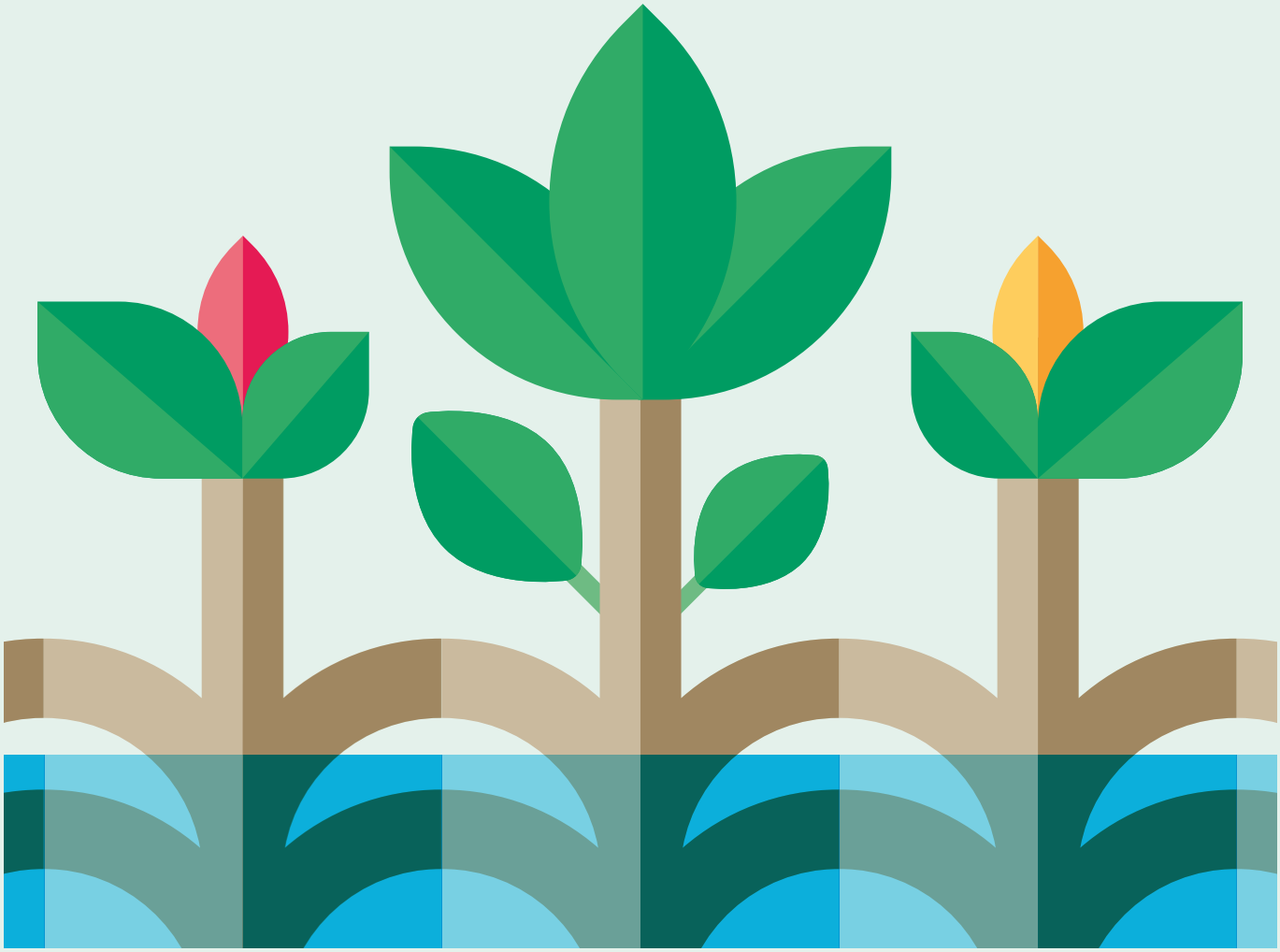
#2 CLIMATE RESILIENCE CASE STUDIES

Strengthening Climate Resilience in Cameroon

Women-Led Mangrove Restoration and Agroforestry



WRF FRM ML

United Nations Decade of FAMILY FARMING 2019-2028

Co-funded by the European Union

Strengthening Climate Resilience in Cameroon

Women-Led Mangrove Restoration and Agroforestry

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1. **Context:** Cameroon, its forests, and the climate emergency



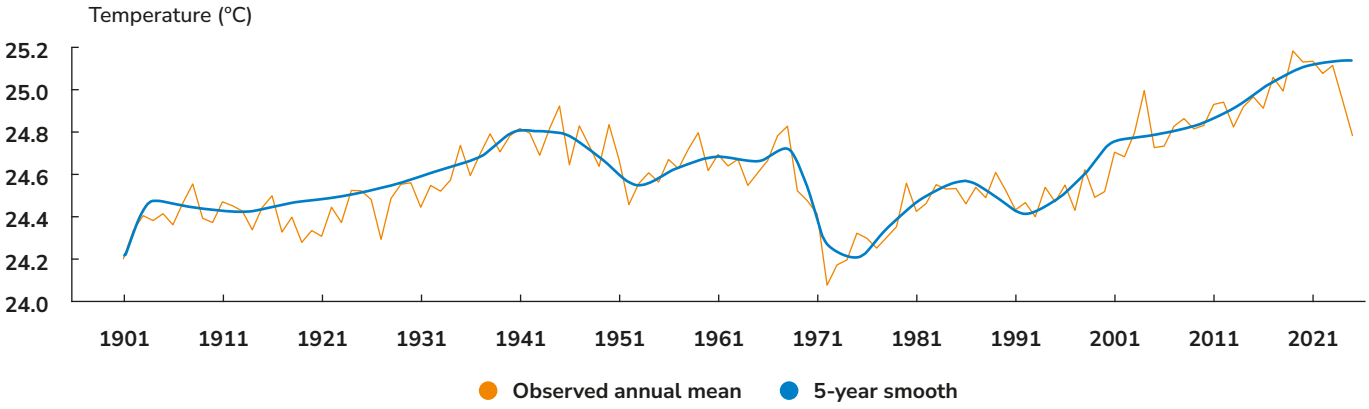
Cameroon occupies a unique position in Central Africa, often called "Africa in miniature" for the extraordinary diversity of its ecosystems, which range from dense equatorial rainforests and coastal mangroves in the south to highland savannahs and semi-arid zones in the north. It is home to the Congo Basin's second-largest forest, one of the world's most vital carbon sinks, and holds some of the most ecologically significant coastal ecosystems on the continent: **Cameroon's mangroves are the sixth largest in Africa**, the first in Central Africa, and among the largest in the world, covering over 200,000 hectares grouped across three main areas — the Rio Del Rey estuary (54%), the Cameroon Estuary (45%), and the Ntem Estuary[1]. Yet this ecological wealth is under severe and accelerating pressure, from both human activity and a changing climate.

A climate already shifting

Cameroon is experiencing increasingly severe climate impacts, particularly in its northern regions. Temperatures have already risen by 0.7°C, extreme weather events are becoming more frequent and intense, and rainfall has decreased by approximately 2.2% per decade, significantly affecting water availability for agricultural production[2].

Looking ahead, projections indicate a deepening divide: already-wet southern regions will receive more rainfall, while drier northern regions will become more arid, with temperatures across the country potentially rising by up to 1.5°C in the north[3]. For millions of Cameroonians **whose food security, livelihoods and cultural life depend on forest and coastal ecosystems**, these changes translate into **disrupted fishing seasons, reduced crop yields and increasing vulnerability to floods and droughts**.

1. Ngaunkam Shokoleu et al, 2024.
2. Cameroon National Climate Change Adaptation Plan, PNACC, 2015.
3. World Bank Climate Knowledge Portal.



Observed Timeseries of Annual Average Mean Surface Air Temperature- World Bank, 2026.

Forests under pressure

Cameroon lost nearly 173,000 hectares of natural forest in 2024 alone, releasing 109 million tonnes of CO_2. **Between 2002 and 2024, the country lost 1.07 million hectares of primary moist forest — a 5.6% reduction in total primary forest cover, with 44% of that loss driven by permanent deforestation**[4]. Existing data from the early 2000s already indicated that only 25% of Cameroon's forests remained undisturbed. Across the Congo Basin, including Cameroon, oil drilling, mining and industrial agricultural expansion are driving deforestation at a rate of approximately 220,000 hectares per year, and forest loss accounts for an estimated 12–15% of total annual global greenhouse gas emissions.

Cameroon's mangroves tell a particular story. Their cover has declined continuously over the past four decades: mangrove areas covering over 70,000 hectares were severely depleted between 1980 and 2006 alone, suggesting that in just 30 years, roughly half of the country's mangrove regions had disappeared, particularly in the **Cameroon Estuary, home to communities like Manoka,** where the loss of mangrove cover has directly threatened the livelihoods and food security of thousands of coastal families.[5] The drivers are multiple — demographic pressure, urbanisation, overexploitation of mangrove wood for fish smoking, unconventional fishing practices, and inadequate governance — compounded by the natural causes of rising temperatures, unusual storms and flooding brought by climate change.

70,000

hectares of mangroves lost in 26 years

Between 2002 and 2024, Cameroon lost 1.07 million hectares of primary moist forest — a 5.6% reduction in total primary forest cover, with 44% of that loss driven by permanent deforestation.

4. Global Forest Watch.
5. Mumbang et al., Forests, MDPI, 2025.

Women at the intersection

It is the **rural women of Cameroon's forest and coastal communities who bear the heaviest burden of this double crisis** (climate and food security). In Cameroon, women make up the majority of workers in the informal agricultural sector and are primarily responsible for their households' food security, depending on forests and coastal ecosystems for food, income and fuel[6]. When mangroves disappear, women earn less from fishing and have less to feed their families. Yet despite being **the backbone of these ecosystems' daily management,** they have limited access to biodiversity programmes and decision-making mechanisms, **and are systematically excluded from the land tenure and governance structures** that would allow them to formalise and scale the restoration work they are already doing[7].

It is in this context that the work of **REFACOF** and the women of Cameroon's forest communities takes on its full significance: a country navigating accelerating climate impacts while struggling to protect one of the world's most critical forest ecosystems.



Women

make up the majority of workers in the informal agricultural sector and are primarily responsible for their households' food security.



Policy framework

Cameroon's climate and forest commitments provide an important backdrop for this case:

- **Forest Law No. 94/01 (1994) and its 2024 update.** Law No. 2024/008 of 24 July 2024 lays down revised forestry and wildlife regulations that now include mangroves as a category of managed forest — a significant step toward their legal protection.

6. CIFOR-ICRAF, 2024.
7. REFACOF, Restore Her Rights, 2024.

- **Douala-Edea National Park (2018).** The gazettement of the Douala-Edea Wildlife Reserve as Cameroon's first national terrestrial and marine park in 2018 now places 39,982 hectares of mangroves and 99,957 hectares of marine habitat under full protection.
- **Nationally Determined Contribution 3.0 (NDC 3.0, 2026).** Cameroon submitted its updated NDC 3.0 in June 2026, reaffirming its commitment to reduce greenhouse gas emissions and strengthen climate adaptation across its five agro-ecological zones. The NDC prioritises forestry, agriculture and land use as key sectors, and recognises the critical role of forest ecosystems in Cameroon's carbon balance.

39,982

hectares of mangroves

99,957

hectares of marine habitat under full protection

2. **Building Climate Resilience:** Agroforestry and women-led mangrove restoration

Mangroves: ecosystems at the intersection of food security, climate resilience and biodiversity

Mangrove forests are among the most productive and multifunctional ecosystems on earth. They provide a wide variety of resources and ecosystem services that are very important to the survival of the populations living around this ecosystem and its exceptional biodiversity. These include **fish products, timber for construction, wood energy, coastal protection, pollution reduction, carbon sequestration**, and more.[8]

Their role in food security is direct and concrete. Non-agricultural activities — including the collection of firewood, fish,

8. Restore her rights. REFACOF, 2024.



10%

of global tropical deforestation emissions come from mangroves

crabs and prawns from mangroves — represent an important source of income for communities living around these ecosystems. Mangroves serve as **nursery habitats for fish and shrimp species that are critical to local diets and livelihoods:** the importance of mangroves in fisheries is particularly apparent for species which depend on mangrove forests for shelter during the juvenile stage.[9]

Their role in climate protection is equally vital. Mangrove ecosystems are crucial to fighting climate change because they are **important carbon sinks that efficiently absorb large amounts of carbon dioxide** from the atmosphere and store it in their roots and sediment, thereby mitigating the effects of global warming. Additionally, mangroves' dense root systems help stabilise coastlines, preventing erosion brought on by extreme weather events and rising sea levels.

Yet these ecosystems are disappearing at an alarming rate. Mangrove conversion and deforestation account for an estimated 10% of the world's total emissions from tropical deforestation, equivalent to 0.08 to 0.48 Pg CO_2e per year. Between 1980 and 2006, **mangrove forests covering over 70,000 hectares in Cameroon were severely depleted** — suggesting that in 30 years, about half of the country's mangrove regions had disappeared, particularly in the Cameroon estuary[10].

9. Ngaunkam Shokoleu et al., ASC-TUFS Working Papers, 2024, citing Aye et al. 2019.
10. Mumbang et al., Forests, MDPI, 2025.

Women at the center of mangrove restoration. REFACOF's Initiative: a journey of ground-level restoration and the food security dimension

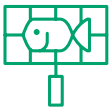
The **African Women's Network for Community Forest Management (REFACOF)**— was founded in 2009 by agronomist and social forester Cécile Bibiane Ndjebet. REFACOF stems from the desire of women from different countries in West and Central Africa to play a more active role in ongoing continental and international land and forestry reform processes. Today it operates as a regional network active across 20 countries (West and Central Africa and Madagascar), with its principal operations anchored in Cameroon, where it concentrates its efforts across three major mangrove zones: the Cameroon Estuary, the Rio Del Rey and the Rio Ntem.

REFACOF aims to promote the land and forest rights of rural women in Africa and to influence policies, laws, decisions and practices for gender equity in tenure. Its work rests on a foundational insight: women are really driving restoration. They are **reforesting degraded areas, they plant trees, they develop nurseries, they do agroforestry**. Even those engaged in livestock production have trees, keeping the forest alive.

One of the communities where this work takes shape is Manoka, an island in the Cameroon Estuary, south of Douala, home to an estimated 45,000 inhabitants from indigenous communities (the Malimba and the Bakoko) as well as people from several neighbouring countries. Here, **REFACOF's work encompasses the full arc of restoration:** establishing nurseries and producing mangrove seedlings; transplanting young plants and monitoring their growth; providing on-site training in reforestation techniques; supplying equipment for the sustainable use of mangrove wood in fish smoking; and organising inter-community exchange visits to share knowledge and strengthen collective practice.

Critically, REFACOF also addresses the root cause of mangrove overexploitation: women fish smokers depend on mangrove wood as their primary fuel source. By introducing **improved fish-smoking stoves** — built with stabilised earth briquettes and using up to 50% less wood than traditional methods — REFACOF has **reduced pressure on mangrove wood,** lowered costs for women fish smokers, and improved their health, safety and working conditions. Combined with its work promoting women's leadership in forest governance, this initiative has **reduced mangrove degradation, improved livelihoods, and reshaped community perceptions of women's roles in natural resource management.**





Improved fish-smoking stoves

built with stabilised earth briquettes and using up to 50% less wood than traditional methods.



EDIMO Emma, fish smoking producer, Manoka.

“It is a restoration organisation that gave us training. They trained us on how to collect, how to transplant, how to plant. In these six hectares, we found twenty thousand seedlings, supported by the women’s network. Thanks to this mangrove, there is a multiplication of fish. Thanks to this mangrove, our smoking business works. Thanks to this mangrove, we have health”.

Edimo Emma, community member of Manoka, Cameroon Estuary (Video testimony, WRF and REFACOF, 2026).



Results and impact of **Women-led climate action.**

The scale of REFACOF's restoration work in Cameroon is significant and documented. Between 2022 and 2026, women supported by REFACOF have restored **313 hectares of mangroves** across the communities/villages of Mbenguè Dikoumè, Manoka, Londji and Campo:[11]

	817,500 mangrove seedlings produced and introduced into the soil.
	185 women, 65 men and 98 young people directly involved, including 35 women and 12 young people in Manoka.
	Return of fish to reforested areas — the primary resource for community survival.
	Women equipped with the knowledge, skills and organisation to replicate and scale the process.
	Significant reductions in mangrove wood consumption achieved through the introduction of improved fish-smoking stoves.

In Cameroon's inland zones, an additional **785 hectares** of forest have been restored, with 344,000 seedlings produced.

REFACOF's model has also proven replicable beyond Cameroon, with restoration work underway in Côte d'Ivoire, the Democratic Republic of Congo and Benin — demonstrating that women-led, community-rooted approaches to forest restoration can travel across contexts and ecosystems.

11. REFACOF efforts restauration in Cameroon database.

3. Connecting local action to global policy: REFACOF, REDD+ and Cameroon NDCs

REFACOF's work is not limited to planting and maintaining trees and forests. Since its foundation, the organisation has worked to ensure that women's contributions to forest restoration are recognised and remunerated within international climate finance mechanisms, most notably REDD+.

REDD+ is a United Nations–backed framework that aims to curb climate change by halting the destruction of forests. REDD stands for 'Reducing Emissions from Deforestation and Forest Degradation'; the '+' symbol implies that its implementation also includes components of conservation, sustainable forest management with the participation of local communities, and the enhancement of forest carbon stocks.

Through its continent-wide advocacy work, REFACOF has proposed forest policies to governments in 20 African states to secure women's rights in forestry and natural resource management. This policy advocacy — making the case that women must have a seat at the table in REDD+ processes, carbon market negotiations and national forest governance — is as central to REFACOF's strategy as the on-the-ground restoration work itself[12].

REFACOF has proposed forest policies to governments in 20 African states to secure women's rights.

At the international level, countries translate their climate commitments **into Nationally Determined Contributions (NDCs),** the concrete plans each government submits under the Paris Agreement. In June 2026, Cameroon submitted its third NDC, setting a 41% economy-wide greenhouse gas reduction target by 2035, with a strengthened focus on the AFOLU sector — Agriculture, Forestry and Land Use — and explicit commitments to green jobs and training for women and young people. The NDC recognises mangroves as one of Cameroon's six principal ecosystems, concentrated along the coastal zone, as part of the country's exceptional biodiversity — home to 8,300 plant species and ranking fourth in Africa for flora richness[13].

12. Forêt, REDD et participation des femmes au Cameroun.
13. Cameroon NDCs, 2026.



REFACOF's work sits at the intersection of these commitments. By restoring mangrove ecosystems, training women in nursery production and replanting, and building community-led governance over forest resources, REFACOF provides the on-the-ground infrastructure to translate national targets into lived reality.

REFACOF's restoration work also contributes directly to Cameroon's commitment under the AFR100 initiative to restore 12 million hectares of land by 2030, as part of the UN Decade of Ecosystem Restoration.

Building community-led governance over forest resources, REFACOF provides the on-the-ground infrastructure to translate national targets into lived reality.

4. Women-lead climate action: Lessons from the field and recommendations for the future

The work of REFACOF and the women of Cameroon's mangrove communities offers lessons that extend far beyond a single reforestation project. In a context of accelerating climate impacts, rising sea levels, increasingly severe storms and coastal flooding, and the growing unpredictability of rainfall, and where women remain systematically excluded from the land and governance structures that shape climate responses, four key lessons emerge, each carrying a clear recommendation.



Climate policy needs a gender lens and women need rights over land.

Women are on the front line of climate change in **Cameroon's coastal communities, and they are already responding to it. Yet without secure land and forest tenure, their contributions** cannot be formalised, scaled or rewarded. Climate adaptation plans, NDCs and REDD+ processes must recognize women as rights-holders and decision-makers. This means integrating a gender lens into national forest governance, ensuring women have a seat at the table in climate negotiations, and securing their access to land as a prerequisite of any restoration programme.

Women's organisations are the infrastructure of climate action.

Behind every seedling planted in Manoka there is a network that trains women in nursery techniques, provides equipment, facilitates inter-community exchanges, and simultaneously advocates at the national and continental level for the policy changes that make this work sustainable. REFACOF's model shows that women's organisations are not a complement to climate action: they are its infrastructure.

This model is also scalable. REFACOF's expansion across different countries in West and Central Africa demonstrates that community-rooted, women-led approaches to forest restoration can be replicated beyond any single context. But scaling requires sustained investment. Sustained, multi-year funding through national climate plans and international climate finance mechanisms is essential to support and expand what is already working.



Family farming as a multifunctional climate solution.

Agriculture is often framed as a driver of deforestation and biodiversity loss — and in its industrial form, it frequently is. But the women of Cameroon's mangrove communities demonstrate a fundamentally different model: **family farming as a multifunctional practice that uniquely integrates the environmental, social and economic dimensions of agriculture**. Food production, ecosystem restoration and community resilience are not separate goals, they are achieved together, through the same hands, on the same land.

At a time when the global food system accounts for between 21% and 37% of greenhouse gas emissions, this is a powerful reminder that agriculture can be part of the solution when it is practised at a human scale, rooted in local knowledge, and supported rather than replaced by external intervention.

Mangroves deliver a dual climate benefit, and deserve investment on both counts.

Mangrove restoration is not only an adaptation strategy. Mangrove forests sequester carbon at rates far exceeding those of terrestrial forests, making them one of the most powerful natural climate mitigation tools available. At the same time, they stabilise coastlines, reduce erosion and buffer communities against the storm surges, flooding and sea level rise that climate change is intensifying. Every hectare restored in Cameroon's coastal zone is simultaneously protecting a community and storing carbon. This dual benefit must be reflected in how mangrove restoration is financed and valued within international climate frameworks.

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