COMMUNITY FORESTS IN NEPAL

SCALING UP FOREST REGENERATION GLOBALLY

RISE

OUR WORLD HERITAGE

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1. EXECUTIVE SUMMARY

→ GLOBAL IMPORTANCE AND THREATS TO FORESTS

Forests play a critical role in environmental health and human well-being but face global threats, primarily from agricultural expansion. Forests are indispensable in the fight against climate change due to their capacity for carbon sequestration and their support for local communities.

→ NECESSITY OF A PARADIGM SHIFT

Effectively addressing deforestation requires shifting from a mere conservation focus to restoration and ensuring economic opportunities that benefit local communities and expand global forest cover.

→ NEPAL'S SUCCESS STORY
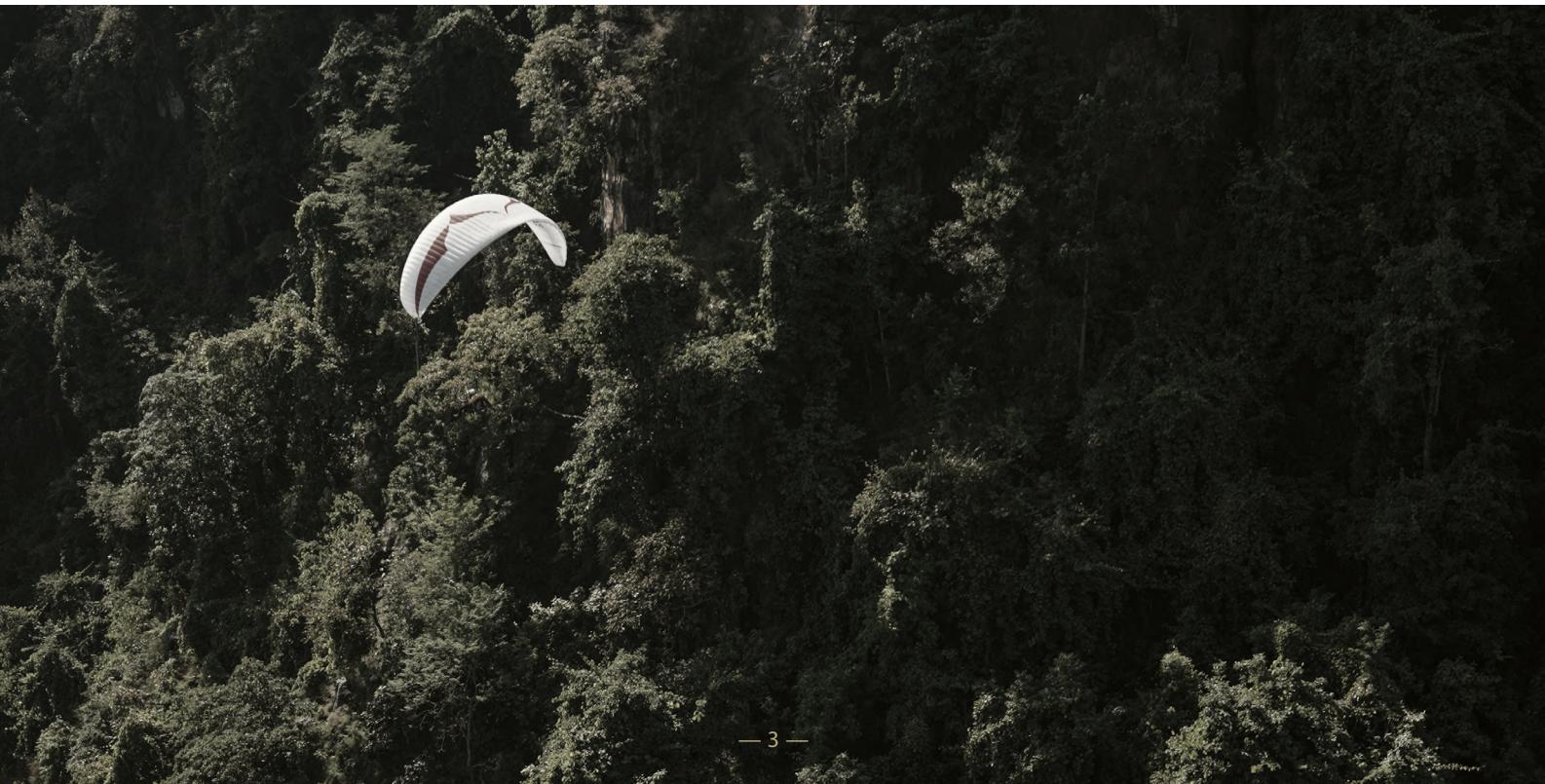
Highlighting the case of Nepal, this paper details how community-based forest management led to a significant increase in forest cover–from 26% in 1970 to 46% by 2016 [1]. The community forests model has demonstrated sustainable conservation and restoration practices while boosting local economies.

→ COMMUNITY FORESTS IN NEPAL

Nepal's community forest model empowers local groups to manage forest resources, fostering both environmental restoration and economic benefits. Through Community Forest User Groups (CFUGs), communities protect biodiversity, enhance forest cover, and support sustainable livelihoods, demonstrating a balanced approach to conservation.

→ PURPOSE OF THE PAPER

To comprehensively analyze how community forests can serve as a sustainable conservation model that offers both environmental and economic benefits. This model not only helps in regenerating forest cover but also supports the livelihoods of the involved communities.

2. WHY DOES FOREST MATTER?
2.1 The value of forests

→ GLOBAL COVERAGE AND VALUE

Today's forests, covering 30% of the earth's surface, are pivotal for carbon storage, water and air purification, biodiversity maintenance, and millions of livelihoods. Forests help mitigate climate change by soaking up carbon dioxide that would otherwise be free in the atmosphere[2]. Their economic value, estimated between $50-$150 trillion, underscores their worth, exceeding global stock markets and gold reserves combined[3].

→ ONGOING DESTRUCTION

Forests are critical to the health of the planet. They sequester carbon, regulate global temperatures and freshwater flows, recharge groundwater, anchor fertile soil and act as flood barriers. The degradation and loss of forests is destabilizing natural systems on a scale unseen in human history. We have already lost nearly half of the trees that existed before the onset of agriculture, and despite countless efforts, this loss continues to grow every year[4]. Despite their crucial role, forests face relentless destruction, equivalent to losing 30 soccer fields every minute globally–a stark indicator of the urgent need for protective measures[4].

In November 2023, over 200 scientists led by Crowther Lab published new science that reaffirms the importance of natural, biodiverse forests in combating climate change. It demonstrates the significant carbon drawdown potential of conserving and restoring natural forests, along with the benefits it creates for local communities, indigenous people, and biodiversity. Importantly, the science highlights that natural forests are no substitute for cutting greenhouse gas emissions or phasing out fossil fuels. To work towards an equitable future, we must cut our emissions and invest in nature[5]. The study reveals a considerable potential for carbon capture in existing forests by allowing these degraded ecosystems to regenerate to maturity, therefore promoting restoration efforts.

It is even more crucial to talk about natural forests and not plantations. A natural forest is a forest that is a natural ecosystem. Natural forests include primary forests, regenerated forests, managed forests, and forests that have been partially degraded. Natural forests do not include tree plantations[6]. Indeed the diversity brought in a natural forest is a key element to ensure and contribute to carbon sequestration and local communities' resilience. This diversity is the foundation of a healthy ecosystem benefiting nature and people.

Indigenous People and Local communities (IPLCs) are playing a key role and are considered by the UN CBD as the guardian of biodiversity. Embedding traditional ecological knowledge and empowering Indigenous peoples as co-investment leaders in nature-based solutions brings value to both corporate action on nature and the long-term health of nature, says a WEF report from January 2023[7].

2.2 The inextricable link to climate - mitigation and adaptation - and biodiversity

2.2.1 CARBON STORAGE AND CLIMATE CHANGE

Forests regulate the climate by sequestering CO_2, storing carbon in their biomass, and releasing oxygen. This dual function is essential for moderating global temperatures and maintaining ecological balance.

BCG estimates that trees have prevented about 1000 gigatons of CO_2 emissions, with a potential value of $27 to $135 per tCO_2[4]. This storage capacity is crucial in mitigating climate change impacts.

As natural carbon sinks, natural forests are essential in achieving the goals set by the Paris Agreement to limit global warming to a 1.5-degree Celsius pathway.

2.2.2 DEFORESTATION IMPACTS

Due to deforestation and decay, forests are transitioning from being net absorbers to net emitters of carbon. This shift underscores the urgent need for robust natural forest conservation measures to maintain their critical role as natural carbon sinks. For example, in parts of the Amazon, deforestation and forest fires have led to carbon emissions that exceed the sequestration capacity of the forests, emphasizing the critical need for effective conservation strategies.[2]

→ BIODIVERSITY
Forests are biodiversity hotspots, and deforestation leads to habitat loss, which directly impacts species diversity and abundance. Biodiversity is crucial for ecosystem stability, resilience, and functionality, which in turn supports climate regulation. Healthy, diverse forests can better resist pests and diseases, store more carbon, and maintain local and global climates.

→ HEALTH
Deforestation can alter the natural habitat of wildlife, bringing animals and the pathogens they carry into closer contact with human populations. This increased interface can lead to the emergence and spread of infectious diseases, which is a public health concern but also has broader implications for societal stability and healthcare systems, impacting their capacity to contribute to and engage with climate change mitigation efforts.

→ ECONOMIC SIGNIFICANCE IN DEVELOPING REGIONS
The sustainable management of forests can enhance economic stability by providing steady income sources through eco-tourism, sustainable agriculture, and regulated logging. Economically stable communities are better positioned to invest in and implement climate adaptation and mitigation strategies. This is crucial in developing regions where economic hardship may otherwise necessitate exploitative practices that degrade natural resources and release significant carbon emissions.

3. THE NEPAL SOLUTION
3.1 What are community forests?

Community forests operate based on the principle of managing and utilizing forest resources by local communities for their benefit, while ensuring the conservation and sustainable use of these resources.[9] The model varies by country, but the core concept involves collective community action, local governance, and participatory management.[9]

3.2 How do community forests work?

→ FORMATION AND LEGAL FRAMEWORK
- Establishment: A community forest is typically established through a legal or regulatory framework that allows a group of local residents or a community-based organization to manage a specific forest area.
- Legislation: Governments provide the legal basis for community forestry, outlining the rights, responsibilities, and processes for community involvement in forest management.

→ COMMUNITY ORGANISATION AND GOVERNANCE
- Community Forest User Groups (CFUGs): Local communities organize themselves into user groups or committees responsible for managing the community forest. These groups are often required to be officially recognized and registered with a government forestry department.

- CFUGs in Nepal have been instrumental in involving Indigenous Peoples and Local Communities (IPLCs) in forest management. While the Biocultural Community Protocol (BCP) developed by Natural Justice is a recognized tool for ensuring IPLC representation, its direct application within Nepal's CFUGs is not extensively documented. Instead, CFUGs often employ locally adapted methodologies to promote inclusive governance and equitable participation.
- Inclusive Governance Practices:
- Adaptive Learning and Action (ALA): This approach emphasizes participatory planning and self-monitoring, enabling CFUGs to involve diverse community members in decision-making processes. ALA has been shown to enhance governance and social inclusion within CFUGs.
- Good Governance Assessments: Some CFUGs utilize specific criteria and indicators to evaluate governance quality, focusing on aspects like accountability, transparency, and inclusiveness. These assessments help identify areas for improvement to ensure fair representation of all community members, including IPLCs.
- Management Plan: CFUGs develop a forest management plan, which includes objectives for forest use, conservation strategies, and sustainable harvesting practices. This plan must often be approved by a relevant government authority.

- Resource Management and Conservation:

  - Sustainable Practices: The community implements sustainable forest management practices aimed at conserving biodiversity, protecting water resources, preventing soil erosion, and ensuring the ecological balance of the forest. Sustainable forest management (SFM) within Nepal's CFUGs includes regular assessments of forest health, species diversity monitoring, and fire control measures. Community members are trained to apply rotational harvesting practices, allowing forest areas to regenerate fully before any further resource extraction.

  - Harvesting and Utilization: CFUGs manage the sustainable harvesting of forest products such as timber, medicinal herbs, non-timber forest products (NTFPs) like bamboo, resin, and other resources. Sustainable harvest levels are determined through participatory planning sessions, ensuring that extraction rates do not compromise the forest's long-term health. Value chains have been developed for several forest products, even on a local level, providing income opportunities while maintaining ecological integrity. For example, CFUGs have set up local cooperatives to process bamboo and resin, which are then sold to local markets, supporting economic growth without overexploiting resources. Additionally, many CFUGs engage in agroforestry practices that integrate sustainable agriculture with forest preservation, promoting diversified livelihoods and enhancing forest resilience.

3.3 The Nepalese example – from disappearing forests to nearly 40% cover

→ HISTORICAL CHALLENGES

In the 1970s and early 80s, The World Bank predicted that without significant afforestation efforts, the accessible forests in the Nepalese Hills would disappear by 1990 [10]. This prediction underscored the urgent need for effective forest management and conservation strategies.

→ POLICY SHIFT TO COMMUNITY FORESTRY

Policy Shift to Community Forestry: In response to concerns over deforestation and forest degradation, the Nepalese government initiated community forestry programs that shifted forest management responsibilities from the state to local communities. This approach was formalized with the Master Plan for the Forestry Sector in 1988, which outlined strategies for sustainable forest use, conservation, and the involvement of local populations. The initiative was further reinforced by the Forest Act of 1993, establishing a comprehensive legal framework that granted local communities rights to manage, protect, and utilize designated forest areas through Community Forest User Groups (CFUGs). CFUGs, legally recognized and self-governing, are entrusted with creating and enforcing forest management plans, setting sustainable harvesting levels, and reinvesting profits from forest products into community development projects. These policies marked a critical shift, aiming to balance environmental protection with socio-economic development, fostering both forest restoration and local empowerment.

→ IMPACT AND SUCCESS

Remarkably, between 1992 and 2016, Nepal's forest cover increased from 26% to 46% of the country's total land area, according to NASA-funded research from 2019[11]. Other data, including interviews with forestry officials such as Kedar Baral, indicate that forested areas grew from 39% to 45%[12]. These figures demonstrate the effectiveness of Nepal's community forestry initiatives.

3.4 How did they make it happen?

The community forestry program in Nepal operates through a hierarchical structure, starting with national-level policy formation and descending through layers of implementation and support, down to local community management. Each government body has a specific role that builds upon the one above it, ensuring cohesive governance and empowering communities to sustainably manage forest resources.

→ **MINISTRY OF FORESTS AND ENVIRONMENT (MOFE)**
- Develops policies and legislation (e.g., Forest Act of 1993).
- Objective: Establishes a legal framework for community forestry to promote sustainable forest management and conservation.

→ **DEPARTMENT OF FORESTS (DOF)**
- Implements forestry policies, allocates forest areas to Community Forest User Groups (CFUGs).
- Objective: Supports community-led management and ensures policy execution at the local level.

→ **DISTRICT FOREST OFFICES (DFO)**
- Approves CFUGs' forest management plans and issues necessary permits.
- Objective: Facilitates the legal transfer of forest management rights to CFUGs, empowering them to manage their local forests.

→ **DIVISION FOREST OFFICES & COMMUNITY FOREST COORDINATION COMMITTEES (CFCCS)**

Role of the Division Forest Office (DFO): The Division Forest Office plays a critical role in the community forestry framework. The DFO is responsible for authorizing and overseeing CFUGs, ensuring that forest management practices comply with national forestry guidelines. It facilitates the transfer of forest areas to community groups, provides technical guidance, and helps in conflict resolution. Under the Act, the Division Forest Office (DFO) has the power to hand over responsibility for forest management to identified user groups 'who are willing and capable of managing any part of national forests.[13][9]

OTHER KEY SUCCESS FACTORS

→ **ECONOMIC INCENTIVES AND LIVELIHOODS**
Economic benefits are integral to the model. CFUGs can sell timber and non-timber products, using the revenue for community development and conservation. This approach helps regenerate forests and reduce poverty in rural communities.

→ **INTEGRATION WITH NATIONAL CONSERVATION GOALS**
The integration of community forestry with national conservation and climate adaptation goals helped secure broader governmental and societal support, making it a key part of Nepal's environmental strategy.

3.5 Impact of community forests

ENVIRONMENTAL AND SOCIO-ECONOMIC BENEFITS

Increased forest cover and biodiversity improved socio-economic conditions through sustainable resource management.

ECONOMIC LIVELIHOODS

Community forests provide resources for income generation, create employment opportunities, support agriculture, encourage microenterprises and eco-tourism, and reinvest in community development.


Figure 1: https://earthobservatory.nasa.gov/images/150937/how-nepal-regenerated-its-forests
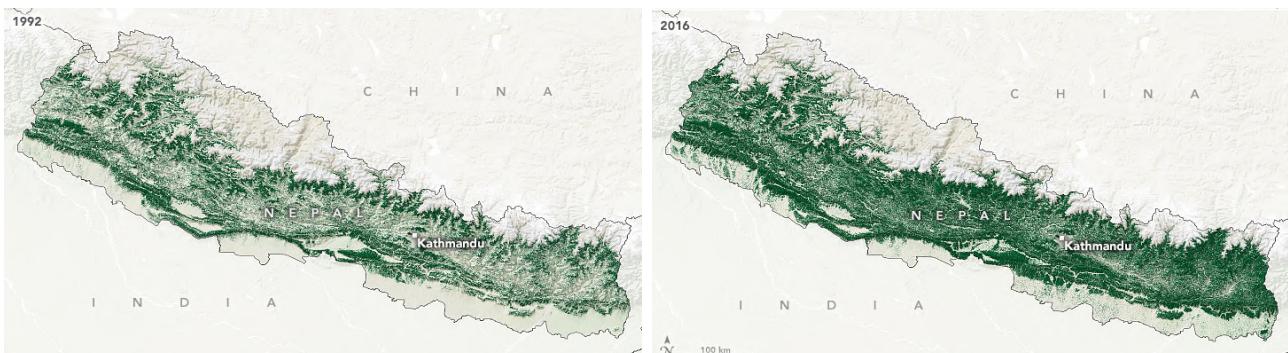
4. CHALLENGES IN COMBATING DEFORESTATION

4.1. Why is combating deforestation challenging?

Overview: Deforestation is influenced by complex interactions of economic, social, political, and environmental factors. Addressing this challenge requires an understanding of the diverse drivers and the specific local contexts, particularly in countries like Nepal, where forest ecosystems vary significantly with altitude.

4.1.1 KEY DRIVERS OF DEFORESTATION

→ QUANTIFYING THE DEFORESTATION
   CHALLENGE

Globally, approximately 10 million hectares of forest are lost each year, equating to about 0.25% of the world's total forest cover annually. This significant loss highlights the urgent need for comprehensive strategies to mitigate deforestation and promote forest conservation and restoration [15].

→ AGRICULTURAL EXPANSION

The Food and Agriculture Organization (FAO) reported a loss of 420 million hectares of forest worldwide between 1990 and 2020, with the trend continuing at a rate of 10 million hectares per year. The FAO also reported that around 90% of this deforestation is attributed to agricultural expansion, with South America, Africa and Asia experiencing the highest net forest losses [16]. The expansion is driven by the need for more land for fewer crops and livestock to support growing populations and global unsustainable food demand.

LOGGING AND INFRASTRUCTURE DEVELOPMENT

Commercial logging operations, often illegal and unsustainable, directly contribute to forest degradation. Moreover, infrastructure projects such as roads, dams, and power lines fragment forest landscapes, generate some habitat loss due to ecological discontinuity, and facilitate further deforestation. The Trans-Amazonian Highway in Brazil increased deforestation rates by up to 200% within 5 kilometers of the road. Satellite imagery showed that this highway led to over 30,000 square kilometers of forest loss by providing easier access for logging and agriculture.

MINING AND RESOURCE EXTRACTION

Mining operations, particularly in tropical and biodiversity-rich areas, lead to significant forest destruction. The demand for minerals and resources, including copper, nickel, oil and gas, drives deforestation both directly and indirectly.

FIRES

Both naturally occurring and human-induced fires are significant contributors to forest degradation and loss, as well as high important carbon emission. For example, [17] estimate that each hectare of tropical forest burned releases approximately 190 metric tons of CO_2. In the Amazon, wildfires in 2019 alone resulted in an estimated 500 million metric tons of CO_2 emissions–comparable to the annual emissions of a major industrialized country. Satellite data and biomass calculations allow researchers to estimate emissions based on the area burned and forest type. In many cases and places, fires are used to clear land cheaply and quickly but can lead to uncontrollable wildfires.

4.1.2 CHALLENGES TO COMBATING DEFORESTATION

WEAK REGULATORY FRAMEWORKS

Globally, forest conservation laws are often poorly enforced due to factors like corruption, limited political commitment, and insufficient resources. The importance of these laws is frequently undervalued within regulatory frameworks, resulting in increased local pressures on natural forests.

LAND TENURE ISSUES

Ambiguous land ownership and tenure rights lead to deforestation challenges, as these ambiguities make it difficult to enforce conservation laws effectively.

ECONOMIC PRESSURES

The immediate economic incentives of exploiting forest lands–such as logging, agriculture, and infrastructure development–often outweigh the longer-term, sustainable benefits of conservation. In Nepal, for example, communities facing poverty and limited access to alternative income sources may turn to logging and land clearing as quicker ways to generate revenue. Agriculture expansion, particularly for cash crops like cardamom or tea in Nepal's forested hill regions, is seen as a more immediate economic opportunity, despite its environmental impact. This short-term gain approach can undermine sustainable forest management, as the benefits of conservation, like ecosystem services, carbon storage, and long-term tourism, are harder to quantify and realize immediately. This creates a cycle where economic pressures drive deforestation, compromising the potential of forests to contribute sustainably to local economies over the long term.

GLOBAL DEMAND FOR COMMODITIES

The international demand for commodities like palm oil, soy, beef, and timber drives deforestation, particularly in countries that are major producers of these goods.

5. OTHER EXAMPLES OF FOREST SOLUTIONS

5.1. Other countries implementing the same community-based approach

Community forests are particularly well-suited to address deforestation in developing countries due to their unique social, economic, and environmental conditions. In many developing countries, rural communities rely heavily on forests for their livelihoods, including resources like firewood, medicinal plants, and non-timber forest products. By granting local communities control over forest management through community forests, they have a vested interest in sustainable practices, balancing immediate resource needs with long-term conservation goals.

In addition, government resources for enforcing conservation laws may be limited in developing regions, making community-led management a more feasible and cost-effective alternative. Community forests also strengthen local governance and empower communities to protect their resources, addressing issues of land tenure and reducing illegal logging and land clearing. This approach taps into local knowledge, aligns with cultural practices, and provides economic incentives for conservation–factors that make community forestry particularly effective and relevant in the context of developing countries.

➔ BOLIVIA

Bolivia has granted forest concessions to indigenous and local communities, empowering them to sustainably manage portions of the Amazon rainforest. These concessions allow communities to harvest resources responsibly, preserving forest ecosystems while generating income. By formalizing community rights to forest resources, Bolivia promotes both conservation and local development, creating a sustainable approach to managing one of the world's largest tropical forests.

➔ MEXICO

In Mexico, Community Forest Enterprises (CFEs) operated by local communities manage extensive forest areas, blending commercial logging with conservation. These enterprises balance economic goals with environmental stewardship, allowing communities to generate revenue from timber sales while ensuring forest regeneration. Mexico's CFEs have become a model for sustainable forest management, demonstrating that local communities can run successful businesses while conserving biodiversity.

➔ INDONESIA'S SOCIAL FORESTRY PROGRAM

Since 2008, Indonesia's Social Forestry Program has designated 12.7 million hectares–roughly 10% of state forests–for indigenous and local community management. This program formalizes customary tenure rights and provides funding for sustainable forest management, community-based conservation, and forest restoration projects. Through this initiative, communities gain legal recognition of their traditional lands, enhancing local stewardship and reducing deforestation pressures on Indonesia's critical forests.[18]

5.2 Other existing solutions

REGULATORY FRAMEWORKS AND GOVERNANCE

→ STRENGTHENING LEGAL PROTECTIONS

Effective natural forest conservation requires robust legal frameworks that clearly define land use rights, restrict illegal logging activities, and regulate land conversion. Successful models include the stringent enforcement of forest protection laws in countries like Costa Rica, which has significantly reduced deforestation rates through legal reforms.

→ SUPPORTING THE ENVIRONMENTALLY HARMFUL SUBSIDIES REFORM LINKED TO 2022 UN CBD GLOBAL BIODIVERSITY PLAN NEGOTIATED IN MONTREAL TARGET 18

EHS unintentionally encourages unsustainable production, the depletion of natural resources, and the degradation of ecosystems. Leading businesses support effective reform as EHS distorts market prices, resource allocation and investment decisions, contributes to unfair competition, creates reputational risks and ultimately prevents leading companies from meeting their own nature commitments. Subsidy reform is a complex challenge, but one that presents a wealth of opportunities for governments, businesses and investors and which can lead to resilient economies [19].

→ IMPROVING GOVERNANCE

Enhancing governance involves increasing transparency and accountability in forest management. This can be achieved by involving multiple stakeholders, including indigenous people and local communities, in monitoring and decision-making processes, and by using technology to make data accessible and actionable.

ECONOMIC AND FINANCIAL INCENTIVES

→ ECONOMIC INCENTIVES FOR CONSERVATION

Programs like Payments for Ecosystem Services (PES) and REDD+ have shown success by providing financial incentives to landowners and communities to maintain forest cover. For instance, Brazil's Amazon Fund has been instrumental in promoting sustainable land use practices and preventing deforestation by compensating local populations for ecosystem services.

→ SUPPORT FOR SUSTAINABLE LIVELIHOODS

Promoting alternative livelihoods that are not dependent on deforestation is crucial. Sustainable agriculture practices, eco-tourism, and other non-destructive uses of natural resources can provide economic benefits without degrading natural forests.

COMMUNITY ENGAGEMENT AND EMPOWERMENT

→ COMMUNITY FOREST MANAGEMENT

Empowering local communities to manage forests sustainably has proven effective in various contexts. Community-managed forests in Nepal are a prime example, where local stewardship has led to improved forest conditions and economic benefits.

→ EDUCATION AND AWARENESS PROGRAMS

Raising awareness about the importance of forests and the consequences of deforestation is essential. Educational initiatives can change local perceptions and foster a culture of conservation, making individuals and communities allies in forest conservation efforts.

TECHNOLOGICAL INNOVATION IN FOREST CONSERVATION

↗ SATELLITE IMAGERY

Utilizing high-resolution satellite imagery enables continuous monitoring of forest cover and canopy density. This technology helps in accurately tracking gains and losses in forest areas, thereby allowing for timely interventions to prevent illegal logging and land encroachment.

↗ STATISTICAL MODELING

Advanced statistical models analyze a combination of anthropogenic factors such as proximity to settlements and infrastructure projects, alongside natural factors like river course shifts or sand dune movements. These models help predict regions at high risk of deforestation, guiding forest management practices and policy decisions to target these vulnerable areas effectively.

↗ PREDICTIVE MONITORING

Implementing early warning systems for landslides can be crucial in forested mountainous areas prone to such events. These systems use a combination of ground sensors, satellite data, and hydrological models to predict and alert local communities and forest managers about potential landslide threats, thus preventing loss of life, property, and forest cover.

↗ DIGITAL GRIEVANCE AND RESOURCE MONITORING

Platforms that capture community grievances and monitor forest resources play a crucial role in involving local populations in forest management. These platforms ensure transparency and facilitate the inclusive management of forests by allowing community members to report illegal activities and participate in decision-making processes.

↗ ECOSYSTEM SERVICE INCENTIVES

Technology can be used to estimate the financial incentives provided to landowners and communities for maintaining forest ecosystems. These calculated incentives encourage the preservation of forests by providing economic benefits to those who implement conservation practices, thus aligning economic interests with ecological goals.

↗ STREAMLINING CARBON CREDIT PROCESSES

Digital MRV technologies simplify and enhance the accuracy of the carbon credit application process. This technology ensures that the carbon savings from forest conservation are properly documented and verified, making it easier for community forests and other conservation efforts to receive financial rewards for their contributions to carbon sequestration.

GLOBAL PARTNERSHIPS

Strengthening international cooperation is crucial for combating global deforestation. This includes sharing technology, data, and best practices, as well as supporting international agreements and cooperation frameworks that aim to reduce forest loss and promote sustainable management.

CONCLUSION

Addressing the complex challenges of deforestation requires diverse, robust solutions that are adapted to local contexts. Community forests stand out as an effective model for harnessing these solutions by empowering local communities to manage and protect their own forest resources. This approach shifts the focus from purely regulatory measures to engaging communities as active stewards of their environment. By involving those directly affected, community forests foster a sense of ownership and accountability that is essential for sustainable management, making conservation efforts more resilient and adaptable.

In addition to engaging communities, community forests align with and strengthen existing policy frameworks. Many countries, including Nepal, have incorporated community forestry into national legislation, creating a structured pathway for local involvement in forest management. This integration not only reinforces local efforts but also brings essential support from government bodies, bridging the gap between policy and practice. When combined with international partnerships, funding, and support, community forests provide a foundation that aligns national and local interests, creating synergy that benefits forest conservation on a larger scale.

Furthermore, the effectiveness of community forests is significantly enhanced by technological advancements utilized by supporting stakeholders. Tools such as satellite monitoring, digital mapping, and mobile applications for resource tracking allow conservation organizations, government bodies, and NGOs to monitor forest health, detect illegal logging activities, and optimize land use planning around community-managed forests. These technologies provide local stakeholders with essential data and insights, reinforcing their sustainable management efforts and helping protect and regenerate forest ecosystems. By integrating traditional community knowledge with modern technological support, community forests form a holistic and adaptive approach to conservation that addresses both local needs and broader environmental goals.

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BCG works with clients to accelerate their climate and sustainability journey. We help them identify and harness climate innovation, embed sustainability at scale into their business, and capture the value they create. Our work is as far-reaching as the challenge.

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