

UNDERSTANDING SYSTEMIC CHANGE: innovative approaches to monitoring, learning and adaptation in the UNDP's work to reduce deforestation

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This article explores innovations in monitoring, evaluation and learning being promoted and adopted by the United Nations Development Program in their activities to promote Forest Positive Agriculture. Using the UNDP's new Causality Assessment for Landscape Interventions (CALI) as an illustrative example, it discusses the importance of adaptive and systemic approaches to understanding change for organizations and projects that are seeking to generate positive change or ecological transformation in complex systems. These innovative measurement practices and principles employed by the UNDP to reduce deforestation can serve as inspiration for a range of actors addressing this and other systemic challenges that must be addressed to bring about ecological transformation.

INTRODUCTION

After record-breaking global average temperatures in early July 2023, UN Secretary General António Guterres warned *"Climate change is here [...] And it is just the beginning. The era of global warming has ended; the era of global boiling has arrived [...] We can still stop the worst,"* he said. *"But to do so we must turn a year of burning heat into a year of burning ambition."*

One of the key measures needed to meet that ambition is increasing Forest Positive Agriculture. In its latest Assessment Report¹ published in March 2023, the Intergovernmental Panel on Climate Change identified "Reduced conversion of natural ecosystems" as a key climate change mitigation response, second only to solar power generation and more effective than wind power. "Improved Sustainable Forest Management" offers more potential than switching to electric vehicles.

¹ IPCC (2023). Sixth Assessment Report: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

The need to act is urgent, and action is being pursued through innovative approaches including jurisdictional and landscape approaches. Increasingly however, organizations including the UNDP have come to realize that finding innovative new ways to measure the effects and results of actions is as important, to ensure that positive impacts are maximized.

Measurement of the kind of change we pursue is hard. Protecting and restoring forests involves change across complex social, economic and environmental systems, and effective measurement has been an enduring challenge for actors in this space for decades.

The UNDP, with other institutions, has been working to develop a better, more nuanced and systemic approach to measurement that can help us understand the complex changes involved in promoting ecological transformation, thereby developing more effective approaches to achieving it.

Forests harbor most of the biodiversity of the Earth, support the livelihoods of hundreds of millions of people (including many of the world's poorest), and provide a multitude of ecosystem services, including carbon storage and climate regulation, soil protection and flood control, pollution abatement, and fresh water supply².

Nonetheless, forests and the services they provide continue to be under severe pressure: it is estimated that 420 million hectares of forest have been lost since 1990 through conversion to other land uses, with agricultural expansion accounting for the most of this³.

PURSuing CHANGE IN COMPLEX SYSTEMS

Landscape and jurisdictional approaches which promote forest positive agriculture and attempt to address agricultural expansion and the other drivers of deforestation are complex interventions, attempting to transform the interplay of political, economic, and social forces. Their Theories of Change tend to include multiple assumptions and risks and rely on many factors working alongside project intervention efforts.

As these landscape and jurisdictional approaches are designed and implemented in dynamic environments, and trying to pull selected levers for change, implementation teams must be comfortable in dealing with uncertainty, with adaptation becoming a key factor for success. Given the limited focus on managing complexity and education on systems thinking in most countries, this is a difficult requirement to meet. As environmentalist George Monbiot said in his submission to the UK Government's Inquiry on Environmental Change and Food Security:

[The] expansion of boundaries of thinking to encompass a whole system - going deeper into the iceberg - leads to a whole range of new considerations

“One of the great deficiencies of our education is that few of us are taught systems theory. Yet everything of material importance to us – the human brain, the human body, human society, ecosystems, the atmosphere, the oceans, the financial system, the food system – is a complex system. The behavior of these systems, because so few of us study them, repeatedly takes us by surprise... We need a far better public and political understanding of complex systems... to understand the world around us and the means by which we can predict trouble and intervene to prevent it.”

How can we adapt what we do to better comprehend and interact with these complex systems? One approach, being developed by the United Nations Development Programme (UNDP) and its partners, is to change the way we measure and define success.

RETHINKING MONITORING, LEARNING AND EVALUATION FOR POSITIVE CHANGE

Traditional monitoring, learning and evaluation (MLE) frameworks, methods and tools are not capable of supporting interventions operating in complex systems, such as landscape approaches. Too often, project teams devise interventions and then construct MLE systems to watch out primarily for the intended results of their interventions. In doing so, teams and organizations seeking to affect positive environmental and social change may miss other, more significant developments. Sometimes these originate from other parts of the complex system, but on other occasions may be an unexpected outcome of the project team's intervention and therefore well worth capturing as an impact of the project to learn from. Learning itself is often undervalued, leading to limited capacities in project teams to adapt to evolving environments and circumstances.

To better support positive change, MLE practices must evolve to effectively support continuous learning and sensemaking of the complex and often highly volatile environment in which projects and interventions are embedded. Increasingly, change makers recognize that the complexity they are grappling with makes it challenging to determine upfront effective pathways and clearly define intermediate results. As a result, they need to continuously “experiment their way through” their interventions. This challenge is very well recognized by UNDP and the Bill and Melinda Gates Foundation, who recently joined forces to launch a new initiative focused on MLE for systems change. This evolution of approach is supported throughout UNDP, right up to the organization's Strategic Plan:

“The latest strategic plan of UNDP recognises the importance of developing new tools that are better suited to support continuous learning and adaptation for interventions in complex systems. This is especially true for landscape and jurisdictional approaches, which target deforestation in highly volatile and dynamic settings.”

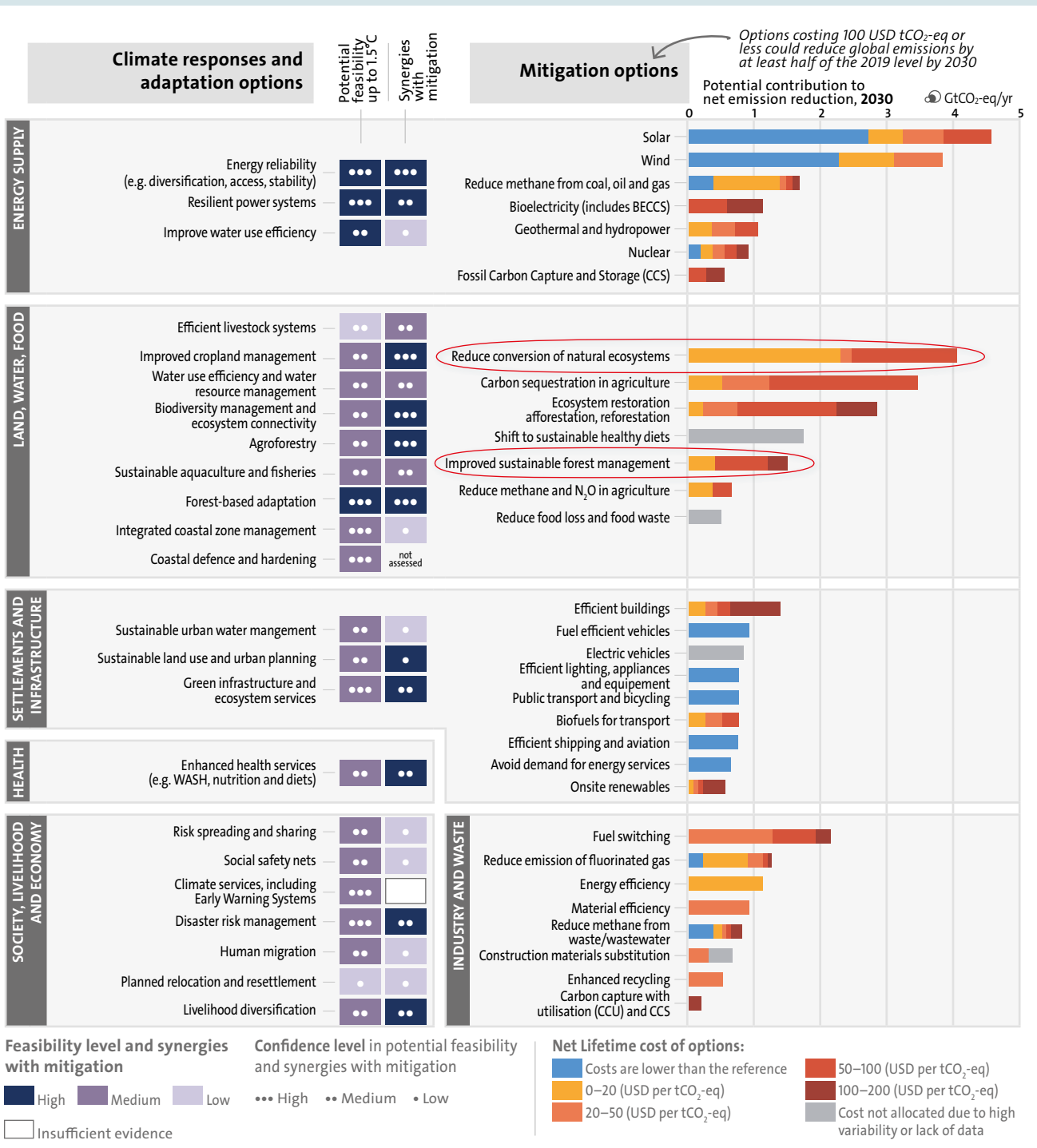
Alan Fox, Deputy Director of the Independent Evaluation Office (IEO) of UNDP

² Ghazoul, J. (2015). *Forests*. Oxford University Press.

³ FAO and UNEP (2020). *The State of the World's Forests 2020 Forests, biodiversity and people*. Rome. <https://doi.org/10.4060/ca8642en>

THERE ARE MULTIPLE OPPORTUNITIES FOR SCALING UP CLIMATE ACTION

Feasibility of climate responses and adaptation, and potential of mitigation options in the near-term



CAUSALITY ASSESSMENT FOR LANDSCAPE INTERVENTIONS – A NEW APPROACH

Among the new tools developed and promoted by UNDP, developed by the UNDP's Food and Agricultural Commodity Systems (FACS) MLE team, is the new *Causality Assessment for Landscape Interventions* (CALI) Guidebook. This tool provides a practical methodology for ongoing sensemaking and adaptation for teams. By helping to define and capture indicators of systemic change, it provides a better suited approach through which to oversee and ensure effective implementation of projects that aim to reduce deforestation in landscapes.

UNDP FACS Global Head Andrew Bovarnick said:

"What we need to complement systemic interventions are tools to assess, measure and generate insights on how well the interventions are actually catalyzing change in a given system and to what extent, why and how. We need new ways of catalyzing change in food systems. Interventions that address the root causes and not the symptoms. Only with the development and application of such tools, which we want to make easily accessible to everyone, can we evolve technical assistance to truly and effectively transform systems."

For organizations including the UNDP that are seeking to influence deforestation, this expansion of boundaries of thinking to encompass a whole system - going deeper into the iceberg - leads to a whole range of new considerations.

Historically, the focus of many interventions have been on the direct drivers of deforestation - the (legal or illegal) processes or human activities that cause deforestation in the landscape⁴. These include activities including commercial agriculture, subsistence agriculture, surface mining, infrastructure development and urban expansion. Indirect drivers are the complex interactions of social, economic, political, cultural and technological processes that bring about direct drivers. At international level, they include market behaviors (supply and demand), fluctuations in commodity prices and currency exchange rates, and financial flows of investments that do or do not take into account deforestation as a financial risk. At national level, they include population growth, the behavior of domestic markets, national policies that favor non-forest land uses, poor governance and legal frameworks and/or lack of enforcement of national laws, subsidies and incentives and the land market. And, at local levels, dynamics including poverty and food security can also have significant influence on the behavior of local stakeholders. Systems practice-based tools like the CALI help to unveil and incorporate these indirect drivers in how projects and interventions are managed.

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HOW CALI WORKS

CALI works by bringing landscape stakeholders together in participatory reflections around the workings of the theory of change of the project – including through unpacking causality and examining the soundness of underlying assumptions – always remembering the context of the complex system which is driving deforestation in the landscape.

The assessment can be planned at project design or commissioned throughout implementation, and it can be conducted one or several times depending on the length of the project and extent of changes in system dynamics.

Every assessment results in ideas for a refined theory of change and a strengthened project implementation strategy that takes into account emerging learnings and the latest evolutions of system dynamics. Teams that are delivering interventions always have strong ownership of the process, which helps them better understand causality and the consequences (or not) of their actions.

"The success of initiatives that operate and seek to effect change in complex systems hinges on an ability to continuously learn and adapt. Working in this way requires a new generation of new M&E tools and practices. CALI provides an important contribution to this, offering a solid and practical methodology for guiding project teams to engage with their stakeholders in a process of continuous reflection on the validity of their theory of change – situating it within the complex system in which they operate."

Søren Vester Haldrup, Innovation Facility Fund Manager and M&E Sandbox Lead, UNDP

Another key benefit is increased connectivity among landscape stakeholders – who are engaged in participatory sensemaking, and their understanding of system dynamics – as they are encouraged to “see the system” that drives deforestation in the landscape, as well as their role in it.

This puts them in a better position to contribute to the development of the project's interventions, as well as to more generally and effectively advocate for their interests, by adopting a system perspective. In this way, CALI leverages the collective intelligence of landscape stakeholders to increase the chances of effectiveness of project interventions, but at the same time, it also contributes to enhancing that collective intelligence in the first place.

"The Causality Assessment for Landscape Interventions (CALI), supported by the GEF, helps project teams to ensure that complexities are reflected in their theory of change, and that their evolution informs adaptations to the project implementation strategy. This is all driven by

⁴ UNEP (2018). "Drivers of deforestation and forest degradation", *REDD+ Academy Learning Journal*.

a participatory process that boosts system connectivity and learning, increasing the likelihood of success of any project addressing deforestation at landscape or jurisdictional level. CALI is therefore an important step toward advancing systems thinking and integrated approach programming to tackle drivers of global environmental degradation.”

Mohamed Bakarr, Lead Environmental Specialist, the Global Environment Facility (GEF)

CALI has already been applied in support to several projects that the UNDP is supporting in Sintang, Pelalawan and South Tapanuli in Indonesia, in North-Wester Liberia, in the Western Region of Paraguay and in a landscape spanning the Ucayali and Huánuco regions of Peru.

The Peru project, for example, included a thorough engagement and dialogue with all key project stakeholders, including representatives of the local and national government, indigenous communities, private sector actors, and other civil society organizations. Beyond adaptation, the assessment has also allowed the whole project team to strengthen their relationships and exchange with these actors, who play a critical role for the success of the project’s interventions. It has also strengthened relationships among the actors themselves, allowing them to better understand each other’s perspectives and thereby deliver their interventions more effectively going forward.

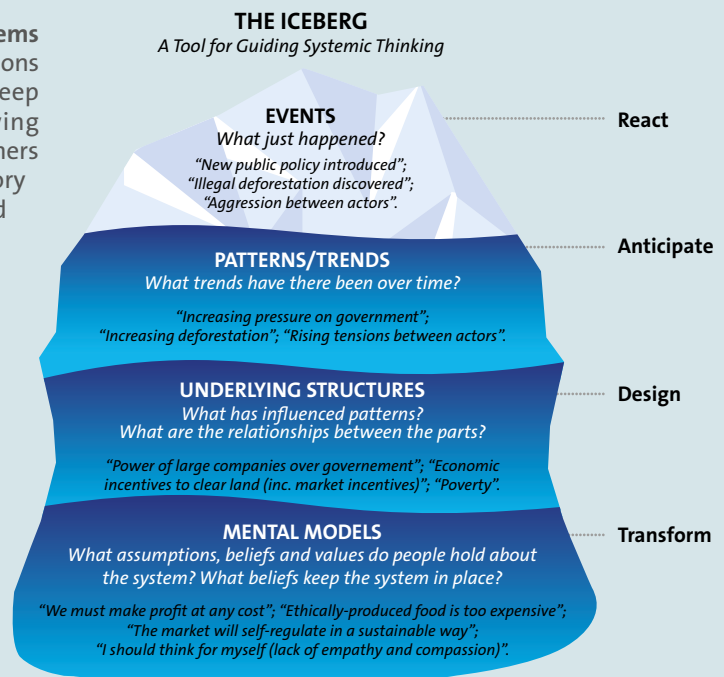
CALI WORKS AGAINST THE GRAIN OF “NORMAL” HUMAN NATURE

It approaches landscape-level analysis through **systems practice**, ie., the approach of making reliable conclusions about the behavior of a system by developing a deep understanding of its underlying structure. Viewing problems from a system perspective helps practitioners to develop a holistic understanding of the trajectory of current developments of deforestation and its underlying complex causes, uncovering the often hidden connections and dependencies between actors and sectors, and as such, building bridges between the functional silos.

In daily life, our attention is often directed towards single events. Most of the information we consume through the news focuses on such single events (e.g., new public policy introduced, illegal deforestation discovered, aggression between actors). However, in most cases, these events are only snapshots in time emerging from underlying **long-term patterns** in a system’s behavior. In other words, such events only represent the tip of the iceberg that is most visible to us, while their underlying **patterns** tell us how the situation affecting a specific landscape or jurisdiction developed and emerged over time (e.g., increasing pressure on government, increasing deforestation, rising tensions between actors).

These patterns of behavior, in turn, are driven by the structure of the system driving deforestation, or in other words how various parts of the system are linked and interact with each other. The structure illustrates the important drivers behind the developments and might unveil the interconnection between different events and patterns. Our decisions to affect the system or some of its parts are based on our understanding of these relationships, i.e. our "mental models" of reality.

Systems practice aims to make these behavior patterns, the system structure, and the mental models which are often implicit and hidden more transparent and visible.



Adapted from “A Systems Thinking Model: Iceberg, Ecochallenge.org.”

When assessing the effectiveness of development interventions aimed at reducing deforestation at landscape or jurisdictional level, systems practice allows practitioners to complement and situate the more structured Theory of Change of their projects. This enables them to consider the full range of relevant outcomes that might have been influenced through their interventions, and how those outcomes, in turn, are influenced by the complex system dynamics at play in the landscapes. This allows teams and organizations to develop a systems-informed understanding of the environment in which they operate, which in turn will help them to make more informed decisions and increase the likelihood of success of their interventions.



Mr. Louis, benefited from UNDP seeds after losing his livestock and crops during Hurricane Matthew © UNDP Haiti (2017).

CONCLUSION - WHAT NEXT?

It is important that this evolution of approaches does not take place in isolation within UNDP – everyone should be able to join in, and a new UNDP Guidebook, as well as the instructive example of the CALI, encourages this.

Encouraging Forest Positive Agriculture means changing a complex system which includes several actors with competing demands including smallholders, companies, financial institutions, governments and many others. Many other components of ecological transformation, from resource use to reducing pollution, exist in similarly complex systems. Monitoring and evaluating progress in projects that work with these actors is challenging because (i) different visions exist of what progress is in the context of systems transformation, and (ii) strategies and goals tend to shift quickly and so project objectives are overtaken by events.

Cause and effect is also often unclear, because other organizations and projects will also be working in various combinations to achieve similar goals. So, who took the action that caused the change? Or is it a combination of actions that we should be looking at? How should we change our project plan to adapt to what we are seeing happening in real life? These are the sorts of questions which arise when taking a more broadly-based approach to monitoring, learning and evaluation. And, while innovative tools like the CALI and much of the UNDP's work in this area has focused on the critical challenge of reducing conversion

of natural ecosystems, these same complex questions and need for a new approach to defining and measuring success are as pressing in other sectors and related challenges that are crucial to a successful ecological transformation.

Innovative tools like the CALI can help practitioners, including businesses, to better understand the role they can play in driving wider systemic change. Instead of working forwards from an intervention towards its intended result, actors pursuing positive change need an open mind – and some degree of humility – to look at what changes have happened, whether or not they seem to have resulted from their actions.

The most important thing that change makers must recognize is that systems are in a state of continuous flux. Promoters of ecological transformation need to focus on making sense of these changes and what they mean for their interventions, so as to be able to adapt effectively. CALI's participatory reflection and sensemaking is the ideal methodology to underpin this thinking, increasing the engagement and ownership of stakeholders on project interventions, while bringing them closer to each other as part of the process.

If you are interested to know more about CALI and/or the broader work of UNDP around systems monitoring, evaluation and learning, please reach out to andrea.bina@undp.org.