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LandScale Assessment Framework gap analysis report

Measuring landscape-level regenerative agriculture conditions and outcomes

Version 1.0 – August 2025

About

This gap analysis was conducted as part of a project funded by the Walmart Foundation to strengthen the LandScale Assessment Framework by enhancing its ability to robustly assess regenerative agriculture conditions and outcomes at the landscape scale. The findings directly informed version 1.0 of the LandScale Regenerative Agriculture Indicator Package.

Citations & acknowledgements

The gap analysis report and Regenerative Agriculture Indicator Package were prepared by Alice Gottesman (LandScale Technical Manager) and Conrado Guzmán (LandScale Programme Senior Officer). Consulted organizations include the Rainforest Alliance, Field to Market, Regen10, The Nature Conservancy, and the Sustainable Food Trust. We are grateful to our partners for their thoughtful contributions, which were essential to shaping version 1.0 of the Regenerative Agriculture Indicator Package.

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RAINFOREST ALLIANCE

Regen10

The Nature Conservancy

Field to Market®
The Alliance for Sustainable Agriculture

Sustainable Food Trust

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Executive summary

This gap analysis was conducted as part of a project funded by the Walmart Foundation to strengthen the LandScale Assessment Framework by enhancing its ability to robustly assess regenerative agriculture conditions and outcomes at the landscape scale. The findings directly informed version 1.0 of the LandScale Regenerative Agriculture Indicator Package.

Regenerative agriculture seeks to balance production with the protection of natural ecosystems while simultaneously restoring degraded farmland. While many existing frameworks focus primarily on farm-level practices, agricultural production occurs within complex landscapes where environmental, social, and governance conditions interact with farming systems. Monitoring and assessing these landscape-level dynamics is critical for informed decision-making, effective interventions, and tracking progress toward sustainability goals. Existing efforts, such as those by Regen10, have begun bridging the gap between farm-level practices and landscape outcomes. Building on these efforts, we aim to provide an implementable indicator package tailored for assessment at the landscape scale.

The resulting Regenerative Agriculture Indicator Package represents the first module in LandScale's broader effort to create tailored assessment tools for major economic activities shaping landscapes. It builds on LandScale's four-pillar structure—ecosystems, human well-being, governance, and production—and integrates relevant regenerative agriculture indicators and metrics, while maintaining LandScale's holistic, outcomes-oriented, multi-stakeholder approach.

To inform this effort, LandScale conducted a literature review of key publications and frameworks from leading organizations, and held targeted consultations with experts to gather insights and ensure alignment with existing initiatives and best practices. Consulted organizations include the Rainforest Alliance, Field to Market, Regen10, The Nature Conservancy, and the Sustainable Food Trust. These engagements provided critical input on priority indicators and metrics, measurement approaches, and gaps in current assessment practices. We are grateful to our partners for their thoughtful contributions, which were essential to shaping this initial version of the Regenerative Agriculture Indicator Package.

Introduction

This gap analysis was conducted as part of a project funded by the Walmart Foundation to strengthen the LandScale Assessment Framework by enhancing its ability to assess regenerative agriculture conditions and outcomes at the landscape scale. While the LandScale Assessment Framework is already robust and has been extensively tested across diverse contexts[1], it currently has limitations in capturing several key aspects of regenerative agriculture.

Regenerative agriculture is gaining momentum across sectors as governments, companies, and producers seek solutions that restore ecosystems, strengthen climate resilience, meet sustainability commitments, and safeguard farmer livelihoods. As an approach, it combines sustainable production practices—such as soil health management and integrated farming systems—to address the dual climate and biodiversity crises while also supporting resilient value chains. As investment in and implementation of regenerative agriculture accelerates, there is a growing need for credible, consistent, and practical indicators that can assess its conditions and outcomes at both the farm and landscape scale. This gap analysis identifies and aligns relevant indicators and metrics that complement the LandScale Assessment Framework without duplicating existing efforts, strengthening its ability to evaluate regenerative agriculture in ways that are meaningful across diverse contexts and stakeholder groups.

The ultimate objective is to build a flexible, scalable assessment framework that is coherent and relevant at the landscape level, aligned with global best practices, and supportive of diverse stakeholder needs and systems. This marks the first step in structuring the LandScale Assessment Framework as modular and principles-based—designed to support innovation in measurement and reporting while enabling thematic expansion[2]. The modular structure allows for deeper exploration of specific economic activities, such as regenerative agriculture, while maintaining integration within LandScale's unified holistic framework. This ensures assessments can be tailored to local priorities without fragmenting the overall approach.

Regenerative agriculture was selected as the first landscape-level economic thematic module due to its growing relevance for LandScale users and partners. It presents a strategic opportunity to support the scaling of regenerative practices through credible landscape-level assessment, aligned with other leading initiatives. By defining a focused set of practical indicators relevant to agricultural production in the landscape context—spanning environmental, social, and economic dimensions— this work aims to raise the bar for monitoring regenerative agriculture conditions and outcomes, helping to drive more effective and coordinated action.

The results of this effort are presented in this gap analysis report, which synthesizes findings from a literature review and expert consultations to identify a set of priority indicators and metrics for the Regenerative Agriculture Indicator Package.

[1] As of August 2025, LandScale has been used to conduct assessments in over 40 landscapes across the Americas, Africa, and Asia, 24 of which have been completed and validated.
[2] The LandScale Assessment Framework provides a holistic basis for assessing landscape sustainability. Thematic modules, such as the Regenerative Agriculture Indicator Package, focus on specific economic activities while maintaining a holistic perspective, with further modules currently being scoped.

Methodology

To identify priority indicators and assess gaps in the LandScale Assessment Framework from a regenerative agriculture perspective, two complementary approaches were used:

1. Literature review

We reviewed key materials, platforms, indicator sets, and methodological frameworks from leading initiatives and organizations involved in regenerative agriculture and sustainability assessment. These included both scientific literature and practice-based tools. The review focused on identifying:

- Common principles and outcome areas emphasized across frameworks;
- Frequently used or recommended indicators;
- Gaps in existing approaches or inconsistencies in definitions and measurement.

Materials that informed our work are listed in Appendix A.

2. Targeted consultations

We engaged in focused consultations—including a workshop with expert organizations—to gather qualitative insights, ensure alignment with ongoing initiatives, and anticipate emerging landscape needs. These discussions provided context-specific recommendations and helped validate findings from the literature review. Consulted organizations include the Rainforest Alliance, Field to Market, Regen10, The Nature Conservancy, and the Sustainable Food Trust.

A set of guiding questions was used to structure the consultations (see Appendix B). These explored perceived gaps, priority indicators, and integration pathways for regenerative agriculture within the LandScale Assessment Framework.

Analysis and discussion

The LandScale Assessment Framework is structured around four pillars: ecosystems, human well-being, governance, and production. Each pillar includes specific goals, which are measured through a set of indicators and corresponding metrics. The framework is grounded in international best practices, including the United Nations Sustainable Development Goals (UN SDGs).

Core indicators address topics fundamental to holistic landscape sustainability and are applicable across all contexts. Additional indicators are context-specific and may be included in an assessment based on landscape needs. Every indicator includes at least one essential metric, while complementary metrics offer additional insight.

To ensure flexibility, landscape initiatives may also define their own indicators and metrics beyond those included in the LandScale Assessment Framework. This structure enables a consistent yet adaptable approach to assessing landscape sustainability across diverse contexts.

To further support holistic yet context-specific assessments, LandScale indicator packages are grounded in the framework's four pillars. The gap analysis for the Regenerative Agriculture Indicator Package—and for future indicator packages—focuses on aligning the existing framework with the data needs of both landscape initiatives and landscape supporters[3] to ensure relevant and credible assessments. The Regenerative Agriculture Indicator Package was developed based on the alignment between our current Assessment Framework, findings from our literature review, and insights from targeted consultations.

The working definition of regenerative agriculture emerging from our analysis views it as a holistic, outcomes-based approach that restores soil health, biodiversity, and other critical ecosystem services while supporting sustainable farmer livelihoods[4]. At the landscape level, this requires assessing both the state of these ecosystem services and the broader socio-economic and governance structures that shape—and are shaped by—agricultural systems. The goal is to capture a snapshot of the landscape that shows how regenerative agriculture both depends on these conditions and contributes to the long-term health and resilience of the landscape as a whole.

[3] In line with ISEAL's definition, landscape initiatives are multi-stakeholder initiatives that operationalize a landscape approach in a specific landscape. Landscape supporters are those—such as governments, companies, and investors—who provide financial, technical, or other forms of support to these initiatives.

[4] LandScale does not adopt a single, existing standard definition of regenerative agriculture. Instead, it draws on common themes from definitions and principles developed by initiatives and organizations such as the Rainforest Alliance, One Planet Business for Biodiversity (OP2B), and Regen10, among others.

Analysis and discussion (continued)

The literature review and stakeholder consultations revealed several common indicators used to evaluate the conditions and outcomes of regenerative agriculture, both at the farm and landscape levels. These indicators are typically grouped into ecological, social, and economic categories. Ecological indicators measure the conditions of managed lands (e.g., degradation and restoration) and ecosystem services such as water availability and quality, soil health, biodiversity, carbon storage and sequestration, and other factors. Social indicators focus on health, nutrition, human rights, community engagement, and the governance structures that influence decision-making and resource allocation. Economic indicators examine inputs, production levels, and market conditions and opportunities.

Most existing regenerative agriculture frameworks tend to focus on practices and outcomes at the farm level. A few emerging initiatives—such as Regen10's Outcomes Framework—are beginning to bridge farm- and landscape-level interactions, but robust tools for assessing regenerative agriculture at the landscape scale remain limited. LandScale's role is to fill this gap. Building on these efforts and leveraging our existing framework, we developed the Regenerative Agriculture Indicator Package to ensure relevance at the landscape scale while remaining complementary to farm-level measurements and other established frameworks. This approach avoids duplicating farm-level monitoring and highlights the added value of landscape-level assessment.

Following the gap analysis, indicators in the LandScale Assessment Framework were adapted for the Regenerative Agriculture Indicator Package to better capture conditions and outcomes from this lens. Additional indicators—covering areas such as soil, agrobiodiversity, community, institutional support, economic resilience, and livestock health and welfare—were incorporated to ensure a truly holistic assessment. In practice, landscape initiatives are encouraged to engage stakeholders in selecting and/or designing indicators and metrics based on local strategies and priorities. While comprehensive, the LandScale Assessment Framework and Regenerative Agriculture Indicator Package remain flexible to suit each initiative's needs.

LandScale also recognizes that certain aspects of regenerative agriculture and landscape health—such as soil or biodiversity—require granular farm-level measurements that are then aggregated to provide a meaningful landscape-level picture. In defining indicators and metrics, we balanced scientific rigor with the practical capacities and resource constraints of our users, ensuring they reflect best practices while remaining feasible for diverse initiatives to implement.

The purpose of the LandScale Assessment Framework and the Regenerative Agriculture Indicator Package is to guide landscape initiatives in conducting structured assessments that provide a clear picture of landscape conditions and outcomes. Each initiative is responsible for analyzing possible causes and correlations between results. Understanding the history and context of a landscape helps determine whether findings reflect the impact of implemented action plans or other activities. Data gathered and analyzed for selected indicators and metrics form the basis for informed decision-making and strategic resource allocation.

Analysis and discussion (continued)

An important distinction between the LandScale Assessment Framework and the farm- and landscape-level frameworks consulted lies in how ecosystems are defined and how natural and managed lands are distinguished. While a full exploration of this issue is beyond the scope of the gap analysis, it is a critical area for alignment with the regenerative agriculture approach. The current LandScale Assessment Framework emphasizes the conservation and restoration of natural ecosystems at the landscape level, with indicators and metrics that track protection efforts and monitor land conversion, degradation, and restoration.

In regenerative agriculture, however, ecosystems include not only natural lands but also managed lands—such as agricultural land—whose conditions can be monitored similarly to natural ecosystems to assess degradation and restoration. While the LandScale Assessment Framework already recognizes that restoration can include land-use improvements beyond natural ecosystems (e.g., agroforestry), some ecosystem indicators need to be expanded to explicitly capture the role of regenerative agriculture, and how these practices interact with and positively influence the wider socio-ecological system. This expansion complements, rather than replaces, the Assessment Framework's strong emphasis on conserving and protecting natural ecosystems.

In summary, the Regenerative Agriculture Indicator Package builds on best practices, lessons learned, and insights from the broader regenerative agriculture movement. It strengthens the LandScale Assessment Framework while providing landscape initiatives with a modular, flexible set of indicators and metrics. Although focused on landscape-level assessment, the package draws on farm-level frameworks and initiatives bridging the two scales, providing practical tools and guidance for evaluating conditions and outcomes across entire landscapes.

Analysis and discussion (continued)

As mentioned above, the Regenerative Agriculture Indicator Package is largely accommodated by the LandScale Assessment Framework, with several additional indicators added to address key gaps. The next step was to evaluate and align existing metrics with those proposed in the literature and through stakeholder consultations. The result is an indicator package that remains consistent with LandScale's four-pillar structure:

- **Ecosystems:** Monitors the conservation of natural ecosystems while recognizing the role of regenerative agriculture in restoring degraded managed lands. Tracks carbon balance through emissions and sequestration in forests, agroforestry, and soils; links ecosystem health to biodiversity (including agrobiodiversity); and measures essential ecosystem services that support—and are supported by—regenerative practices.
- **Human well-being:** Covers income, asset ownership, health, nutrition, and access to basic services like safe water and sanitation. Additional metrics assess labor rights and protections, helping ensure that sustainability efforts promote social equity and dignity.
- **Governance:** Evaluates land tenure, conflict, stakeholder inclusion, and cross-sector coordination in land-use planning. Also includes metrics on climate vulnerability, adaptation planning, and institutional support systems such as incentive programs and technical assistance.
- **Production:** Examines productivity, input use efficiency, and resilience across crops, livestock, and plantations. Tracks adoption of sustainable land and waste management practices, economic resilience of producers, and animal health and welfare.

Review the full Regenerative Agriculture Indicator Package to see all included aspects and their intended measurements.

Conclusion and next steps

The Regenerative Agriculture Indicator Package represents a key step in enhancing LandScale's ability to assess landscape sustainability, highlighting the role of regenerative practices in supporting both ecosystem health and socio-economic well-being. By drawing on leading literature and the work of key organizations, it strengthens and extends the LandScale Assessment Framework, helping to bridge the gap between farm-level outputs and landscape-scale outcomes.

To ensure its practicality and global relevance, several next steps are planned:

- **Pilot testing:** The package will be piloted across multiple landscapes in the USA. We also welcome opportunities to pilot the package in other geographic and socio-ecological contexts to test its adaptability and ensure its applicability to diverse landscape realities.
- **Framework alignment:** We will strengthen the package's relevance and usability by more explicitly mapping indicators to complementary frameworks and best practices, while scoping opportunities for collaboration and mutual reinforcement.
- **Resource and guidance expansion:** LandScale's guidance materials and resource library will be expanded to reflect the additions introduced through the Regenerative Agriculture Indicator Package. This will support users in interpreting and applying the indicators effectively.
- **Validation procedure design:** We will define how the LandScale Operations Team will effectively integrate the new indicators and metrics from the Regenerative Agriculture Indicator Package into its validation procedure.
- **Platform integration:** The Regenerative Agriculture Indicator Package will be integrated into the LandScale platform with modular functionality, allowing users to view, select, and report on regenerative agriculture indicators as a tailored component of the wider Assessment Framework.
- **Scoping further thematic modules:** The Regenerative Agriculture Indicator Package establishes the approach for analyzing and integrating future thematic modules into the platform.

These next steps will help ensure that LandScale continues to provide a robust, flexible, and forward-looking framework for landscape-level sustainability assessments—one that is capable of supporting regenerative agriculture transitions at scale.

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Appendices

Appendix A: Bibliography

Estrada-Carmona, N., Sánchez, A. C., Remans, R., & Jones, S. K. (2022). *Complex agricultural landscapes host more biodiversity than simple ones: A global meta-analysis.* Proceedings of the National Academy of Sciences, 119(38). https://doi.org/10.1073/pnas.2203385119

Field to Market. (2022, March). *Field to market sustainability metrics overview documentation. Version 2.1.* https://fieldtomarket.org/media/2022/03/FTM_Metrics-Documentation-v2.1.pdf

Global Farm Metric. (2025, June). *Global Farm Metric Framework.* https://www.globalfarmmetric.org/wp-content/uploads/2025/06/V3b-Inside-the-Framework-16.6.25-1.pdf

IFDC. *Integrated soil fertility management (ISFM).* https://ifdc.org/integrated-soil-fertility-management-isfm/

One Planet Business for Biodiversity (OP2B). (2021, September). *Scaling up regenerative agriculture – OP2B's contribution.* https://www.wbcsd.org/wp-content/uploads/2023/10/OP2B-Regenerative-Agriculture-Leaflet.pdf

Rainforest Alliance. (2020, August). *Raising the bar – Regenerative agriculture for more resilient Agro-ecosystems.* https://www.rainforest-alliance.org/wp-content/uploads/2021/07/Raising-the-Bar-Regenerative-Agriculture-for-More-Resilient-Agro-Ecosystems.pdf

Regen10. (Forthcoming). *Regenerative Agriculture Outcomes Framework – Version 1.*

Scherr, S. J., Buck, L. E., & Granados, B. (2025, February). *Policy brief: A strategy for transforming food systems through regenerative landscapes.* 1000 Landscapes for 1 Billion People & Regen10. https://regen10.org/wp-content/uploads/sites/19/2025/03/Policy-Brief_A-Strategy-for-Transforming-Food-Systems-through-Regenerative-Landscapes.pdf

Soil Health Institute. *Recommended measurements for scaling soil health assessment.* https://soilhealthinstitute.org/app/uploads/2022/10/SHI_SoilHealthMeasurements_factsheet.pdf

World Business Council for Sustainable Development (WBCSD) & Regen10. (2024, May 8). *Business guidance for deeper regeneration.* https://www.wbcsd.org/resources/business-guidance-for-deeper-regeneration/

Appendix B: Guiding questions

Guiding questions during the consultations included:

- Do you think the current assessment framework sufficiently captures the principles of regenerative agriculture? (e.g., biodiversity, soil health, ecosystem conversion, carbon cycle, physiochemistry, crops, water, economic system)
    - If not, what do you consider the most critical gaps or areas for improvement?
- What specific indicators and/or metrics do you believe should be added to effectively measure regenerative outcomes? (e.g., soil organic carbon, water retention, profitability, ecosystem resilience)
    - Do you think these new indicators could be integrated within the existing structure of the framework, or would modifications be necessary?
- Are there existing frameworks or methodologies we should consider aligning with or learning from?
- How much flexibility should be built into the framework to account for regional differences in regenerative agriculture practices?
- What kinds of additional guidance or tools would be helpful in enhancing the adoption and usability of this indicator package? (e.g., case studies, practical examples, templates for implementation)
- How can we ensure the proposed indicators are practical, applicable at the landscape level, and relevant to different stakeholders? (e.g., farmers, companies, investors, policymakers)