

Nature Tech Unwrapped: A Modular Toolkit for the Nature-Positive Transition.

1. Nature Tech refers to a set of tech-enabled solutions that protect and restore nature.

The Nature Tech Collective defines Nature Tech as “any technology that enables, accelerates, and scales the nature-positive transition.” To make it concrete, think about it in these ‘5M’ categories - each helping our economic system recognize and value nature as a core asset.

- **Measurement & Monitoring:** Uses digital tools to collect, analyze, and verify nature data—essential for tracking ecosystem health and managing risks.
- **Modeling:** Turns raw nature data into actionable insights to prioritize, forecast, and monitor impacts.
- **Material Change:** Supports tangible interventions to restore ecosystems and drive sustainable agriculture and supply chain practices.
- **Monetization:** Creates financial incentives for conservation by aligning economic systems with nature goals.
- **Market Pressures:** Focuses on aligning policy, business, and societal goals with nature by addressing market failures and driving collaboration.

In our Nature-Positive System Map, we think of these solutions as a layer around the three system shifts and capital investments needed for a nature-positive transition.

2. The 5M's in action.

Let's make it real. Imagine Company X, a business that wants to integrate nature-risks and opportunities to decision making and strategy. Here's how the 5M's of nature tech guide their journey:

1. **Measuring & Monitoring:** Company X begins by understanding its impact on nature, establishing a baseline, and tracking progress. Technologies like sensors, satellites, IoT, and bioacoustics collect, analyze, and verify nature data, helping monitor ecosystem health and risks.
2. **Modeling:** With data in hand, Company X uses technologies like AI and machine learning to turn raw information into actionable insights. These models help forecast ecological outcomes, prioritize actions, and monitor progress, enabling smarter decisions.
3. **Material Change:** To create tangible impact, Company X implements regenerative practices and technologies. From drone-based reforestation to soil and biodiversity management solutions, they reduce their footprint and restore ecosystems.
4. **Monetization:** Company X makes its actions financially sustainable by leveraging biodiversity and carbon credits or using natural capital accounting. This aligns nature-positive actions with economic incentives, attracting investments and creating value.

5. Market Pressures: Operating in a regulated world, Company X adopts tools to meet policies like CSRD and TNFD, track compliance, and engage communities. These ensure transparency, accountability, and alignment with stakeholder expectations.
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3. Solutions vs. enabling technologies.

The '5M' categories provide useful anchors but blur two distinct elements:

1. Solutions: These are the services that organizations require, such as measuring biodiversity, modeling deforestation scenarios, or financing ecosystem restoration projects.
2. Enabling Technologies. These are standalone technologies like LiDAR, IoT, and eDNA that power these solutions.

Let's look at Measuring & Monitoring as an example. To take meaningful action for nature, businesses first need to measure and monitor a wide range of natural systems. This includes solutions like mapping ocean floors for offshore wind farm site management, tracking forest health for wildfire prevention, or monitoring endangered species in rivers. There's a vast array of enabling-technologies to power these solutions. For example:

- LiDAR (Light Detection and Ranging) is one such technology. By sending out laser pulses and measuring their return, LiDAR creates precise 3D maps of the Earth's surface. It's used to map ocean floors for wind farm site selection or to measure biomass in project areas for accurate carbon credit estimates.
- The Internet of Things (IoT) connects networks of sensors to gather real-time data. For example, wildfire detection systems rely on IoT-enabled, solar-powered sensors to detect fires during their smoldering phase. These sensors monitor forest conditions and transmit alerts in real-time, enabling ultra-early intervention.
- Environmental DNA (eDNA) is a method of detecting species by collecting genetic material they leave behind in their environment—like skin cells, waste, or mucus. Scientists can extract this DNA from samples of soil, water, or air to identify which species are present without needing to see or capture them. It can be used for things like monitoring endangered fish populations in rivers by analyzing water samples, helping conservationists understand their habitat and track their recovery over time.

By distinguishing between solutions and enabling technologies within the 5Ms, it becomes easier to map how nature tech tools address specific challenges and contribute to the nature-positive transition.

4. Nature Tech as a modular solutions layer.

The transition to a nature-positive economy requires both significant capital investment and systemic changes. Nature Tech acts as a modular solutions layer that enables and accelerates this transition, offering adaptable tools that plug into different aspects of the journey.

Nature Tech is best understood not as a single, monolithic category but as a set of tech-enabled solutions with modular applications. For example:



Problem: Traditional farming practices harm soil health, reduce biodiversity, and drain water resources. Farmers often don't have the data they need to switch to regenerative practices, which makes it harder to make good decisions. This also creates challenges for businesses trying to ensure their supply chains are sustainable.

Solution: Precision agriculture solutions give farmers tools to measure and monitor their environment, helping them adopt better practices. These solutions are enabled by technologies like sensors, which track soil health metrics such as carbon content, water capacity, and nutrients, helping farmers optimize soil management. eDNA sampling analyzes genetic material from water or soil to monitor biodiversity and track species presence, while bioacoustics uses sound recordings to assess wildlife activity and ecosystem health. Additionally, camera traps capture images of wildlife to track biodiversity changes over time. Together, these technologies provide farmers with the data they need to make informed decisions, improve environmental outcomes, and build sustainable supply chains.

The power of Nature Tech lies in its modularity. Tech-enabled solutions can be combined and adapted to address diverse challenges, effectively "plugging into" multiple stages of the nature-positive transition.

5. Nature Tech: A dynamic and evolving toolkit.

The Nature Tech ecosystem is constantly evolving, with new tools and approaches emerging. While categories and frameworks are useful to guide understanding, flexibility remains essential.

Ultimately, Nature Tech is best understood as a versatile toolkit that enables and accelerates the nature-positive transition.