**The Indispensable Role of Foresters and Environmental Managers in Delivering Renewable Energy NDCs**

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 **Introduction**

Across Africa, the escalating climate crisis is driving a rapid shift towards renewable energy sources. This transition, outlined in each country's Nationally Determined Contributions (NDCs) under the Paris Agreement, represents a critical pillar of international climate action. While policymakers and the energy sector are often at the forefront, the success of these initiatives hinges on the often-overlooked expertise of foresters and environmental managers. From the vast rainforests of the Congo Basin to the sprawling savannas of East Africa, Africa's diverse ecosystems offer unique challenges and opportunities for renewable energy development. Foresters and environmental managers play a vital role in ensuring this development aligns with ambitious NDCs, contributing to a more sustainable future for the continent.

 **Understanding NDCs**

Nationally Determined Contributions (NDCs) are unique national plans outlining each country's approach to reducing greenhouse gas emissions and adapting to climate change impacts. They reflect a nation's commitment to sustainable practices, including the adoption of renewable energy sources like solar, wind, hydropower, and biomass. For instance, [Ethiopia's NDC targets a 100% reliance on renewable energy for electricity generation by 2030,](https://unfccc.int/sites/default/files/NDC/2022-06/Ethiopia%27s%20updated%20NDC%20JULY%202021%20Submission_.pdf) a goal that necessitates the expertise of foresters and environmental managers to ensure its environmental sustainability.

 **The Integral Role of Foresters**

Africa's forests, [estimated to cover over 1.7 billion hectares](https://www.fao.org/forest-resources-assessment/en/), are critical natural carbon sinks, absorbing significant amounts of atmospheric CO2. Foresters play a key role in maximizing this natural process and ensuring responsible renewable energy development through various strategies:

1. **Carbon Sequestration and Storage:**

Forests, under the watchful eye of foresters, function as Earth's lungs. They absorb vast quantities of atmospheric carbon dioxide (CO2) through photosynthesis, a natural process where trees convert CO2 and sunlight into energy for growth. This captured carbon becomes stored within the trees themselves and the surrounding soil. Foresters play a critical role in maximizing this natural carbon sequestration by:

* **Afforestation and Reforestation:** Foresters plan and oversee the planting of new trees in degraded areas or previously non-forested land. Initiatives like the Great Green Wall project in Africa, aiming to restore degraded land across the Sahel region, exemplify large-scale afforestation efforts.
* **Sustainable Forest Management:** Foresters implement practices that promote healthy forest growth and minimize deforestation. Selective logging techniques that remove mature trees while allowing younger ones to thrive ensure a continual carbon sink. A prime example is FSC (Forest Stewardship Council) certification, which verifies forests are managed responsibly according to environmental, social, and economic standards.
* **Protecting Existing Forests:** Foresters play a vital role in combating deforestation through forest protection programs and anti-poaching initiatives. The Amazon rainforest, crucial for global carbon sequestration, is a prime example where foresters work tirelessly to prevent illegal logging and land conversion activities.
1. **Sustainable Biomass Production:**

Biomass energy, derived from organic materials like wood and agricultural waste, offers a significant renewable energy source. However, unsustainable harvesting practices can negate the environmental benefits. Foresters play a crucial role in ensuring biomass production is truly sustainable:

* **Selective Harvesting and Forest Management Plans:** Foresters design plans that determine which trees can be harvested based on age, maturity, and overall forest health. This ensures a sustainable yield while maintaining the forest's ecological balance.
* **Short Rotation Coppices (SRCs):** Foresters promote the cultivation of fast-growing tree species specifically for biomass production. SRCs are established on degraded land or alongside existing forests, providing a dedicated and renewable source of biomass without impacting natural ecosystems.
* **Utilizing Agricultural Residues:** Foresters work alongside agricultural experts to find efficient ways to utilize agricultural waste products like corn stover and rice straw for biomass energy production. This reduces reliance on harvesting trees altogether and promotes a more circular bioeconomy.

By implementing sustainable biomass production methods, foresters ensure this renewable energy source contributes to NDC goals without compromising long-term forest health or biodiversity.

1. **Biodiversity and Ecosystem Services:**

Forests provide vital ecosystem services like soil conservation, water management, and habitat for diverse species. The expertise of forestry professionals ensures that renewable energy projects, particularly those involving land-use changes, do not jeopardize these services. By fostering resilience against climate change impacts, sustainable forest management contributes to the broader environmental and social objectives enshrined in NDCs.

Forests provide a multitude of ecosystem services beyond carbon sequestration. They maintain healthy soil, regulate water flow, and offer critical habitat for countless species. Foresters act as stewards of these vital ecosystems:

* **Land-Use Planning for Renewable Energy Projects:** Foresters conduct environmental impact assessments (EIAs) to minimize the footprint of renewable energy projects like wind farms or hydropower dams. They identify and protect sensitive habitats and corridors crucial for wildlife movement. For instance, foresters in Costa Rica have played a key role in siting and designing geothermal projects to avoid disrupting critical rainforest ecosystems.
* **Maintaining Connectivity between Fragmented Forests:** Forestry initiatives can involve creating wildlife corridors between isolated forest patches. This allows for animal migration and gene flow, promoting biodiversity and ecosystem resilience. The Yאט"ה (Yatir) Forest in Israel showcases successful efforts to reconnect fragmented woodlands using strategic planting and corridor creation.
* **Sustainable Forest Management for Ecosystem Health:** Foresters implement practices that promote healthy and diverse forest ecosystems. This includes controlling invasive species, promoting native plant regeneration, and managing natural disturbances like wildfires. The Kasigau Corridor REDD+ project in Kenya is an excellent example of how sustainable forest management can contribute to biodiversity conservation and community development.

 **The Crucial Contribution of Environmental Managers**

**1. Environmental Impact Assessments (EIAs):**

Environmental managers conduct EIAs to assess the potential impacts of renewable energy projects on natural ecosystems. They identify and mitigate negative consequences, ensuring renewable energy infrastructure doesn't harm surrounding habitats. This proactive approach safeguards biodiversity and contributes to the preservation of the natural balance.

**2. Resource Management:**

The success of renewable energy initiatives hinges on responsible natural resource management. Environmental managers oversee the sustainable use of resources – such as water for hydroelectric projects and land for wind and solar farms. They ensure project development adheres to environmental preservation goals, fostering harmony between energy generation and sustainable development.

**3. Policy Development and Implementation:**

Environmental managers are critical in developing and implementing environmental regulations on renewable energy. They collaborate with the public and private sectors, alongside non-governmental organizations, to create policies promoting sustainable practices. By integrating environmental considerations into policy frameworks, they contribute to the creation of an environment conducive to effective NDC implementation.

 **Collaborative Synergies**

Effective execution of renewable energy NDCs necessitates collaboration. The unique knowledge and perspectives brought to the table by environmental managers and foresters are crucial for comprehensive climate action. Their roles intersect with other industries, creating synergies that enhance the effectiveness of renewable energy projects.

* **Interdisciplinary Collaboration:** When energy specialists, urban planners, agricultural experts, foresters, and environmental managers collaborate, renewable energy projects become socially and environmentally just. Tackling the intricate challenges of climate change requires a multi-disciplinary approach, fostering the development of integrated solutions.
* **Community Engagement:** Environmental managers and foresters often work closely with local communities, ensuring their inclusion in decision-making processes. This engagement ensures renewable energy initiatives meet local needs and garner public support, both essential for long-term project viability.
* **Monitoring and Evaluation:** Continuous monitoring and evaluation are crucial to gauge the overall effectiveness and environmental impact of renewable energy installations. Foresters and environmental managers establish frameworks for ongoing assessment, ensuring projects remain aligned with climate commitments and adapt to evolving conditions.

**Conclusion**

Realizing ambitious renewable energy NDCs hinges on the expertise often overlooked: foresters and environmental managers. From maximizing Africa's vast carbon sinks through sustainable forestry practices to ensuring minimal environmental impact of renewable energy projects, their contributions are indispensable. Their collaboration with policymakers, energy specialists, and local communities fosters a multi-faceted approach crucial for a sustainable future powered by clean energy and a healthy planet.

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