-1 Soil organic carbon stock SO4-2 Red List Index SO4-3 Average proportion of Terrestrial Key Biodiversity Areas covered by protected areas
SO5: To mobilize substantial and additional financial and non-financial resources to support the implementation of the Convention by building effective partnerships at global and national level	5.1 Adequate and timely public and private financial resources are further mobilized and made available to affected country Parties, including through domestic resource mobilization. 5.2 International support is provided for implementing effective and targeted capacity-building and 'on-the-ground interventions' in affected country Parties to support the implementation of the Convention, including through North–South, South–South and triangular cooperation. 5.3 Extensive efforts implemented to promote technology transfer, especially on favorable terms and including on concessional and preferential terms, as mutually agreed, and to mobilize other non-financial resources.	SO5-1 Bilateral and multilateral public resources SO5-2 Domestic public resources SO5-3 International and domestic private resources SO5-4 Technology transfer SO5-5 Future support for activities related to the implementation of the Convention	-

C. Evolution of the indicator framework (2009–2024)

9. Over the past two decades, the UNCCD has moved from descriptive reporting toward a harmonized, indicator-based monitoring framework anchored in SDG indicator 15.3.1. This evolution has been shaped by successive COP decisions and continually reviewed through sessions of the CRIC.

10. The early steps were taken between 2007 and 2013. At the eighth session of the COP (COP 8) in Madrid, Spain (2007, decision 3/COP.8), the Committee on Science and Technology was requested to develop a minimum set of impact indicators. A survey conducted among Parties in 2009 revealed that more than 1,000 unique indicators were in use at country level to track progress towards the SOs, highlighting the need for a harmonized approach to measuring progress at a global and regional level, towards implementation of the UNCCD. COP 9 in Buenos Aires, Argentina (2009, decision 17/COP.9) adopted 11 impact indicators for pilot testing, and COP 10 in Changwon, South Korea (2011, decision 19/COP.10) refined them further. This process culminated in COP 11 in Windhoek, Namibia (2013, decision 22/COP.11), which introduced 'progress indicators', endorsed the use of global default datasets, and laid the foundation for the land condition cluster under SO1, including land cover, productivity and soil organic carbon (SOC).

11. The alignment with the SDGs began in 2015. At COP 12 in Ankara, Turkey (2015, decision 3/COP.12), Parties adopted the concept of land degradation neutrality (LDN), linking the Convention directly to the 2030 Agenda for Sustainable Development. At the same session, the UNCCD was recognized as the custodian of SDG indicator 15.3.1, measuring the proportion of degraded land over total land area. By November 2019, SDG indicator 15.3.1 was upgraded from Tier III to Tier I, the highest level of classification in the SDG indicator framework.[1]

12. The structural overhaul was consolidated at COP 13 in Ordos, China (2017, decision 7/COP.13), where Parties adopted the UNCCD 2018–2030 Strategic Framework. This established the five SOs and endorsed a set of 14 indicators. Indicators for drought were not defined at this stage. Reporting was henceforth mandated through the third iteration of PRAIS (PRAIS3), replacing earlier narrative submissions.

13. Subsequent sessions deepened the framework. COP 14 in New Delhi, India (2019, decision 11/COP.14) integrated drought into the monitoring system, adding three new indicators to measure drought hazard, exposure and vulnerability. COP 15 in Abidjan, Côte d'Ivoire (2022, decision 11/COP.15) endorsed version 2 of the Good Practice Guidance for SDG indicator 15.3.1 and the Good Practice Guidance for National Reporting on Strategic Objective 3. In the same decision, Parties also provisionally adopted five optional indicators: SO2-3 (exposure to land degradation), SO4-3 (protected area coverage), and SO5-3, SO5-4 and SO5-5 (covering private resources, technology transfer and future support). CRIC 21 in 2023 oversaw the first implementation of these additions. By the midterm evaluation in 2022, 112 Parties had reported once on SDG indicator 15.3.1, and 76 had set voluntary national LDN targets. Refinements continued at COP 16 in Riyadh, Saudi Arabia (2024, decision 4/COP.16), which confirmed the status of the five optional indicators.

14. The PRAIS system itself evolved in parallel with these decisions. PRAIS1 (2010–2012) offered early online reporting templates but with limited structure. PRAIS2 (2014–2016) expanded coverage but remained largely descriptive. PRAIS3 (2017–2018) marked the first fully indicator-based cycle, applying the SO1 defaults and setting the global SDG indicator 15.3.1 baseline. PRAIS4 (2022–2023) became a comprehensive platform covering all five SOs and 17 indicators, incorporating a centralized database to host indicator submissions and facilitate synthesis, preloaded geospatial datasets, dashboards, quality-assurance tools and e-learning support. In advance of the next reporting cycle,

[1] According to the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs), a Tier I indicator is conceptually clear, has an internationally established methodology, and standards are available. Data is regularly produced by countries for at least 50 per cent of countries and 50 per cent of the population in every region where the indicator is relevant.

PRAIS4 has been further enhanced and remains the operational backbone for the 2026 reporting process.

15. Alongside the evolution of national reporting, a supporting infrastructure of third-party tools has emerged, with PRAIS4 at its core, aligned with the current indicator framework. Conservation International's Trends.Earth tool, for instance, allows 7 of the 17 UNCCD indicators to be calculated using national geospatial data and custom parameters.

16. This trajectory reflects the steady evolution of the UNCCD's monitoring system from narrative reports to a results-based framework aligned with LDN and the SDGs, now anchored in PRAIS4.

D. Purpose and objectives

17. This assessment supports the IWG-FSF, established under decision 4/COP.16, which is tasked with:

(a) Identifying key elements for a post-2030 strategic framework of the UNCCD, building on lessons learned, as contained, inter alia, in the report of the IWG on the Midterm Evaluation of the 2018–2030 Strategic Framework, and its follow-up;

(b) Conducting a thorough analysis of current indicators for national reporting on the SOs of the 2018–2030 Strategic Framework of the UNCCD with a view to making them more responsive for a post-2030 strategic framework of the Convention, while ensuring that future methodologies are feasible, simple to understand and within the capacities of Parties.

18. In this context, the assessment gathers evidence about the current indicators against selected criteria set out by the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD-DAC), complemented by three additional dimensions – measurability, synergies, and systems integration – to reflect UNCCD-specific priorities.

19. Rather than assessing country-level performance, this study assesses the indicator set's architecture: its structure, usability, alignment with SOs, and lessons from previous reporting processes (2018 and 2022).

E. Scope and limitations

20. This assessment covers all 17 indicators adopted by Parties under SO1–SO5 of the UNCCD 2018–2030 Strategic Framework. The review applied the methodological approaches outlined in Section II consistently across all five SOs, examining both the indicators individually and the framework as a whole.

21. The framework as a whole was tested against the Mutually Exclusive, Collectively Exhaustive principle, which provided a structured way of evaluating whether the set of indicators avoided redundancy and double counting across SOs, while ensuring comprehensive coverage of the core dimensions of DLDD.

22. The scope of this review is not without limitations. Survey participation, while broad, did not extend to all affected Parties and experts, and thus representativeness remains uneven. The evidence base is stronger in countries with established monitoring systems and academic engagement, while insights from lower-capacity contexts are more limited. Additionally, the scientific literature review covered mostly SO1, where much more information was available and aligned with the OECD-DAC criteria used for this assessment. Where possible, scientific publications were also reviewed for the other SOs, but to a much lesser extent. Despite these limitations, the combined use of the seven assessment criteria and the MECE principle provides a structured and balanced evidence base from which to evaluate the UNCCD indicator framework. This approach ensures that both the technical performance of individual indicators, and the overall coherence of the framework are systematically addressed.

II. Methods

A. Approach

23. The assessment was based on a triangulation of evidence drawn from three complementary sources: desk-based research, surveys and key informant interviews. Together, these provided a robust evidence base combining institutional records, expert perspectives and country-level experience.

24. The desk study formed the backbone of the analytical work, comprising a systematic review of official UNCCD documentation, including COP decisions, CRIC reports and the findings of the midterm evaluation. This was supplemented by a targeted review of recent and relevant peer-reviewed scientific publications presenting findings and ideas that fit within the scope of each OECD-DAC criterion.

25. Two complementary surveys were then conducted to capture national and expert perspectives. The first, directed at national focal points (NFPs) and science and technology correspondents (STCs), received 80 responses from Parties. It was structured around 11 standardized statements designed to capture national experience with each indicator, including its relevance, feasibility, measurability and sustainability (see annex I). The second survey, completed by six technical experts, mirrored the NFP questionnaire but focused on providing an external technical validation of feasibility, comparability and interpretive clarity.

26. The third source of evidence consisted of key informant interviews with eight internationally recognized experts, selected for their thematic and institutional relevance (see annex II). Their areas of specialization included geographical information systems (GIS) and remote sensing, drought monitoring, biophysical assessment, environmental finance and inter-Convention synergies. Conducted through semi-structured interviews, these discussions provided qualitative insights into indicator robustness, methodological constraints and the institutional and political conditions influencing indicator performance.

27. Taken together, these three sources provided a multidimensional evidence base: the desk review supplied the institutional and scientific context; the surveys captured national and technical perspectives; and the interviews offered interpretive depth and nuance.

B. Evaluation framework and criteria

28. The evaluation questions outlined in the Terms of Reference for this indicator assessment were translated during the inception phase into a structured analytical framework, based on seven criteria adapted from the OECD-DAC model, and tailored to the needs of the UNCCD (see annex III). These criteria were applied consistently to all indicators across the five SOs, ensuring both comparability and rigour.

29. The analysis assessed the relevance of indicators to the Convention’s objectives and to national and global frameworks; their effectiveness in capturing change and supporting decision-making; and their efficiency, understood as the balance between reporting burden and informational value. The measurability criterion evaluated clarity, precision and methodological feasibility, while sustainability considered whether indicators could realistically be maintained within existing institutional and financial capacities. Two additional criteria – systems integration and global/regional synergies – were added to reflect the UNCCD’s emphasis on coherence across conventions and alignment with national monitoring systems. The integration and synergy criteria map closely to the OECD-DAC criterion on coherence, while matters concerning long-term outcomes and contribution to impact are incorporated under effectiveness. This adaptation ensured that the criteria collectively captured both the technical and systemic dimensions of indicator performance.

C. Surveys and analytical logic

30. The two surveys provided the core quantitative evidence for the assessment. Each survey was built around 11 standardized statements, designed to ensure consistency and comparability across countries and experts. The statements covered the alignment of indicators with national priorities, their actual use in policy and planning, data costs and accessibility, methodological clarity, and sustainability within existing institutional structures. Respondents indicated their level of agreement using a five-point Likert scale, ranging from 'fully disagree' to 'fully agree'.

31. Each of the seven OECD-DAC criteria was mapped against these statements. For example, relevance was captured through statements assessing national alignment and importance; effectiveness through questions on use in decisions and observable change; and sustainability through the indicator's maintainability within current resources. Measurability was assessed through questions about data availability and methodological understanding, while systems integration and synergies focused on whether indicators were compatible with national data systems and other international frameworks such as the SDGs, CBD, UNFCCC and Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework).

32. This structure allowed each indicator to be scored systematically against the full set of evaluation criteria, producing a detailed, comparative dataset across all SOs. The descriptive statistical findings presented in this report are drawn from the first survey which provides a sufficiently representative basis for analysis across regions, while insights from the expert survey, though smaller in scale, served as a validation layer, offering an external technical check on the feasibility and interpretive soundness of national responses.

D. Mutually Exclusive, Collectively Exhaustive analysis

33. In parallel with the criteria-based assessment, the evaluation applied the Mutually Exclusive, Collectively Exhaustive (MECE) principle to test the logical coherence of the indicator system as a whole. The MECE analysis examined whether the 17 indicators collectively covered the full range of DLDD issues, and whether any indicators overlapped or duplicated measurement of the same dimension.

34. The first step of the MECE test focused on redundancy, i.e. identifying instances where indicators appeared to measure similar phenomena. The second step examined gaps, asking whether all critical domains of the Convention, such as drought resilience, biodiversity, restoration outcomes and financial mobilization, were adequately represented.

35. By applying this lens, the evaluation was able to judge whether the framework as a whole is balanced across domains, comprehensive in its coverage and non-duplicative in its data demands. In doing so, the MECE analysis ensured that the evaluation not only assessed the technical performance of individual metrics but also the systemic coherence of the framework as an integrated mechanism for global monitoring and national decision support.

III. Results: summary of evidence and analyses

36. For each SO, the assessment below presents a structured narrative synthesis, drawing on three complementary sources of evidence applying analysis against OECD-DAC and UNCCD-specific criteria.

37. Survey results are based on 80 responses, primarily from Africa (35 per cent), with nearly equal representation from Asia (18 per cent), Latin America and the Caribbean (16 per cent), the Eastern European Group (16 per cent), and the Western European and Others Group (15 per cent). Most respondents were UNCCD STCs, followed by NFPs and Reporting Officers. Overall, 65 per cent of the respondents identified as male.

A. Strategic objective 1: To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality

38. The LDN scientific conceptual framework, together with the Good Practice Guidance for SDG Indicator 15.3.1 and its addendum, provides the scientific foundation for SO1. SDG indicator 15.3.1 (the proportion of degraded land) and its three sub-indicators – land cover, land productivity and SOC – are the most widely recognized and applied elements of the UNCCD monitoring architecture, including in the scientific literature. Experts agreed that SO1 provides the ecological backbone of the UNCCD indicator framework, converting information on processes describing the condition of affected ecosystems into quantifiable metrics. Furthermore, they agreed that the current framework represents a trade-off between global comparability and national policy relevance.

39. The relevance of these indicators is undisputed, though several experts emphasized that their scientific validity depends on the ecological context. Current global land cover classification systems, while robust for standardized reporting, were described as not yet fit for understanding. Dryland mosaics and savannas, for instance, are frequently misclassified under global land cover typologies that simplify complex ecosystems. Similarly, land productivity dynamics driven by rainfall or CO_2 fertilization can falsely imply improvement, reinforcing the need for context-specific interpretation. The national survey data confirms that, while there is broad agreement on the importance of the conceptual approach in principle, its practical usefulness depends on how well it is tailored to local realities. Land cover emerged as the strongest alignment point, with 99 per cent of respondents agreeing or fully agreeing that it supports national goals. The proportion of degraded land followed with 93 per cent positive responses, despite repeated calls for clearer methodological guidance, while land productivity and SOC received 89 and 85 per cent positive responses, respectively.

40. In terms of its relevance for capturing key land degradation processes, the current set of indicators for SO1 has been extensively studied to measure and map land degradation globally.[2] However, other modelling frameworks incorporate and integrate multiple land degradation drivers.[3] Several approaches build upon and enhance the indicator-based monitoring framework adopted by the UNCCD[4] or propose to simplify the current monitoring framework.[5] Additionally, it has been demonstrated that mapping of land degradation is improved when additional indicators are included in the analysis and assessment, such as erosion,[6] as well as soil health metrics and soil properties.[7] On the methodological approach to mapping land degradation, Schillaci et al. (2022) highlighted that the ‘one-out-all-out' aggregation rule tends to exaggerate degradation rates depending on dataset selection, while Sims (2020) observes that the appeal of a single LDN metric can obscure ecological nuance unless supported by contextual interpretation.

41. Despite their widespread adoption, the applicability of SO1 indicators at the global scale remains contentious. This is largely due to methodological and contextual challenges encountered in their application across diverse bio-climatic zones, in particular, the limited understanding of the dynamics in arid and hyper-arid environments.[8] For instance, Mbow et al. (2015) found that estimates of land productivity dynamics (LPD) in the Sahel, based on four decades of normalized difference vegetation index (NDVI)[9] Earth Observations (EO) measurements, showed inconsistent signals, making it difficult to distinguish land degradation signals from other physical processes, such as the effects of precipitation of vegetation. In addition, von Maltitz et al. (2019) found that signals showing improved LPD

[2] Bajocco et al., 2012; Baskan et al., 2017; Gao & Liu, 2010; Lorenz et al., 2019; Rajan et al., 2010; Rotllan-Puig et al., 2021; Schillaci et al., 2023.

[3] Prăvălie, 2021; Prăvălie et al., 2024; Wuepper et al., 2021; Zhao et al., 2021.

[4] Girma et al., 2023; Manna et al., 2024; Mikhailova et al., 2024.

[5] Herrick et al., 2025.

[6] Thomas et al., 2023; Tsymbarovich et al., 2020.

[7] Mikhailova et al., 2024; Thomas et al., 2023.

[8] Gao et al., 2025; National Center for Vegetation Cover Development and Combating Desertification, 2025.

[9] Tucker, 1979.

in parts of South Africa were due to alien plant invasions and woody plant densification, which needed contextual interpretation and expert knowledge to be mapped accurately as degraded areas.

42. In terms of effectiveness, SO1 indicators are widely used to monitor progress toward LDN, but their decision-usefulness varies considerably across sub-indicators. National survey responses show that land cover and the proportion of degraded land are regarded as the most decision-relevant indicators, with around 88 and 85 per cent of respondents, respectively, agreeing that they provide useful monitoring evidence. Productivity and SOC, while scientifically robust, were viewed as less effective for near-term decision-making, largely because their signals are harder to interpret within policy cycles. Productivity trends are often confounded by climatic variation, while SOC changes unfold too slowly to demonstrate policy impacts within the four-year reporting timeframe. Experts repeatedly stressed that NDVI-based productivity measures are "technically reliable but conceptually fragile" as greenness trends can be distorted by rainfall variability, CO_2 fertilization or shrub encroachment. SOC, though essential for long-term monitoring, was described as "too slow to move and too modelled to manage," providing limited feedback for adaptive land-use planning. SDG indicator 15.3.1 retains strong conceptual appeal but remains methodologically unreliable because of the one-out-all-out rule, which can amplify small errors, differences or variations in the sub-indicators.

43. Efficiency analysis reveals that, while SO1 indicators are technically feasible and supported by freely available EO data, efficiency decreases during national contextualization. Land cover remains the most efficient to produce, owing to standardized data streams from EO satellites, such as Landsat, Terra-MODIS and Sentinel-2. Productivity is easy to compute, but often time-consuming to interpret, analyse and verify; many national agencies report spending significant effort explaining discrepancies between NDVI outputs and ground observations. SOC monitoring is resource-intensive due to the need for national sampling, calibration and inter-ministerial coordination. In fact, only 29 per cent of respondents agreed that data for this indicator could be collected without significant cost or effort, and just 26 per cent felt it could be maintained within current staffing and budgetary resources. SDG indicator 15.3.1 may compound inefficiencies by requiring repeated recalculation when input datasets change. Survey comments reflect these operational realities: countries acknowledge that remote-sensing data is free and available, but emphasize that validation and harmonization with national datasets is time-consuming and costly. Experts echoed this view, noting that the "efficiency lies in the satellite but the inefficiency lies in the translation".

44. The efficient use of SO1 indicators would depend greatly on the availability and accessibility of data. Space-borne satellite EOs available in the last few decades have significantly improved the assessment of land degradation,[10] and may arguably be considered indispensable for this purpose. Time series datasets of freely available satellite-derived multispectral data have been widely applied to map and track trends in land cover and land use changes leading to land degradation, such as from Landsat[11] and MODIS. Land productivity dynamics are predominantly derived from NDVI.

45. More recently, higher spatio-temporal resolution multispectral datasets available via the Sentinel-2 satellites from the European Space Agency (ESA) have further enhanced the accuracy and granularity of land cover and land productivity dynamics data. The Sentinel-2 multispectral data at a 10 metre spatial resolution has been widely applied in the past several years in land degradation assessments.[12]

46. Analysis-ready EO products of annual land cover change maps from 1992–2022 at 300 metre spatial resolution are available from the ESA Climate Change Initiative (ESA-CCI). Such products may be better suited to national or global assessments capturing longer-term changes,[13] but less suited to smaller-scale assessments focused on short-term and seasonal-change land cover. Additionally, while the datasets may be freely available, products harmonizing the longer time series and coarser resolution LANDSAT datasets with

[10] Dubovyk, 2017; Metternicht et al., 2010; Symeonakis & Drake, 2004; van Lynden & Mantel, 2001.
[11] e.g. Kiage et al., 2007; Lu et al., 2007; Xie et al., 2019.
[12] Bär et al., 2023; Nait-Taleb et al., 2025; Nzuza et al., 2021; Rynkiewicz et al., 2025.
[13] Winkler et al., 2021.

finer resolution Sentinel-2 datasets are still underexplored in the context of land degradation assessment.

47. More recently, high-resolution datasets (30 metre resolution) have been produced for land cover[14] and land productivity dynamics,[15] with the potential for contemporary analysis of land degradation in Small Island Developing States subject to further analysis and validation by national users.

48. Although EO data is increasingly accessible, ground-based measurements of land cover, SOC and land productivity available to calibrate and validate remote sensing–based methodologies used in land degradation assessments remain scarce and insufficient. National-level campaigns aimed at collecting data for the SO1 indicators, including field-based measurements of the proportion of degraded land, are often limited in the literature as well as in free-and-open databases globally.[16] Moreover, these datasets are often not collected in synchrony with the overpass of the satellites measuring the same data, which may be important for areas with dynamic land cover. The lack of ground measurements may also be explained by measurement constraints for some indicators, particularly land productivity. Even with the high-resolution LDP product recently developed, Li et al. (2025) relied on coherence with other satellite-derived land cover datasets to undertake their validation process due to the infeasibility of validation through ground measurements. Within the current monitoring framework of the UNCCD, an initial attempt has been made to provide methodological guidance for verifying, but not validating, the outcomes of land degradation assessments in the addendum to the Good Practice Guidance for SDG Indicator 15.3.1.[17]

49. Regarding measurability, most countries confirm that data exists for all four SO1 indicators, yet interpretation remains uneven. Land cover and productivity are viewed as the most measurable indicators, as confirmed by 66 and 58 per cent of survey respondents, respectively, reflecting the availability of global EO data. However, both require contextual validation. SOC and SDG indicator 15.3.1 are also considered technically measurable, by 46 and 55 per cent of respondents, but sensitive to modelling assumptions and dataset choices. Several countries observed that they can produce all three sub-indicators, but that they tell sometimes conflicting stories, emphasizing the need for clearer interpretation protocols and national ground-verification systems. Experts agreed that while NDVI provides consistent measurement, it cannot be used in isolation because greenness may reflect climatic fluctuations rather than land recovery. SOC measurability depends heavily on modelled data and assumptions about soil type and land cover, and SDG indicator 15.3.1 is prone to volatility between reporting cycles. Regional geographies pose specific challenges for applying productivity and SOC methodologies; hyper-arid areas and small islands, in particular, are challenged by spatial resolution, insensitivity of indicators to change, and a lack of observational data, among others. Future improvements depend on fusing multiple data layers and validating EO outputs with ground observations to ensure that measurements reflect ecological reality rather than statistical artifacts.

50. Systems integration is progressing but remains uneven. Eighty-nine per cent of survey respondents indicated that land cover data is embedded within national systems and integrated into land use and forestry monitoring frameworks. Integration is slightly lower for productivity, SOC and the proportion of degraded land, at 78, 79 and 69 per cent respectively, as most countries rely on externally processed datasets, and SOC data is often housed in academic or agricultural institutions outside of environmental reporting chains. Experts emphasized that integration challenges are institutional rather than technical: many countries possess the necessary data infrastructure, but siloed governance and limited interoperability impede efficient use. The most successful systems apply FAIR – Findable, Accessible, Interoperable and Reusable – data principles to connect existing datasets across ministries.

51. One of the major strengths of SO1 is synergies across frameworks. Parties widely recognize the SO1 suite as a foundation for informing the national LDN target setting process, enabling the same indicators to be used for reporting on both the UNCCD and the SDG

[14] Zhang et al., 2024.
[15] Li et al., 2025.
[16] Hengl et al., 2025.
[17] Teich et al., 2025.

processes, thereby reducing duplication and improving coherence. Experts confirmed that SO1 is the strongest point of convergence across the Rio conventions. SDG indicator 15.3.1, for example, has been adopted as an indicator to measure the baseline extent of degraded ecosystems for Target 2 of the Kunming-Montreal Global Biodiversity Framework (GBF), while ‘Trends in carbon stocks above and below ground’ forms part of land-based carbon stock assessments (e.g. biomass, soil carbon) under the measurement, reporting and verification (MRV) system, and the Enhanced Transparency Framework of the Paris Agreement. MRV elements include greenhouse gas inventories, e.g. land use and forestry. Shared datasets, such as those obtained from satellite remote sensing, facilitate multi-framework reporting and should reduce duplication of efforts among the conventions. However, the lack of a common land cover classification system continues to limit comparability. Experts emphasized that alignment with ecosystem accounting standards such as System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA-EA) is necessary to enable consistent reporting across conventions and national accounts. Overall, SO1 already functions as the shared backbone of global land monitoring, but its full synergy potential depends on adopting ecosystem-accounting linkages that standardize classifications and spatial scales.

52. Sustainability findings reveal a clear divide between technically durable and institutionally fragile indicators. Land cover monitoring is structurally sustainable, supported by recurring satellite programmes, such as the Copernicus Sentinels, Terra-MODIS, and Landsat. In contrast, productivity and SOC rely heavily on short-term donor projects or academic collaborations, and often lack national custodianship. Experts stressed that sustainability depends not only on data continuity but also on interpretive continuity, i.e. maintaining consistent analytical standards, metadata, and personnel across reporting cycles. Lit et al. (2025) emphasize the need for massive data storage, high-performance computing, and technical expertise to handle high-resolution data, implying an increase in financial, human and computational costs for end users. This may not be sustainable unless appropriate and fit-for-purpose spatial data and computational infrastructures are put in place by users. This is an important finding for countries expecting to use high spatial resolution (≤30m) in current and future assessments of land degradation.

53. On policy and implementation, the longevity and sustainability of SO1 indicators are also closely linked to the target for LDN, which aspires to achieve neutrality by 2030. However, the voluntary approach adopted by the UNCCD in setting these LDN targets at the national level provides only a limited and ambiguous mandate for consistent and enforceable action. Mikhailova et al. (2024) argue that little progress has been made to achieve LDN by 2030. The prospect for future progress on LDN is small, as there is less enthusiasm for soil health at national and international levels compared to other environmental issues such as climate change. Additionally, Mikhailova et al. argue that achieving LDN would be costly, and that it is less politically and financially onerous for a country to endorse a vague international statement about the harms of land degradation than participating in and making a commitment to restore degraded lands. International soil governance is currently fragmented across different institutions and processes, each of which has limitations.[18] To achieve LDN, Hannam (2022) argues that reforms are essential. Furthermore, legislative provisions at national and international levels should enable the participation of all stakeholders in the development of policy, guidelines and ecological standards for LDN, while encouraging governments, land managers and the community to share responsibility for controlling land degradation. This should include procedures for policy implementation, special codes of practice, land management indicators, and the physical and ecological limits of soil and land.

54. Overall, 90 to 99 per cent of respondents concurred that all four indicators should be retained, underscoring their significance for national land monitoring and reporting.

55. Strategically, more sustainable SO1 indicators would require the institutionalizing of SOC and productivity monitoring within national agencies, revising aggregation logic to account for restoration and positive change, and linking SO1 indicators with SEEA ecosystem accounting to ensure interoperability. Integrating contextual layers, such as tenure,

[18] Bodle, 2022.

drivers and livelihoods, would further improve interpretive precision and policy relevance. Expanding the use of open data platforms and ensuring interoperability of datasets by applying FAIR data principles would enable cross-sectoral use of information for land monitoring and management. Overall, SO1 remains the most mature and visible pillar of the UNCCD indicator system, which is globally coherent, scientifically robust and steadily evolving from a technically solid monitoring framework into a truly decision-relevant instrument on land condition.

B. Strategic objective 2: To improve the living conditions of affected populations

56. In terms of relevance, SO2 was designed to connect land degradation with lived realities, anchoring the Convention’s people-centred vision within broader development frameworks. Experts consistently described SO2 as the bridge between biophysical monitoring and human well-being, drawing on established SDG data streams and placing DLDD in policy arenas led by social and economic ministries. The national survey data confirms this alignment. Seventy-eight per cent of respondents rated indicator SO2-1 as highly relevant and aligned with national goals, reflecting the sense that poverty reduction belongs squarely within the Convention’s mission. Indicator SO2-2 received 81 positive responses, underscoring its resonance with SDG 6 and climate adaptation commitments. Indicator SO2-3 drew a smaller but still substantial majority, 76 per cent. This variation mirrors the indicator’s methodological limitations. While it marks an important first step toward monitoring gender-based inequalities related to DLDD, the current indicator primarily captures geographical exposure rather than the differing socioeconomic vulnerabilities of women and men. Respondents recommended that the reporting process include an assessment of how land degradation impacts on off-site exposed populations. In short, relevance is strong: SO2 situates DLDD within national poverty, water and resilience agendas. Yet, the indicators contextualize DLDD more than isolating its direct effects, resulting in repeated requests from Parties to incorporate gender, tenure, migration and youth into the next framework.

57. Peer-reviewed scientific literature highlights that land degradation both arises from and perpetuates rural poverty.[19] Common themes in the studies cited reveal that demographic pressure, unequal access to productive land and weak institutional integration reflect how degradation reduces agricultural productivity and household income, while limiting the poverty-reducing benefits of national economic growth. Based on panel data from 41 sub-Saharan African countries, Ssekibaala and Kasule (2023) confirm that poverty and environmental degradation reinforce each other in a “poverty–environment trap”. Taken together, these results highlight the importance of institutional quality, education and income equality in improving the impacts of land degradation.

58. Unlike the strong linkage between land degradation and poverty, the connection between land degradation and community access to safe drinking water is less apparent and scarce in the scientific literature. Nonetheless several studies have linked land degradation with water quality and water scarcity.[20]

59. Effectiveness remains mixed. The indicators succeed in elevating the social dimensions of DLDD in national narratives, but their influence on land-use decisions is uneven. Survey results show moderate to strong acceptance of their decision-making value – 75 per cent of positive responses for poverty and inequality and 77 for safe water – with land degradation exposure the weakest at 65 per cent. Open comments explain why: poverty and water statistics are familiar, widely used, and politically salient, but they remain only loosely connected to DLDD-specific interventions unless paired with land, tenure and livelihood evidence. The exposure metric is geographically clear but often ‘blind’ to differentiated vulnerability; respondents asked for sex-disaggregated, tenure-aware overlays to make it useful for planning. As several interviewees put it, a harmonized system in which SDG data serves all three Rio conventions would allow global reporting to feed national due diligence,

[19] Barbier & Hochard, 2016, 2018; Qiu et al., 2017; Waheed et al., n.d.; Wang & Li, 2019.

[20] Issaka & Ashraf, 2017; Mukherjee et al., 2020; Raber et al., 2020.

and national projects to inform global frameworks, closing the loop between awareness and action.

60. Efficiency under SO2 is strongest where countries can leverage SDG-aligned data they already collect. Poverty and water indicators benefit from recurring national surveys, established standards and reporting cycles, which keeps incremental costs low. Survey responses make this clear: 51 per cent of respondents judged SO2-1 to be feasible within current resources, and 46 per cent did so for SO2-2. By contrast, exposure introduces coordination costs: only 34 per cent rated it efficient to implement, with qualitative feedback pointing to the need for inter-agency data-sharing between environmental, agricultural and statistical institutions. The constraint, in other words, is institutional interoperability rather than the indicators themselves. Experts argued that a single investment in data harmonization – linking GIS layers with census or household surveys – would pay off across UNCCD, UNFCCC and CBD reporting, improving both efficiency and effectiveness.

61. Measurability shows the same divide. All three indicators are technically quantifiable, but only poverty and water consistently meet the tests of statistical maturity, national ownership and regular updates. The survey confirms high measurability for SO2-1 (59 per cent) and SO2-2 (58 per cent), compared with 38 per cent for SO2-3. Countries explained that exposure depends on combining geospatial degradation layers with demographic baselines produced within different timetables and spatial frames; misalignment reduces confidence and interpretive accuracy. The implication is pragmatic: the data exists, but interpretive quality hinges on fusing social and environmental datasets under shared standards and custodianship.

62. Systems integration is correspondingly uneven. Poverty and water indicators are already embedded within national statistical frameworks and international databases, which guarantees continuity and facilitates cross-ministerial use. Survey integration scores are strong and nearly identical for these two indicators (69 and 68 per cent, respectively). Exposure scores lower (59 per cent), reflecting the governance challenge of merging datasets owned by different agencies operating with different formats, resolutions and reporting calendars. National respondents called for common repositories, data-sharing agreements and interoperable platforms to complement GIS and socioeconomic evidence.

63. Synergies are one of SO2’s defining strengths. The indicators intentionally mirror SDG 1, SDG 6 and SDG 15, thereby reducing the reporting burden. NFPs welcomed this design, noting that the same data streams support multiple obligations. However, caution is necessary. Coherence is no substitute for causality and if SO2 mirrors SDG metrics too closely without attribution checks, it risks becoming a context statistic rather than an instrument of DLDD accountability. Coherence should be paired with clearer diagnostic focus on land-based drivers and with guidance on interpreting social indicators in DLDD contexts.

64. Sustainability follows the pattern already visible in the other criteria. Poverty and water indicators are institutionally durable because they are embedded in national statistics and financed through recurrent budgets. The survey recorded roughly 53 to 51 per cent confidence in their long-term sustainability. Exposure remains fragile with around 30 per cent positive responses due to its frequent reliance on externally funded GIS overlays and time-bound technical assistance. Parties linked sustainability to domestic resourcing, legal mandates and staff continuity, arguing for stable geospatial databases within national custodians, routine training and dedicated budget lines to maintain population–land overlays.

65. Overall, national survey respondents support the retention of these indicators, with 76 per cent of respondents endorsing SO2-1, 78 per cent SO2-2, and 83 per cent SO2-3.

66. Therefore, the strategic implications for the post-2030 period are clear. First, embed vulnerability in land degradation impacts – determined by factors such as tenure, gender, income and livelihoods – within exposure metrics so that SO2 tracks who is affected and how, as well as where. Second, institutionalize integrated land-social data systems, allowing DLDD interventions to be linked to poverty reduction and resilience outcomes with greater attribution. Third, maintain coherence with SDG systems while sharpening the diagnostic focus on land-based drivers, transforming SO2 from contextual statistics into actionable indicators that demonstrate how land restoration improves lives.

C. Strategic objective 3: To mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems

67. From a policy relevance perspective, SO3 is widely regarded by Parties and experts as a core pillar of the Convention's drought risk and resilience agenda. Seventy-six to eighty-nine per cent of survey respondents agreed or fully agreed that the drought indicators align with national development priorities. Respondents repeatedly framed drought as a cross-sectoral driver of vulnerability that directly shapes agricultural productivity, water security and climate-adaptation outcomes. Several noted that drought is not just an environmental problem but a socioeconomic one, affecting food, energy and human security. Within this framing, countries highlighted the particular value of the exposure and vulnerability dimensions in terms of linking human and ecosystem resilience in land-use and adaptation planning, citing concrete applications such as water-allocation decisions, pastoral early-warning systems, and livelihood diversification programmes. Expert perspectives were consistent with these views: SO3 was described as capturing the most direct human–environment dimension of the Convention, and guidance such as the Handbook of Drought Indicators and Indices[21] emphasizes that monitoring should quantify dryness while also informing actions that mitigate socioeconomic impacts. As a result, SO3 is seen as mission-consistent and cross-cutting, central to progress under SDG 13 on climate action and SDG 15.3 on LDN, and an essential input to early-warning and risk-reduction strategies aligned with the Sendai Framework.

68. Based on scientific literature, the Standardized Precipitation Index (SPI)[22] remains one of the most widely applied and statistically robust indicators for quantifying drought, largely due to its simplicity, flexibility and comparability across climates.[23] Owing to these advantages, SPI forms the analytical foundation of major drought monitoring systems, such as the U.S. Drought Monitor and the European Drought Observatory,[24] and it is recommended by the WMO as a primary index for operational drought assessment (2012). Numerous regional and global studies have confirmed its reliability in delineating drought onset, persistence and spatial extent across a range of climatic settings.[25]

69. However, drought itself is a multifaceted hazard that progresses through interrelated stages – meteorological, agricultural, hydrological and socioeconomic – each reflecting different aspects of water deficit.[26] Meteorological drought, the initiating phase, occurs when precipitation falls significantly below the long-term climatological mean. Although SPI effectively represents this dimension, it cannot account for soil moisture depletion, evapotranspiration or human impacts.[27] To capture the full drought continuum, researchers advocate multi-index frameworks integrating temperature, soil moisture and socioeconomic indicators, such as the Standardized Precipitation Evapotranspiration Index (SPEI) or the Soil Moisture Index, to better characterize drought propagation and resilience.[28]

70. Effectiveness varies along the hazard–exposure–vulnerability continuum and depends on both data maturity and interpretive depth. Hazard monitoring through SO3-1 is the most established operationally: national meteorological services routinely apply SPI and SPEI, and 70 per cent of survey respondents confirmed regular use of such tools. At the same time, both experts and Parties cautioned that interpreting SPI/SPEI in isolation can misrepresent drought

[21] World Meteorological Organization (WMO) and Global Water Partnership (GWP), 2016: Handbook of Drought Indicators and Indices (M. Svoboda and B.A. Fuchs). Integrated Drought Management Programme (IDMP), Integrated Drought Management Tools and Guidelines Series 2. Geneva. https://www.droughtmanagement.info/literature/GWP_Handbook_of_Drought_Indicators_and_Indices_2016.pdf.

[22] McKee et al., 1993.

[23] Hayes et al., 2011; WMO, 2012; Stagge et al., 2015.

[24] Svoboda et al., 2002; Spinoni et al., 2014.

[25] Naumann et al., 2014; Vicente-Serrano et al., 2010; Zhang et al., 2019.

[26] Wilhite & Glantz, 1985; Mishra & Singh, 2010.

[27] Beguería et al., 2014; Aadhar & Mishra, 2021.

[28] Vicente-Serrano et al., 2010; Agha Kouchak et al., 2015; Carrão et al., 2016.

dynamics. Consistent with WMO–GWP guidance that no single index captures all drought types, the evidence points to the value of composite approaches integrating meteorological, agricultural and hydrological indices, supported by locally relevant severity classes. SO3-2 adds policy traction when exposure is connected to socioeconomic baselines – livelihoods, infrastructure and service access – but is constrained by data integration and limited availability of national datasets for population disaggregation, particularly by sex or livelihood group. Experts were clear that exposure alone has limited decision-making value unless it is overlaid with essential service coverage and adaptive-capacity information, allowing drought analytics to feed actual risk management functions. SO3-3 advances the framework toward resilience by introducing a Drought Vulnerability Index (DVI), which was judged conceptually strong but operationally fragile. Only 39 per cent of respondents considered the index maintainable within existing systems. NFPs considered it essential for understanding resilience, yet pointed to limited socioeconomic time series, and inconsistent definitions of adaptive capacity as barriers. Experts identified the DVI as SO3's most important innovation, precisely because it moves beyond hazard mapping, but emphasized the need for transparent component structures – exposure, sensitivity and adaptive capacity – to support consistent computation and comparability across regions. Overall, effectiveness increases markedly when technical and institutional integration co-evolve: hazards are routinely tracked, but translating those signals into risk-reduction decisions still hinges on countries' ability to connect physical drought metrics with population, livelihood and ecosystem data.

71. Efficiency of implementing these indicators is determined primarily by patterns of data availability and the strength of institutional coordination. Just under half of respondents (49 per cent) found SO3-1 feasible within existing budgets, largely because SPI and SPEI can be generated from freely available climate datasets through automated pipelines maintained by meteorological agencies. Feasibility dropped to 40 and 39 per cent for SO3-2 and SO3-3, respectively, reflecting the effort required to integrate datasets scattered across agriculture, water, statistics and planning institutions. Countries referred to irrigation, water-use and livelihood data residing in separate systems and formats, demanding time-consuming reconciliation. Experts confirmed that the principal efficiency losses arise not from computational complexity but from weak inter-agency coordination and the absence of shared data infrastructure. Echoing the WMO–GWP message that analytic methods are ineffective without institutional linkages, the convergent view is that efficiency gains will come not from new indices, but primarily from standardized data-exchange protocols, interoperable repositories and streamlined reporting chains.

72. Measurability is technically strong yet interpretively uneven. SPI and SPEI can be generated automatically from global and national datasets, and 59 per cent of respondents confirmed regular national production of SO3-1 hazard data. Nevertheless, technical measurability does not guarantee interpretive accuracy. The WMO–GWP Handbook underscores the importance of complementing SPI/SPEI with soil-moisture and hydrological indicators to capture agricultural and water-resource impacts and to avoid over-reliance on precipitation anomalies alone. Respondents also noted that gauge density, satellite calibration and metadata standards affect reliability, reinforcing the need for local validation procedures and clear documentation, allowing indices to translate into operational guidance rather than static maps.

73. National systems integration shows steady progress with persistent gaps. Parties reported incorporation of SO3-1, SO3-2 and SO3-3 into national drought or land-monitoring systems at rates of roughly 83, 71, and 76 per cent respectively. Nevertheless, drought information often remains siloed in meteorological services, with limited formal mechanisms to exchange socioeconomic and vulnerability data with agriculture, water, planning or statistics agencies. Both national and expert feedback emphasized that embedding SO3 in ecosystem-accounting frameworks and early-warning platforms would improve interoperability and policy utility, allowing drought information to flow into broader resilience planning and reporting processes. This is consistent with WMO guidance encouraging countries to integrate drought monitoring within comprehensive climate-risk management systems.

74. Global synergies are strong and valued, but not yet fully leveraged. Seventy-nine per cent of respondents considered SO3-1 relevant for other global frameworks, including the Sendai Framework, while 66 per cent of respondents affirmed similar relevance for SO 3-2 and SO 3-3. These alignments enable national systems to repurpose common data pipelines across frameworks. Technical experts pointed to clear linkages with UNFCCC adaptation metrics and CBD ecosystem- resilience indicators under the Kunming–Montreal GBF, suggesting a route to greater policy relevance if SO3 is positioned as shared input rather than standalone reporting. This aligns with national requests for unified drought-risk platforms that meet multiple reporting commitments and reduce duplication while increasing comparability.

75. Sustainability across SO3 is moderate overall, reflecting a balance between established technical tools and fragile institutional arrangements. In the survey, 49 per cent of respondents believed they could sustain SO3-1 through existing hydrometeorological services and budgets, while only 39-40 per cent expressed confidence in maintaining SO3-2 and SO3-3 without external funding. Some countries have begun embedding drought indicators in national observatories and statistical systems to stabilize funding and ensure continuity, while others are exploring links to broader climate-risk and agricultural information systems. Expert reviewers agreed that SO3-1 is relatively stable because it draws on global datasets (e.g. Global Precipitation Climatology Centre, ERA5, MODIS) which provide continuity even when national records are incomplete, whereas the sustainability of exposure and vulnerability depends on national socioeconomic datasets which can be updated alongside biophysical indicators. The shared conclusion is straightforward: technical tools exist, but institutional continuity determines whether the data remains usable over time.

76. Overall, 83 to 90 per cent of respondents concurred that all three indicators should be retained, underscoring their significance for the Convention's drought risk and resilience agenda.

77. The strategic implications for the post-2030 period are clear and actionable. First, standardize the DVI by specifying minimum components, proxy datasets and aggregation rules to enhance comparability, attribution and credibility across reporting cycles and regions. Second, complement vulnerability assessments with ecological and social resilience measures to capture adaptive capacity and recovery potential. Third, embed SO3 within long-term, nationally financed monitoring systems by establishing custodianship in meteorological, water and statistical agencies, securing dedicated budget lines, and formalizing data-sharing agreements that sustain regular updates of hazard, population and vulnerability data. Taken together, these steps would shift SO3 from a primarily reporting-oriented framework to a risk management instrument that closes the gap between global accountability and national decision-making.

D. Strategic objective 4: To generate global environmental benefits through effective implementation of the United Nations Convention to Combat Desertification

78. SO4 sits at the intersection of land restoration, climate change mitigation and biodiversity conservation, given the perceived global benefits of implementing the UNCCD, with its relevance consistently affirmed by the evidence base. Across the national survey, 85 to 91 per cent of respondents agreed that SO4's indicators align with national climate and biodiversity priorities. Open remarks frequently described SO4's role in linking LDN to the CBD's post-2020 GBF and UNFCCC's land-sector MRV. Experts echoed this view, noting that carbon stocks tie restoration directly to climate change mitigation, whereas the Red List Index (RLI) and protected-area coverage provide visible, policy-legible evidence of biodiversity outcomes. At the same time, respondents cautioned that SOC remains operationally weak, given sparse field measurements and infrequent, model-based updates. In short, SO4 is mission-consistent and politically resonant, but its components differ markedly in operational maturity.

79. Effectiveness reflects that divide. For SO4-1 (carbon stocks), roughly 73 per cent of national respondents judged the indicator useful for depicting long-term change, yet

repeatedly characterized it as slow to respond and overly dependent on modelled data. Some national respondents cited high sampling costs, limited laboratory capacity and staff turnover as persistent constraints, with several noting that SOC results come from models, not field observation, undermining its credibility in policy reporting. Expert testimonies converged on the same point: SOC is indispensable conceptually, but technically fragile within the four-year reporting cadence, and multi-decadal evidence, careful calibration across heterogeneous soils, and regular updates are needed for credible trend detection. By contrast, SO4-2 (the RLI) received the strongest effectiveness ratings. Eighty-five per cent of respondents considered it to be fit for trend analysis, and national respondents emphasized how easily it integrates with existing CBD submissions. Experts similarly valued the RLI's scientific defensibility and cost-efficiency, owing to regular updates from the International Union for Conservation of Nature (IUCN), while acknowledging that national contextualization remains necessary to reflect endemic and ecosystem-specific priorities. SO4-3 (coverage of important biodiversity areas) also performed well operationally, with 83 per cent of respondents considering it effective. Experts warned that "extent does not reflect condition," recounting instances where nominal expansion of protected areas coincided with continued habitat loss inside their boundaries. With this in mind, they recommended evolving the metric toward condition- and service-based measures, ideally connected to ecosystem-accounting frameworks, such as SEEA-EA. The overall pattern is clear: biodiversity indicators enjoy high scientific and operational confidence, whereas SOC is conceptually strong but practically constrained by cost, detectability and data fragmentation. Countries asked for guidance linking SO4 outputs to restoration planning and integrated policy decisions rather than reporting alone.

80. Efficiency assessments underscore the importance of institutional capacity over analytical tools. Fifty-five per cent of respondents flagged the cost and staffing demands of SOC sampling as a major bottleneck. Despite the availability of global datasets such as the IUCN RLI and the World Database on Protected Areas (WDPA), over 40 per cent of respondents also cited ongoing costs and maintenance requirements as challenges for the biodiversity indicators. Experts traced inefficiencies to fragmented data ownership across environment, forestry, climate and statistics ministries, not to methodological hurdles. Around 25 per cent of survey comments explicitly called for joint MRV platforms and shared repositories to avoid duplication and harmonize inputs across conventions. The implication is straightforward: the fastest efficiency gains will come from inter-agency coordination, standardized data-exchange protocols, and shared infrastructure.

81. Measurability is technically feasible yet uneven in interpretive precision. For SOC, experts estimated current accuracy at 60–70 per cent, while 46 per cent of national respondents reported having access to reliable data. By comparison, 51 per cent confirmed reliable access to standardized IUCN data for the RLI, and 59 per cent found protected-area coverage readily measurable. Remote-sensing specialists pointed to rapid advances – higher-resolution Sentinel products and artificial intelligence-assisted mapping – which would improve spatial detail and harmonization for SOC and ecosystem-extent indicators, provided that they were paired with national calibration and consistent metadata.

82. Systems integration mirrors these differences. Roughly 76–85 per cent of respondents reported that the RLI and protected-area indicators are already institutionalized through CBD or WDPA reporting streams, whereas fewer than 69 per cent said the same of SOC. Several comments cited weak coordination among land, climate and biodiversity agencies as a persistent constraint. Experts observed that SOC data commonly sits in research institutes or agricultural ministries outside national MRV systems, and recommended aligning UNCCD reporting with ecosystem accounting (SEEA-EA) to consolidate datasets and responsibilities. Survey feedback pointed in the same direction, with multiple proposals for integrated environmental databases linking UNCCD, CBD and UNFCCC portals, demonstrating that Parties support institutional convergence.

83. Synergies across global frameworks is one of SO4's defining strengths. Roughly 85 per cent of respondents recognized overlaps with CBD indicators. Experts emphasized that SO4's carbon, species and conservation metrics map cleanly to the UNFCCC's MRV, the CBD's Kunming–Montreal GBF and SDG 15, creating opportunities for blended finance, reduced duplication and clearer attribution. Several EO specialists further argued that

adopting ecosystem-accounting classifications would provide a common typology across conventions by 2030, positioning SO4 as the anchor for cross-framework comparability.

84. Sustainability varies by indicator. The RLI benefits from regular global updates and entrenched institutional processes, with 44 per cent of respondents indicating that reporting could continue under current capacity. In contrast, SOC and the protected-area indicator appear more precarious, with only 29 and 31 per cent of respondents, respectively, expressing confidence in sustaining them without external support. Open comments pointed to staff turnover, unstable funding and project discontinuity as recurrent risks. Both national and expert perspectives converged on the remedy: embedding monitoring in permanent institutions, such as statistical offices, hydrometeorological services and environmental observatories backed by dedicated budgets. Pairing global EO streams with domestic sampling and routine calibration was singled out as the most credible path to long-term SOC viability.

85. Overall, 88 to 91 per cent of respondents regarded the retention of these three indicators as essential.

The synthesis is therefore straightforward. SO4 combines two of the UNCCD system's most mature indicators with one of its most technically fragile. Carbon stocks are critical for climate alignment but hampered by slow signals and model dependence. The RLI is scientifically robust, globally harmonized and policy-ready. Protected-area coverage is politically visible and practical, but should evolve towards condition-based measures reflecting ecological outcomes rather than designation alone. With more than 70 per cent of countries already deploying at least one SO4 indicator through other frameworks, the next gains will come from modernizing SOC standards with higher-resolution EO and national calibration, expanding ecosystem-condition metrics to complement coverage, and institutionalizing cross-convention MRV to embed SO4 within national monitoring architectures. Taken together, these steps would consolidate SO4's role as the bridge connecting land restoration to climate and biodiversity benefits, turning global aspirations into measurable, credible and decision-relevant outcomes.

E. Strategic objective 5: To mobilize substantial and additional financial and non-financial resources to support the implementation of the Convention by building effective partnerships at global and national level

86. SO5 focuses on the means of implementing the Convention, emphasizing the financial resources and mechanisms used to achieve its objectives. SO5 progress indicators cover the following, in particular:

(a) SO5-1: Bilateral and multilateral public resources, capturing official, bilateral financial flows between countries, channelled through agencies such as the German Development Agency (GIZ), the United States Agency for International Development (USAID) and the French Development Agency (AFD), as well as multilateral sources, such as multilateral development banks, the Green Climate Fund, the Global Environment Facility and many other relevant institutions;

(b) SO5-2: Domestic public resources, tracking national public expenditures from governments for the implementation of the Convention's objectives, including subsidies and transfers that support activities to combat DLDD;

(c) SO5-3: International and domestic private resources, monitoring private-sector investments – both international and domestic – that contribute to activities addressing DLDD and promoting sustainable land management, including from private foundations and non-governmental organizations;

(d) SO5-4: Technology transfer, assessing the transfer, acquisition, adaptation and development of environmentally sound, economically viable and socially acceptable technologies relevant to combating desertification and mitigating drought impacts;

(e) SO5-5: Future support for activities related to the implementation of the Convention, a forward-looking indicator aiming to identify countries' financial needs or gaps for the effective implementation of national plans and policies to combat DLDD.

87. Whereas the first three progress indicators (SO5-1, SO5-2 and SO5-3) track financial flows from key sources of financing, SO5-5 serves as a forward-looking indicator assessing countries' financial needs or gaps for implementing the Convention. These indicators inform policy decisions on resource mobilization by assessing the current volume of investments from diverse funding sources and identifying financial needs or gaps related to DLDD-related plans. Technology transfer is included within the indicator set out in response to decision 11/COP.14, which mandates its integration into the indicator cluster.

88. Evidence from the national survey, the technical survey and expert consultations converges on two central points. First, the public-finance indicators (SO5-1 and SO5-2) benefit from established global default datasets and national project pipelines. Particularly, the OECD Creditor Reporting System (CRS) dataset, which is a well-established source of information on official development assistance (ODA) and other official flows from donor countries and multilateral institutions to developing countries. This default dataset provided to countries for UNCCD reporting facilitates the technical process of reporting on this indicator and offers international comparability.

89. Second, governance arrangements across agencies and ministries, e.g. environment and finance ministries and national statistical offices, may serve as a key lever for progress in monitoring financial flows.

90. Relevance is high across all five indicators. The majority of respondents agreed or fully agreed that SO5 aligns with national priorities, and the pattern is consistent across the set: SO5-1 was endorsed by roughly 86 per cent, SO5-2 by 79 per cent, SO5-3 by 77 per cent, SO5-4 by 73 per cent, and SO5-5 by 80 per cent.

91. Governments repeatedly framed SO5 as essential to LDN financing and as a visible bridge to SDG 15.a and SDG 15.b on resource mobilization, and SDG 17 on partnerships. Experts agreed that SO5 is the system's most politically resonant cluster, while underscoring the importance of continuing to make additional resource mobilization efforts to close the financing gap. Analyses of land-related financial flows reinforce the assertion that the most relevant sources of finance are domestic budgets.[29] Responses to the survey also revealed that most spending is situated within broader agriculture and environment portfolios rather than being specifically targeted at DLDD-related matters.

92. Effectiveness is uneven and tracks the maturity of underlying systems. Public finance reporting performs best conceptually and operationally. For progress indicator SO5-1, around 79 per cent recognized alignment with national policies, strategies or sectoral plans, and nearly three quarters saw consistency with global frameworks, yet only around half (55 per cent) judged it feasible to maintain in practice, citing the need to further coordinate efforts across ministries, including the ministry of finance, to consolidate country-level data.

93. Progress indicator SO5-2 shows the same pattern: strong perceived importance for LDN, but feasibility falling to the mid-fifties (56 per cent) because few countries have budget-tagging to track DLDD-related activities and associated investments, given that environment ministries often lack the mandate or access to extract the necessary fiscal data. Whereas progress indicators related to SO1–SO4 benefit from default satellite-based data in the reporting process, the assessment of financial flows under SO5 relies primarily on countries' environmental and financial accounts in light of the limited default data available for SO5-2.

94. Progress indicator SO5-3 on private resources is the most constrained indicator: despite roughly three quarters judging it to be policy-relevant, only 41 per cent found it feasible or maintainable with current staff, systems and budget. Respondents described it as "conceptually relevant but practically invisible," pointing to absent disclosure frameworks and weak incentives for reporting. SO5-4 on technology transfer faces similar challenges,

[29] UNCCD Global Mechanism 2024.

with around seventy-three per cent acknowledging relevance but only about one third calling it feasible, given fragmented responsibilities and project-based data availability.

95. Progress indicator SO5-5 on financial needs is widely valued as a planning tool but remains difficult to operationalize in some cases, with 52 per cent of respondents believing it could be maintained. However, as countries continue to refine their DLDD-related plans, e.g. through the second phase of the LDN Target Setting Programme, it is expected that they will be better able to assess their financial needs linked to LDN, thereby facilitating progress to more effective reporting on SO5-5.

96. Despite conceptual and methodological strengths, the SO5 set of indicators may require improvement by aiming to further link investments to DLDD outcomes, as well as the integration of SO5 reporting and domestic accounting systems. Existing default finance datasets on DLDD are not yet designed to travel with geospatial datasets, particularly the OECD CRS dataset. This fact, in principle, makes it difficult to fully understand the effectiveness of investments on the ground. However, it is important to highlight that tracking investment projects in relation to results on the ground using geospatial information would inevitably increase the reporting burden. On the integration of the reporting and domestic policy measures, countries refer to continuing to harmonize tracking systems used by countries and those required for reporting in order to lower the reporting effort.

97. Efficiency echoes institutional issues. Indicators anchored in established systems – especially SO5-1 and SO5-2 – were judged most feasible to maintain, with around 55 to 56 per cent calling them maintainable under current capacity. SO5-1 and SO5-2 default data is provided by the OECD and national accounts. The PRAIS4 templates for the upcoming UNCCD reporting process aim to reduce the compilation burden while ensuring the capture of relevant financial flows. One of the limiting factors is access and coordination with treasuries. By contrast, SO5-3 and SO5-4 are costly to assemble because information is dispersed across agencies, development partners and firms, each using different definitions and formats, meaning that many countries resort to project-by-project compilation. SO5-5 sits in the middle: forward estimates of financial needs are useful for finding solutions in the context of resource mobilization.

98. Experts and NFPs agreed that the largest efficiency gains come from standardized templates, budget-tagging within an Integrated Financial Management Information System (IFMIS), and direct data exchange between PRAIS4 and national finance systems. Nonetheless, whereas such integration may lead to gains, national accounts often present information relevant to the Convention in an aggregated manner without distinguishing expenditures across the specific policy areas related to DLDD, which may still limit its use for reporting purposes. This is an area where countries may further explore how better to track and report the resources allocated to combating DLDD in their national financial systems.

99. Measurability is technically sound for public finance and fragile for private and technology flows. SO5-1 and SO5-2 received the highest positive ratings (55 per cent), reflecting reliance on OECD-DAC, treasury accounts, and multilateral portfolios that are already compiled for other obligations. SO5-3, SO5-4 and SO5-5 drew lower ratings, with 48, 46 and 51 per cent, respectively: private finance remained opaque amid proprietary constraints. While default data on technology transfer remains insufficient, countries are encouraged to share their technology transfer experiences through a flexible reporting template in order to exchange lessons learned under this progress indicator. Future support to cover financial gaps is often unstable, with estimates shifting from year to year.

100. Expert consultations and institutional notes converged on the need to continue improving the guidelines for reporting on SO5, particularly on issues related to default data, which remains especially challenging for private sector and technology transfer indicators.

101. The Global Mechanism (GM) and the secretariat have simplified the reporting template for SO5-5, and the current version also supports both qualitative and quantitative reporting, depending on the financial needs identified in the DLDD-related plans. In addition,

the GM has developed Good Practice Guidance for National Reporting on UNCCD SO5[30] to help countries prepare for the next round of SO5 reporting.

102. National systems integration shows the same hierarchy. Public finance indicators integrate best, as their data fits naturally into finance ministry workflows and donor registries, with 66 per cent of respondents reporting that SO5-1 and SO5-2 are embedded or used in planning. Despite the relevance of the private sector to resource mobilization, and the importance of technology transfer to combat DLDD, their integration into national systems is weaker for these indicators – around 45 to 55 per cent – because no single custodian exists, responsibilities are diffuse and the challenges of compiling default data remain.

103. Synergies are strong by design. Parties widely recognized alignment with SDG targets 17.3, 17.7, and 15.3, and the many projects also impacting on the thematic areas of the other Rio conventions. As land interventions are a common denominator across the Rio conventions, many projects target all three, consistent with the objective of donors to maximize impact across thematic areas per dollar invested. Nonetheless, data resulting from projects should be carefully used when one adds finance data across thematic areas of the Rio conventions as there may be the risk of double counting. However, results from the survey highlighted that reporting could be simplified across the Rio conventions due to synergies and untapped bridges for technology transfer with the UNFCCC Technology Mechanism and CBD Bio-Bridge, which would benefit from common templates and a glossary shared across conventions.

104. Sustainability remains moderate overall, although it may be improving as capacity-building efforts and additional resources strengthen reporting capabilities. In principle, around 55 per cent of respondents believed that SO5-1 and SO5-2 could be maintained, but fewer than half were confident in doing so independently of donor or GM support. Private sector finance and technology transfer showed the weakest sustainability, with respondents citing donor dependence, staff turnover, and the lack of a national mandate for environment ministries to extract finance data. Countries building their financial statistics in a disaggregated manner, allowing DLDD-related activities to be identified, reported steadier performance between cycles. The GM has worked to simplify the template for the upcoming 2026 UNCCD reporting process, and is expected to provide regional training and a helpdesk network to support countries in continuing to build their respective capacities.

105. Overall, 73 to 86 per cent of respondents were in favor of retaining these five indicators. Relevance is high, but feasibility and sustainability lag in some cases. NFPs emphasized dispersed data ownership and partial coverage of the private-sector reporting channels, while experts stressed that enduring performance depends on institutionalization. In addition, strengthening the link between investments and land-related actions could enhance the effectiveness of resource allocation and support the ongoing integration of PRAIS templates with countries' IFMIS. As the capacities around reporting on financial flows are built and supported by the respective guidelines, countries continue to report between cycles and informational value rises.

IV. Mutually Exclusive, Collectively Exhaustive Assessment

106. In addition to assessing each indicator against the seven adapted OECD-DAC criteria, the analysis also applied the MECE principle to test the logical integrity of the indicator system as a whole.

[30] Good Practice Guidance for National Reporting on UNCCD Strategic Objective 5, available at: https://www.unccd.int/resources/manuals-and-guides/good-practice-guidance-national-reporting-unccd-strategic-objective-5

A. Overall Assessment

1. Mutual Exclusivity

107. It is important to note that the Mutual Exclusivity assessment considered overlaps and redundancies among different indicators in the UNCCD framework, rather than cases where the same indicator was used in two different SOs, such as trends in carbon stocks above and below ground, which is a multi-purpose indicator used to measure progress towards both SO1 and SO4. As such, it cannot, by definition, be considered mutually exclusive. In its reporting documentation, the secretariat clarifies that quantitative data and a qualitative assessment of trends in this indicator are reported under SO1. Furthermore, the underlying metric, SOC, will be considered provisional until an operational dataset becomes available on above- and below-ground carbon at the global level.

108. In general, the UNCCD indicator framework can be considered scientifically robust but not fully exclusive. Overlaps occur where indicators share similar baselines or data sources, such as exposure metrics that use both SDG indicator 15.3.1 data and drought hazard data to assess population exposure to land degradation and drought, respectively. These intersections reflect the interdependence of biophysical, socioeconomic and financial systems, rather than simple duplication, but they weaken attribution and pose a risk of double counting.

2. Collective Exhaustiveness

109. The 17 indicators collectively capture the main pillars of the DLDD continuum: ecosystem condition, human well-being, drought risk resilience, global environmental benefits, and finance. However, the analysis identified six blind spots: restoration outcomes, gender-responsiveness, tenure security, livelihood resilience, adaptive capacity, and non-ODA finance flows.

B. Results of Mutually Exclusive, Collectively Exhaustive analysis by strategic objective

110. From a MECE standpoint, SO1 is partially mutually exclusive and largely collectively exhaustive. SOC estimates are often derived from land-cover change information, and NDVI-based productivity overlaps with rainfall-driven greenness, creating interdependencies among sub-indicators. Nonetheless, the combination of land cover, productivity and carbon effectively captures the principal biophysical dimensions of land condition despite large gaps that remain in representing drivers, positive transitions and restoration dynamics. Peer studies by Thomas et al. (2023), Tsymbarovich et al. (2020) and Mikhailova et al. (2024) demonstrate that land degradation mapping is improved when erosion and soil health indicators are included in the analysis.

111. SO2 is only partly mutually exclusive – SO2-3 necessarily overlaps with SO1 because it uses the land degradation dataset to estimate population exposure – and yet is broadly exhaustive for core dimensions of living conditions, covering income, basic services and environmental exposure. However, large gaps remain: health, food security, migration dynamics and, crucially, land tenure are not captured directly, despite shaping the vulnerability and differential impacts of DLDD on women and men. National respondents to the survey called for vulnerability-aware reporting, and stronger integration of tenure and gender, in line with decision 25/COP.16 which requests the secretariat to develop effective and meaningful gender-specific indicators for the future strategic framework of the UNCCD.

112. SO3 is conceptually well structured, with indicators of drought hazard, exposure and vulnerability, following the logic of risk. However, exposure is overly simplistic, as populations are mapped onto hazard layers without accounting for socioeconomic differences. While the trio is largely exhaustive for drought risk, national respondents identified missing elements, such as adaptive capacity, service reliability and livelihood sensitivity, which limit practical applicability when absent or weakly specified. Vulnerability is central to resilience-oriented monitoring, but consistent and credible computation requires clearer guidance on its components: exposure, sensitivity and adaptive capacity.

113. SO4 is largely mutually exclusive: carbon, species status and conservation extent speak to distinct global-benefit domains. Collectively, the trio covers the core climate, biodiversity and conservation dimensions; nonetheless, survey respondents called for complementary ecosystem-condition and restoration-benefit metrics to round out the picture.

114. The set of SO5 indicators is conceptually distinct, but requires careful implementation from an operational perspective. For example, public external sources contributing to core domestic budgets of the recipient country may lead to double-counting of funding once external resources are appropriated into national budgets. However, in the case of default data from bilateral and multilateral sources, flows marked for core contributions to recipient countries are excluded from the dataset provided to countries in order to avoid potential double counting issues. Public–private partnerships and blended finance blur the boundaries between finance, and it is advised that the respective sources be reported under the corresponding indicators. The existing indicator framework offers several opportunities for further enhancement, such as capturing core contributions between financing providers and multilateral development banks. Domestic and international private flows are often under-captured, and technology transfer lacks default data. Most importantly, the prevailing architecture still separates money from outcomes, and, without sectoral or geospatial tags, finance cannot be tied to land practices, areas or results at scale. Nevertheless, such improvements in the monitoring systems may come with a considerable burden for reporting Parties.

V. Conclusions

115. The UNCCD indicator framework under the 2018–2030 Strategic Framework represents a paradigm shift from descriptive, narrative-based reporting toward structured, evidence-based, data-driven monitoring. For the first time, Parties have been able to track progress towards the UNCCD SOs through a shared system of indicators that connects national data with regional and global trends. The framework has proven its value as both a scientific and institutional achievement, but its uneven performance across SOs also reveals where recalibration is needed as the Convention prepares for the post-2030 era.

116. The overall picture is one of contrast: where methods are mature and data is accessible and operationally produced, the indicators perform strongly; where indicators depend on human, financial or institutional concerns, results are less consistent. Yet, the framework's evolution itself is a mark of success, as it has brought clarity, discipline and comparability into an area that was once fragmented and largely narrative. Indeed, the ability of the secretariat to publish (near) global and regional statuses and trends for many of its indicators, based on nationally reported data, in such diverse channels as the United Nations Secretary-General's special report on mid-way progress towards Agenda 2030,[31] the UNCCD Data Dashboard, and official synthesis reports presented at CRIC 21, is a testament to the impact of the national reporting process using the current indicator framework. This progress and impact should be maintained and enhanced further.

117. The clearest strength lies in SO1 and SO3, which anchor the Convention in its core mission: improving ecosystem conditions, striving to achieve a land degradation neutral world, and building resilience to drought. The indicators under SO1 – land cover, land productivity, SOC and the proportion of degraded land – form the scientific backbone of LDN. Their reliability stems from a solid theoretical and methodological basis for the indicators, the existence of standardized operational and semi-operational global datasets, and clear custodianship by the EO community. Similarly, SO3, with its focus on drought hazard, exposure and vulnerability, aligns directly with the Intergovernmental Panel on Climate Change risk assessment framework, the Sendai Framework and the WMO's drought monitoring standards. Together, these two

[31] "Progress Towards the Sustainable Development Goals: Towards a Rescue Plan for People and Planet", was released in 2023 as a Special Edition to mark the halfway point to 2030. https://unstats.un.org/sdgs/report/2023/

clusters demonstrate that, when indicators are both scientifically robust and institutionally embedded, they can be applied at scale and with relatively broad acceptance by the Parties. This combination of technical maturity and policy relevance makes SO1 and SO3 the cornerstones of the current framework.

118. The reliance on established global datasets has also proven effective. EO systems provide contemporary and historical time series data on land cover and productivity at moderate resolution; drought indices such as SPI and SPEI deliver consistent regional metrics; and global biodiversity and finance databases allow cross-Convention comparability. These systems, while externally managed, offer efficiency and credibility: they save countries the cost of building entirely new data pipelines while maintaining a coherent global standard. The challenge going forward is to sustain this balance, leveraging global custodianship without undermining national ownership.

119. Another area of strength is SO4, where the co-benefits of implementing the UNCCD are measured by two biodiversity-related indicators, including trends in species abundance and protected-area coverage. Both show solid alignment with the CBD and SDG indicator frameworks. These measures are widely recognized and embedded in national environmental planning, giving the UNCCD a credible foothold in the broader global environmental architecture. The framework thus performs best when data is shared across conventions and reporting aligns with existing policy instruments.

120. Yet, several persistent challenges weaken the overall architecture. The first is methodological. Indicators based on vegetation or greenness indices, especially land productivity (SO1-2), often conflate short-term climate variability with long-term management effects. When vegetation productivity increases due to rainfall or CO_2 fertilization rather than improved land stewardship, progress can appear overstated. Similarly, trends in SOC (SO1-3; SO4-1) remain vital but difficult to track due to slow-occurring change, measurements that depend on models rather than direct sampling, and incomplete or outdated national datasets. These limitations do not invalidate the indicators but underscore the need for methodological refinement, including improved calibration, region-specific thresholds, and integration with national soil mapping initiatives.

121. A second challenge lies in SO2, which introduces the socioeconomic dimension. Poverty and water access indicators capture the human consequences of land degradation, but their connection to DLDD processes is indirect, and affected by economic structure, governance and external shocks beyond the land sector. Many respondents described these indicators as contextual rather than diagnostic. Their value lies in framing equity and vulnerability, not in tracking the biophysical change that the Convention ultimately seeks to influence. This distinction matters, because it highlights why social data must be linked with environmental and economic metrics rather than treated as a parallel stream.

122. The third area of concern is SO5, which focuses on resource mobilization. This indicator cluster is conceptually central; however, its measurability largely depends on countries' capacity to collect the required data, as default data is only partially available. The indicators measure bilateral and multilateral resources, domestic finance, private investment, technology transfer and financial needs, each an essential dimension of implementation. Yet, the available default data shows uneven coverage. While default data on bilateral and multilateral flows is measurable through the OECD CRS dataset, it largely reflects data from providers of ODA and other official flows rather than from recipient countries. Domestic and private finance offer only partial coverage, and the technology transfer indicator remains in an early phase of development. These indicators therefore rely largely on countries' efforts in collecting the required environmental and financial datasets related to the combating of DLDD in order to develop a more comprehensive understanding of resource mobilization for the implementation of the Convention.

123. Across all SOs, sustainability and ownership remain recurring concerns. Several indicators would appear to be heavily dependent on external support, either through

donor-funded data systems or global models maintained outside of national institutions. Only around one third of countries reported being able to maintain indicator reporting for these few indicators with existing staff and budgets. This dependence may keep the system running in the short term, but it creates fragility in the long term. Without national integration – both technical and institutional – the durability of the monitoring system remains uncertain.

124. The application of the MECE principle confirmed that, while the framework is logically complete, it is not yet fully coherent. Duplication occurs where similar dimensions are tracked under different objectives, such as SOC under SO1 and SO4. That said, SOC is considered by the UNCCD to be a temporary metric to track carbon reduction co-benefits until an operational indicator for trends in carbon stock above and below ground can be produced. Exposure indicators under SO2 and SO3 could also be interpreted as partially duplicative, as they are based on overlays with other indicators within the set. Gaps are equally visible, and restoration outcomes, tenure security, gender and equity, livelihood resilience, adaptive capacity, and non-ODA finance flows present challenges related to default data availability. These findings reinforce the need for consolidation rather than expansion; the goal should not be to multiply indicators but to ensure that those retained jointly describe the ecological, social and financial system the Convention seeks to transform.

125. The deeper lessons emerging from this evaluation point to the mechanisms behind success. Indicators that perform well are those with a long tracking history and default data available (e.g. SO5-1 on bilateral and multilateral sources), as well as those embedded within existing national monitoring systems, connected to clear mandates, and recognized by domestic institutions as relevant for planning. In contrast, those that do not depend solely on public sources tend to be more challenging, as is the case for the private sector. A second insight concerns the balance between global comparability and national specificity. The strength of global datasets lies in consistency, but that same uniformity can erase the nuances of national classification systems, customary tenure or livelihood context. For global reporting to retain meaning, it must give countries the flexibility to adapt indicators to their realities without losing comparability.

126. Finally, the absence of measurable targets is a major structural gap. Most indicators track trends but not thresholds, leaving it unclear whether Parties are ‘on track’. The few exceptions, such as SDG Target 15.3’s “no net loss of healthy land”, show how targets can sharpen accountability and attract political attention. Without them, reporting risks becoming an exercise in documentation rather than learning.

127. The overarching lesson of this evaluation is that the current indicator framework has matured to the point where refinement, coherence and national integration are the next essential steps. The framework now stands at a crossroads: with targeted reforms and sustained investment, it can become not just a tool for measurement but the basis for a decision-support system and a catalyst for transformation – one that helps countries both describe and act on change.

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Annex I

Indicator Assessment National Survey

Questions included in the UNCCD Indicator Assessment Survey for national focal points and science and technology correspondents:

Q1: How have you been involved in the UNCCD process? Please select all that apply. [Multiple choice]

☐ National focal point (NFP)

☐ Science and technology correspondent (STC)

☐ UNCCD Reporting Officer (RO)

☐ Other (please specify)

Q2: Within which region are you based? [Single choice]

☐ Africa Group

☐ Asia-Pacific Group

☐ Latin America and the Caribbean Group

☐ Central and Eastern Europe Group

☐ Western Europe and other Group

Q3: What is your gender? [Single choice]

☐ Male

☐ Female

☐ Prefer not to say

Q4: Would you be available for possible further discussion and questions online/by email? If so, please leave your name and email address here.

Click or tap here to enter text.

Q5: Please indicate whether you agree/disagree with the following statements using a scale below: [Single choice]

- Fully agree
- Agree
- Neutral/Not relevant
- Somewhat disagree
- Fully disagree

The statements/questions below were repeated for each of the 17 indicators currently used to track progress towards the strategic objectives of the UNCCD 2018–2030 Strategic Framework. The five strategic objectives and the corresponding indicators were provided for clarity.

Statements	Indicator(x)
1. This indicator matches our national land or environment goals. *(Does this align with your country's planning or reporting priorities?)*	Choose an item.
2. This indicator is referenced in official national policies, strategies or sectoral plans. *(Has this indicator informed national commitments or targets — for example, in climate change strategies, biodiversity action plans, or development frameworks?)*	Choose an item.
3. We can collect data for this indicator without high cost or effort. *(Is it feasible to report on this within your existing capacities?)*	Choose an item.
4. This indicator shows measurable changes in land, ecosystems or people's lives. *(Is this useful for demonstrating tangible impacts?)*	Choose an item.
5. This indicator can be maintained with current staff, systems and budget. *(Can your institution sustain regular reporting on this indicator?)*	Choose an item.
6. We understand how to use this indicator, and we have access to reliable data. *(Do your teams understand it and have access to relevant data?)*	Choose an item.
7. This indicator is used – or can be used – in our geographical information systems, statistics or other national systems. *(Can this fit into your institutional monitoring systems?)*	Choose an item.
8. This indicator is used in national planning, budgeting or land management. *(Is this directly useful to your planning or budgeting process?)*	Choose an item.
9. This indicator matches indicators used in other global frameworks (e.g. Sustainable Development Goals, United Nations Framework Convention on Climate Change, Sendai Framework for Disaster Risk Reduction 2015–2030). *(Is it relevant to other reporting frameworks your country uses?)*	Choose an item.
10. This indicator gives new information not already covered by other indicators we use. *(Does it add value or fill a gap?)*	Choose an item.
11. This indicator is important for our country's land monitoring and reporting. *(Would you consider this an essential indicator to retain?)*	Choose an item.

Q6. Is there anything else you'd like to share about the indicators or the UNCCD reporting process in your country? *(Optional – examples: challenges, ideas for improvement, data gaps, or successful practices.)*

Click or tap here to enter text.

Annex II

Experts Interviewed

Dr. Barron J. Orr
Lead Scientist, UNCCD; architect of the Land Degradation Neutrality (LDN) conceptual framework.
Interview date: August 2025

Dr. Graham von Maltitz
Senior Researcher, Council for Scientific and Industrial Research (CSIR), South Africa; former member, UNCCD Science-Policy Interface (SPI); co-author, *World Atlas of Desertification*.
Interview date: September 2025

Dr. Ingrid Teich
Senior Scientist, University of Bern, Switzerland; co-author, Addendum to the Good Practice Guidance for Sustainable Development Goals Indicator 15.3.1; expert in land cover mapping and land degradation monitoring; Intergovernmental Working Group on the Future Strategic Framework (IWG-FSF) member. *Interview date: August 2025*

Dr. Jeff Herrick
Research Soil Scientist, United States Department of Agriculture, Agricultural Research Service; former Chair, UNCCD SPI; developer of LandPKS; IWG-FSF member.
Interview date: September 2025

Dr. Marc Paganini
Technical Officer, Directorate of Earth Observation Programmes, European Space Agency (ESA); UNCCD/Convention on Biological Diversity (CBD)/Ramsar focal point for Earth Observation indicators.
Interview date: September 2025

Ms. Karima Oustadi
Programme Officer, Ministry of Environment and Energy Security, Italy; consultant, UNCCD Global Mechanism; specialist in resource mobilization and strategic objective 5 indicators.
Interview date: August 2025

Dr. Jamal Annagylyjova
Programme Officer, CBD; former UNCCD Regional Coordinator for Eastern Europe and Central Asia; expert on LDN and restoration targets. *Interview date: September 2025*

Dr. Ward Anseeuw
Senior Technical Officer, Land Tenure Team, Food and Agriculture Organization of the United Nations; former Head of Research, International Fund for Agricultural Development; Professor (emeritus), University of Pretoria, South Africa; expert on land tenure and monitoring frameworks.
Interview date: September 2025

Annex III

Assessment Matrix

Criterion	Strategic Question	Sub-questions / What to Look For	Rationale	Main Data Sources	Possible Indicators of Success
Relevance	Are the indicators fit for purpose – aligned with the UNCCD strategic objectives (SOs), national priorities and country needs?	- Alignment with SO1–SO5? - Adequate reflection and coverage of the Land Degradation Neutrality (LDN) Conceptual Framework ? - Support for national land-use/restoration planning? - Adaptable across countries and contexts?	Ensures indicators serve both global accountability and national utility.	UNCCD 2018–2030 Strategic Framework, national reports, survey responses, summaries by the Committee for the Review of the Implementation of the Convention	- % of countries reporting alignment with SOs - # of countries using indicators in national plans - Stakeholder ratings of relevance (survey)
Effectiveness	Do the indicators enable tracking, support decision-making, and guide investment?	- Support for Results Based Management (RBM) and monitoring? - Actionable for decisions/investments? - Link between outputs and outcomes?	Enhances monitoring credibility and informs planning.	Midterm Evaluation Process findings, secretariat reports, national plans, interviews, surveys	- # of countries using indicators for policy/investment - Evidence of outcome-level reporting - Survey % rating indicators as actionable
Efficiency	Are the indicators cost-effective and non-duplicative for resource-constrained countries?	- Implemented without new costs? - Avoid duplication?	Reduces reporting burden and increases practicality.	Performance review and assessment of implementation system (PRAIS) documentation, survey feedback, Multilateral Environmental Agreement (MEA) mapping tools, Midterm Review (MTR) case studies	- % of countries citing minimal reporting burden - # of overlapping indicators eliminated or harmonized
Measurability	Are the indicators technically sound and supported by reliable, accessible data?	- Standard definitions and methods? - Reliable data available? - Guidance accessible? - Measurable objectively?	Promotes clarity, data quality and comparability.	Sustainable Development Goals (SDG) indicator 15.3.1, Good Practice Guidance, PRAIS metadata, survey responses, technical briefs	- % of countries using standardized methods - # of indicators with full metadata/guidance - % of countries with consistent reporting across cycles

Sustainability	Are there institutional and financial mechanisms to ensure long-term use?	- Embedded in institutions? - Reliant on donor support? - National capacity in place? - Political and financial commitment?	Ensures continuity beyond projects or funding cycles.	National surveys, MTR, capacity reports, legal/institutional documents	- % of countries with legal/institutional mandates - # with national budget lines for monitoring - # of capacity-building actions completed
Systems integration (cross- cutting)	Can indicators be integrated into existing national systems without duplication?	- Used in national plans or statistics? - Compatible with existing datasets? - Mechanisms for local–national data flow? - National staff trained?	Promotes ownership and sustainability through system harmonization.	Monitoring frameworks, survey responses, MTR case studies	- % of indicators used in national monitoring & evaluation systems - # of countries with integrated data workflows - # of staff trained at national level
Global coherence and synergies (cross- cutting)	Do indicators align with global frameworks and enable joint reporting?	- Methodological alignment with SDG/Convention on Biological Diversity (CBD)/United Nations Framework Convention on Climate Change (UNFCCC)? - Shared data across MEAs? - Harmonized timelines/definitions? - Reduced redundancy?	Increases efficiency and coherence across MEAs and global goals.	SDG indicator 15.3.1 documentation, CBD monitoring framework, UNFCCC inventories, survey responses	- # of indicators aligned with SDG/CBD/UNFCCC - % of countries using indicators for multiple MEAs - Survey % rating global alignment as high