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■ CLIMATE CRISIS

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COVER PHOTO: UNSPLASH



Enhancing innovative solutions for community resilience

Monica Borrero

Monica Borrero is working as a global programme manager at UNDP- Adaptation Fund Climate Innovation Accelerator (AFCIA), United Nations Development Programme (UNDP).

Innovation does not only mean new technologies, but also different approaches to implement practices, business models and promote behavioral changes.

UNDP has worked with partners and countries since 2008 to mobilize US\$1.2 billion from vertical funds and bilateral donors and leveraged an additional \$3.1 billion from public and private partners via co-financing to implement 220 adaptation projects across 93 countries. Many of these projects are innovative, some are groundbreaking.

In this line of thinking, UNDP believes that promoting adaptation strategies within vulnerable communities at the grass-roots level is an effective approach to enhancing their capacity to withstand the impacts of climate change. This lies at the heart of the Adaptation Fund Climate Innovation Accelerator (AFCIA), a UNDP-managed programme that aligns with the implementa-

tion of both the Paris Agreement and the 2030 Sustainable Development Agenda. In this Climate Tribune Magazine edition, readers are invited to read stories about the innovative solutions supported by the UNDP-AFCIA programme.

The UNDP-AFCIA programme sits under the UNDP-led multi-partner platform, the Adaptation Innovation Marketplace. Launched by the UNDP Administrator Achim Steiner in 2021, this strategic platform aims to promote scaled-up climate change adaptation at the local level, focusing on civil society, non-government organizations, women, and youth innovators. The marketplace crowds in resources, know-how, and technical support to facilitate local access to climate change adaptation finance.

UNDP-AFCIA is a \$16 million programme funded by the Adaptation Fund and the European Union and it is designed to support the development of locally-led, innovative adaptation practices, tools, and technologies in communities from developing countries. It is currently supporting 44 civil society organizations across 33 countries globally, through the award of micro (\$60,000) and small grants (\$125,000).

The UNDP-supported programme is on track to develop more



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than 20 scalable innovative adaptation solutions, benefiting a substantial 634,000 people, with almost half of them women. Grantees have achieved remarkable outcomes, including raising more than \$1 million through crowdfunding efforts. Notable successes encompass extensive environmental restoration, with the implementation of regenerative agricultural practices on more than 1,660 hectares of land and the documentation of more than 50 traditional knowledge-based climate adaptation measures.

Over the past two years, we've witnessed remarkable changes focusing on the grassroots level, driven by the dedication of these remarkable community leaders. These groundbreaking solutions have been tailored to the unique circumstances and requirements of each community. From Asia to America, we've gained insights and knowledge, and played a role in expanding these initiatives using UNDP-AFCIA's resources.

In Brazil, for example, local partner Centro Ecologico is improving food security and protecting the local ecosystem for Indigenous Peoples by introducing and expanding the production of acai berries; in Cambodia, 40 women are benefiting from growing and selling of crickets, earning \$2,600 for the first tonne of crickets that was farmed as an alternative food source lead by the Centre for Livestock and Agriculture Development (CelAgrid); in Uganda, local partner Sample Uganda Aquaponics Association is training local communities aquaponics technology through an innovative lease-to-own model to promote aquaponics and horticulture-related production targeting an expansion plan of reaching \$21 million of the local vegetable and fish market; in Colombia, Clean Tech Hub aims to inspire, mobilize,

“While UNDP-AFCIA is a recent initiative, it's crucial to note that this community-centered approach is not new”

connect, and catalyze green entrepreneurship through turnkey programs with hundreds of startup businesses.

While UNDP-AFCIA is a recent initiative, it's crucial to note that this community-centered approach is not new. UNDP has been providing support to NGOs, civil society organizations, Indigenous Peoples, and local communities for more than three decades in identifying, planning, executing, and assessing local projects aimed at tackling a range of local, national, and global concerns. Some of the UNDP-led programmes that support locally led action and sustainable entrepreneurship include the GEF-Small Grants Programme, the UNDP Accelerator Labs, the Equator Prize or the Ocean Innovation Challenge, and they fo-

cus in different stages of ideation, incubation and acceleration. The UNDP-AFCIA programme and the AIM platform focus on the acceleration stage.

We believe that by setting up pilot projects and carefully monitoring their results, insights and best practices can be fed into policy processes, helping to scale up successful approaches. Likewise, sharing best practices can help individuals/organizations in different regions of the world to better prioritize their options based on need and capacity.

With one of UNDP-AFCIA programme's objectives to facilitate the exchange of experience and enhance the knowledge base of these local champions, UNDP recently hosted the 2023 UNDP-AFCIA Global Workshop from 17-19 October in Manila, the Philippines, where we spotlighted a diverse range of innovative solutions bolstered by these small grants. This event brought together participants for training, peer-to-peer learning, and networking sessions covering topics such as 'Funding Approaches for Sustainable Development,' 'Impact and Business Development,' and 'Funding and Innovation.'

On the other hand, UNDP-AFCIA is strongly focusing in supporting the local partners to accelerate their work by providing them with specialized technical assistance, networking platforms, collaboration with top MBA and EMBA University programmes, engaging them with family investment offices, philanthropy and corporate foundations to support adaptation innovations and exploring together innovative ways for sustainable finance, such as blended finance approaches to scale up their solutions.

The commitment of these local partners extends far beyond our programme, warranting international acknowledgment and assistance, as demonstrated by UNDP-AFCIA cohort-one Dipayan Dey (from South Asian Forum for Environment) and Tz-innia Carranza (from Espacio de Encuentro de la Culturas Originarias A.C.), both finalists in the Local Adaptation Champions Awards 2023 under the "Business Adaptation Solutions" and "Capacity Building" categories respectively. From UNDP-AFCIA cohort-two we would also like to recognize Shah Rafayat from Footsteps Bangladesh and Unathi Sihlahla from INMED South Africa, who are also finalists in the same award under the "Business Adaptation Solutions" category. We look forward with anticipation to the December ceremony hosted by the Global Centre for Adaptation, and we take immense pride in having one of our grantees showcased in this prestigious event.

All of this intense and successful work was made possible with the support of numerous partners and the inspiration from individuals like Professor Saleemul Huq. As we were finalizing this editorial, we received the sad news of his passing on October 28th.

Saleemul Huq was a brilliant scientist whose expertise and generosity led to the establishment of numerous networks aimed at bolstering community resilience. His contributions extended beyond the realm of climate change discourse, as he dedicated tireless efforts to seeking and advocating for solutions to adapt to

a changing climate. He understood the imperative for developing nations to adapt to a warming planet and devoted many years of his life to bringing critical issues like loss and damage to the forefront of UN negotiations. In 2022, he earned the distinction of being selected as one of Nature's top 10 scientists, recognized as a pioneering figure in the field of climate science.

He served as the head of the International Center on Climate

“ Transformative adaptation action is only possible by ensuring that communities, enterprises, and local actors are at the heart of driving this change ”

Change and Development (ICCCAD) in Bangladesh, a pivotal partner for us. Personally, I had the privilege of meeting him in Bangkok last May 2023 at the CBA17 Conference, where we had a meaningful conversation about the UNDP-AFCIA program and the remarkable work being undertaken by ICCCAD. I also mentioned to him our plan to highlight impactful stories from the field in this version of the Climate Tribune Magazine. He provided full support through his ICCCAD colleagues to co-develop some of these stories, and expressed genuine interest in reading and learning from the innovative solutions put forth by these local champions.

We dedicate these stories to him and the monumental contributions he made for the betterment of our planet.

You can discover more remarkable projects from our grantees in the upcoming edition of Climate Tribune Magazine, where you'll have the opportunity to delve into 8 personal stories of these local champions who inspire their communities to join the battle against climate change.

Transformative adaptation action is only possible by ensuring that communities, enterprises, and local actors are at the heart of driving this change. Working together with our partners we are confident that local communities and stakeholders can innovate and accelerate adaptation, finding more solutions for resilience building.

Enjoy the stories!

Monica Borrero, Global Programme Manager, UNDP- Adaptation Fund Climate Innovation Accelerator (AFCIA) United Nations Development Programme (UNDP)



COURTESY

Utilizing Indigenous Knowledge and Practices for Climate Resilience

The name of the association, “Bukidnon Umayamnon Tribe Kapu-unan To Mga Datu Association or BUKDAA” originates from the tribal leaders of the Bukidnon Umayamnon Tribe, which means the Council of Elders (COE).

Rukhsar Sultana

With the belief that indigenous people's knowledge, and practices can help to save the planet from the impact of climate change, this story reflects solutions from the Bukidnon Umayamnon Tribe of the Philippines. Despite contributing insignificantly to the global issue of climate change, the aftershocks of a changing climate have wreaked havoc on this community. Nevertheless, climate change is not the sole obstacle for the community; deforestation and biodiversity loss have also emerged as significant threats. This has led to consequences in cultural aspects, youth's lives, and livelihoods.

With the help of the UNDP-Adaptation Fund Climate Innovation Accelerator (AFCIA), Adaptation Fund, and the European Union, the members of this community could engage in and dedicate themselves to safeguarding their environment. Their community-led project focuses on solutions like climate change adaptation and mitigation, such as planting bamboo and cacao trees. Both species are climate resilient as they prevent soil erosion; restore soil, and help regenerate the denuded forest. This project has allowed them to sustain

their livelihoods as well as safeguard the well-being of future generations - affirms Datu Laaw (Fernando Damaso), tribal leader, of the Bukidnon Umayamnon Tribe of the Philippines.

The name of the association, “Bukidnon Umayamnon Tribe Kapu-unan To Mga Datu Association or BUKDAA” originates from the tribal leaders of the Bukidnon Umayamnon Tribe, which means the Council of Elders (COE). This name was inspired by the significant challenges that the community faced during the grant period.

One of the major challenges that the community faced during the implementation of the project was a delay in fund transfer due to a sudden change of international bank policies in the Philippines. In addition to funding challenges, the community encountered flooding and landslides during the project period. Although some plants suffered damage, the community had proactively prepared themselves to address the situation by securing extra planting materials for replanting.

To help in the solution process and generate sustainable income for the Bukidnon Umayamnon Tribe, the community planted 10 hectares of giant bamboo and 10 hectares of cacao along the banks as a way of green cover along the second largest river system in the Philippines, the Pulangi River. All of the planting materials were collected from a reliable nursery for this project to meet the project's timeline. The COE entrusted the management of this massive plantation to the different tribal leaders to be in charge of their respective management areas.

Planting bamboo has numerous benefits as it is considered an endemic and the tallest grass species in the Philippines and is well adapted to riverbanks and areas with high soil moisture. It helps prevent riverbank erosion and further loss of fertile lands. This helps protect communities, crops, and domesticated animals from flooding. The bamboo also improves surface runoff water quality that reaches the river systems. Giant bamboo is a fast-growing versatile resource, easy to propagate, a source of food, and a source of construction material for traditional houses. This implies that the more giant bamboo is used in the architectural and construction sectors, the more we contribute to preserving trees in the forest, preventing unnecessary cutting. Additionally, giant bamboo has excellent carbon sequestration properties, which directly help contribute to climate change mitigation.

While it takes about seven years to derive sustainable income (under a sustainable management system) from giant bamboo, cacao trees start to produce sustainable income for farmers in their third year. Cacao trees also have considerable carbon sequestration properties and harvesting cacao fruits/pods will not require cutting the cacao trees, preventing soil erosion. Furthermore, bamboo is used to build houses because it is more flood and storm-resilient, considering the Philippines is more prone to cyclones, storms and typhoons.

The project has effectively addressed two critical issues:

forest deforestation and poverty among the indigenous community. Poverty drives forest depletion as locals lack alternative livelihoods, leaving them vulnerable to climate change. Forest loss increases flood risks during typhoons, causing more harm, as well as destroys biodiversity habitat resulting in biodiversity loss.

During this period, young individuals actively participated in the project, as they represent the second and third generations of the community and are being groomed for significant roles in the Ancestral Domain management. Therefore, basic training on financial management systems was provided to the young women to help them prepare for the future, as well as participate in the Youth Summit on Biodiversity Conservation organized by a partner organization.

This project offers temporary employment, serving as an alternative income source for the community. At the initial stage of the project, income has not been generated from the plantations yet. But when there is income generation, the

“Planting bamboo has numerous benefits as it is considered an endemic and the tallest grass species in the Philippines and is well adapted to riverbanks and areas with high soil moisture”

members of the farmers' group will receive 30% of the plantation income, the rest will be designated for the Council of Elders to support livelihood projects. Additionally, this project has promising opportunities, such as raising bamboo and cacao planting materials and other potential livelihoods. Not to mention, Giant Bamboo is the current main raw material for the Bamboo engineered products along the value chain.



Tribal leaders in discussion Meetings

COURTESY

Through this initiative, the community has made significant strides in environmental stewardship and livelihood diversification. Moving forward, the community is committed to safeguarding and nurturing the existing bamboo and cocoa plantations while delivering ongoing training, and if resources warrant, additional hectares of Bamboo and Cacao will be established. When funds start coming in, 70% will be kept for a shared fund dedicated to livelihood projects, with the Council of Elders determining expenditure allocation at a later stage.

About this story:

This story has been co-created with the support of ICCCAD, UNDP, and BUKDAA, in the framework of the UNDP managed - Adaptation Fund Climate Innovation Accelerator (AFCIA). The UNDP AFCIA programme counts the financial contributions from the Adaptation Fund and the European Union and has awarded 44 micro and small grants to locally-led organizations across 33 countries worldwide, accelerating their innovative solutions to build resilience in the most vulnerable communities.

UNDP-AFCIA, is one of the funding windows anchored under

“Through this initiative, the community has made significant strides in environmental stewardship and livelihood diversification”

the Adaptation Innovation Marketplace (AIM), a multi-stakeholder strategic platform that promotes scaled-up adaptation at the local level, launched by UNDP Administrator Achim Steiner at the Climate Adaptation Summit in January 2021.

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Navigating hope: SMK's transformational journey in empowering Pohnpei through aquaculture practices



Picture-01 Seaweeds collection from the Sea



COURTESY

In the western Pacific Ocean, the idyllic small island of Pohnpei of the Federated States of Micronesia is home to a rich diversity of marine life. However, this diverse ecosystem is under threat from climate change and other human activities. Recognizing the urgent need to protect these invaluable natural resources, Sokehs Menin Ketengesed (SMK), an NGO based in Pohnpei, embarked on an ambitious initiative to implement sustainable seaweed harvesting and marine conservation practices.

They were able to embark on this journey with the help of funding from the UNDP-Adaptation Fund Climate Innovation Accelerator (AFCIA), a programme that aims to foster and accelerate innovative technologies, practices, and business models for local adaptation through tapping into the incredible potential of NGOs, civil society, women and young innovators.

Their guiding principle, “Tuhken Wahr Tipwitipw, Wahr Seisei” translated to “Sticks of the canoe are breaking, but

the canoe continues to sail”, highlights their determination as they continue to work with coastal communities driving change. We interviewed Mark Johnny, the President of the Sokehs Menin Ketengesed Board.

Rooted in community engagement, SMK has been making an impact in the community through targeted awareness campaigns on sustainable management of resources, and adoption of traditional fishing techniques. This has successfully shifted locals to focus away from mass fishing for the market, to taking ownership of the preservation of natural resources. Additionally, they have provided employment through the creation of sustainable blue jobs, particularly the appointment of community conservation officers. This has empowered individuals to take ownership of their work and thus has been instrumental in contributing to the overall success of marine protection efforts. They continue to fortify Pohnpei’s Marine Protected Areas (MPAs) against the consequences of climate change while simultaneously uplifting local communities.



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“One of the standout achievements has been the creation of a seaweed farm, a departure from traditional farming methods”

Moreover, The UNDP-AFCIA grant has been instrumental in amplifying SMK’s footprint. They have made incredible efforts to harness local knowledge to implement sustainable seaweed management practices that prioritizes preservation over extraction. The initiative serves a dual purpose, not only does it provide a sustainable source of income for local communities, but it also acts as a critical element in the broader strategy to build resilience against climate change impacts. Seaweed serves as a powerhouse of essential nutrients, fortifying local diets and supporting indigenous and culturally significant foods.

One of the standout achievements has been the creation of a seaweed farm, a departure from traditional farming methods. This venture was not without its challenges as SMK had to navigate the complexities of working in government jurisdiction and creating market linkages. However, after persistent efforts and consultations with the esteemed traditional chief of the community, SMK was ultimately able to obtain the necessary approvals from the government. This was a major victory for the project as it paved the way for the establishment of a sustainable seaweed farm that would have a positive impact on the community. They also worked to educate the public about the benefits of seaweed farming, which helped to create demand for the product. These processes highlighted the intricacies of navigating through government-backed traditional structures, underscoring the complexity of our undertaking.

SMK’s approach has been holistic and hands-on. The initiative relies on a multifaceted aquaculture approach including growing different species of fish, seaweed and sea cucumbers (a delicacy on the island)). As SMK has actively aligned their efforts with the state’s strategic development plan (agriculture and the fisheries rationale while safeguarding natural resources and cultural heritage), focusing on exporting and expanding seaweed cultivation they are now being endorsed by the government. Furthermore, to enhance the project’s viability, SMK has collaborated with a fellow from Oxford University (engaged via the UNDP AFCIA programme) to develop comprehensive business plans. This strategic partnership aims to optimize the project’s potential and ensure its long-term sustainability.

The proceeds from seaweed sales contributed to the establishment of a revolving fund, which in turn compensates Community Conservation Officers who are dedicated to enforcing MPA conservation measures. The grant has elevated the role of local conservation officers and enabled them to conduct critical fish counts and provide invaluable data for MPA monitoring. Specialized training programs have been implemented to enhance their proficiency, ensuring they remain at the forefront of conservation efforts in Pohnpei.

The grant has facilitated 120 climate monitoring sessions, fostering heightened vigilance and equipping fishermen and farmers with the information needed to make informed deci-

“ A noteworthy mark of this initiative is its commitment to women’s empowerment through ensuring women’s active involvement in the harvesting and production of marketable goods. Notably ”

sions. They serve as a bridge between traditional knowledge and modern conservation practices. Through their work, they have rekindled generational wisdom, teaching skills such as net mending, knot tying, and utilizing moon cues for optimal fishing times. This revival of traditional knowledge is instrumental in fostering a more sustainable approach to resource management.

A noteworthy mark of this initiative is its commitment to women’s empowerment through ensuring women’s active involvement in the harvesting and production of marketable goods. Notably, a significant portion of the value-added businesses such as pop-up restaurants and local businesses and shops, particularly those specializing in seafood, are under the management of women. This not only signifies a thriving economic opportunity but also underscores the project’s commitment to women’s empowerment. The success achieved in this aspect serves as a compelling model that can be replicated in other communities, promising increased economic support for women, as well as for individuals identifying with various gender identities, and those from communities most impacted by shocks and stresses. SMK is not only creating equitable opportunities but also catalyzing a shift towards enhanced nutritional diversity.

The UNDP AFCIA grant has not only provided crucial financial support to SMK’s projects but has also catalyzed a range of additional benefits and has expanded their influence and impact. It models that, through communities working together to protect their natural resources, sustainable development can be achieved. The grant has amplified awareness,

strengthened partnerships, and equipped local stakeholders with the knowledge and tools to address the intricate challenges posed by climate change and unsustainable commercialization. Through these efforts, SMK is sailing towards a future where Pohnpei’s marine ecosystem thrives in harmony with its coastal communities, a path towards a more sustainable and resilient future.

About this story:

This story has been co-created with the support from ICCCAD, UNDP and Sokehs Menin Ketengessed (SMK), in the framework of the UNDP managed - Adaptation Fund Climate Innovation Accelerator (AFCIA). The UNDP AFCIA programme counts with the financial contributions from the Adaptation Fund and the European Union, and has awarded 44 micro and small grants to locally-led organizations across 33 countries worldwide, accelerating their innovative solutions to build resilience in the most vulnerable communities.

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Blossoming Resilience: Empowering Women and Communities in West Timor's Climate Odyssey



COURTESY

Farah Anzum

In the sun-drenched landscapes of West Timor, a remarkable tale unfolds - a tale of resilience, adaptation, and the power of unity. Here, rainfall is a scarce blessing and the sun's intensity paints the earth in shades of arid beauty. A community stands at the crossroads of climate change and survival. Amidst the challenges of unpredictable weather and the spectre of cyclones, the local farmers and households tread a delicate path, hoping for bountiful harvests during the fleeting wet season. Yet, the threat looms large - crop failures mean not just empty stomachs, but the shadow of stunting, a silent plague that affects both women and children. Stunting is characterised by a diminished height-for-age, often stemming from persistent undernutrition, typically linked to socioeconomic hardship, maternal health and nutrition challenges, frequent illnesses, and inadequate early-life feeding and caregiving practices, as described by the World Health Organization.

Within this intricate dance of nature and human lives, hope takes root. The heart of the innovative solution has been supported by a grant from the UNDP-Adaptation Fund

“Within this intricate dance of nature and human lives, hope takes root”



Woman weaving textiles

COURTESY

Climate Innovation Accelerator (AFCIA)- that beckons with the promise of a better tomorrow. UNDP-AFCIA accelerates innovative technologies, practices, and business models for local adaptation through tapping into the incredible potential of NGOs, civil society, women, and young innovators.

With this grant, the organisation has restored degraded environments, boosted incomes, improved nutrition levels, and is strengthening its financial sustainability through voluntary carbon sequestration schemes. It uses climate-smart agriculture and forest restoration through planting 400 hectares of trees and engaging 500 individuals, including 300 women farmers in seed production, expanding its impact.

Simon Field, presently serving as an advisor and volunteering with Yayasan Basipae to provide assistance to the UNDP-AFCIA grant implementation, mentioned “33% of our children are born into a shadow of stunting, a fate that casts a long veil over their potential. If our government’s ambitions of 10% or even zero stunting by 2030 become reality, a hope will be carved for every household to stand resilient against climate change, and every child will be free to flourish.”

This part of the Indonesian island of Timor is unlike the lush landscapes that dot the rest of the country; here, the

earth is parched, and the rains arrive for only four months, leaving eight months of arid struggle- adding immense vulnerability to the households. In the past few years, the region has experienced alternating climatic patterns of La Niña and El Niño, with 2015 being predominantly influenced by El Niño. Moreover, the looming threat of intense drought during El Niño years has led to severe water scarcity, affecting rain-forest ecosystems and historical rainfall patterns. Scientific predictions point to more frequent extreme cyclones due to changing climate. Severe water scarcity during El Niño affects ecosystems and historical rainfall. Emerging pests and diseases add to the woes. Globally, climate instability is evident, reflected in the Pacific Ocean heating and irregular weather. This vulnerability touches generations, causing child stunting from insufficient early nutrition.

Cyclones intensify the struggle as they sweep through the land during the wet season, defeating the very crops that are the lifelines of these families. The community has rallied together to defy the odds. The answer lies in the earth beneath their feet - trees. Trees provide sustenance during the dry season and are a lifeline of income.

Under this initiative, the community has allied with



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the innovative concept of voluntary carbon credits working through a group called Plan Vivo. Trees become a currency, storing carbon as they grow, and in turn, generating revenue for those who nurture them. The women of the community are vanguards of this transformation. They understand the vulnerabilities of motherhood, the challenges of childbirth and nurturing, and the importance of securing their children's future. With newfound enthusiasm, they embrace the opportunity to diversify their gardens with trees - mangoes, citrus, and other hardy varieties that stand tall against the changing climate. And so, a quiet revolution is born.

Trees that once dotted the landscape sporadically now take root as symbols of resilience. With each planted seedling, the community builds resilience against droughts and cyclones. Each tree represents a commitment, not just to the environment, but to the generations to come. The women who lead the transformation drive the change from within. No longer confined to tradition, these women wield the power to choose.

Furthermore, these women are reshaping their role in West Timor's value chain as well. Traditionally, they relied on cotton cultivation for weaving textiles, facing price uncertainties. This project established a partnership with the socially responsible company Sukkachita, enabling women to convert their cotton harvest into yarn for sale. Additionally, they are now seeking buyers for natural dyes. With two income sources, from cotton, yarn and dyes, these women have the flexibility to choose how they use their cotton harvest, whether by direct sale, yarn production, or textile crafting. This innovative approach empowers them economically, transforming traditional practices in the community.

As the carbon credit program gains momentum, it carries the promise of a more equitable future. The vulnerable are no longer victims; they are architects of resilience. The carbon credits offer not only environmental restoration but also a lifeline of sustained income for years to come. As these communities join hands with local NGOs and other organizations in innovative partnerships, they're not just adapting to climate change - they're rewriting the narrative of empowerment. And as these winds sweep across West Timor, they carry with them the seeds of hope, the roots of resilience, and the promise of a more sustainable, empowered, and equal tomorrow.

“Trees that once dotted the landscape sporadically now take root as symbols of resilience”

“In our community, young people play a pivotal role, particularly the young women who embody determination and hope. Driven by the awareness of their vulnerability during childbirth and life's challenges in remote settings, they eagerly participate in the program to craft a safer and more prosperous future. Meanwhile, young men, upon turning 18, venture beyond the village for income, leaving women behind to navigate household and community intricacies. The convergence of young women and men forms our community's beating heart. Women fortify lives and future generations, while men secure sustenance afar, uniting progress. Their shared dream of choice, independence, and empowerment lights the path to a brighter future for all”, Simon said.

Yet the core challenge lies in bridging the gap between communicating the abstract concept of climate change and the tangible benefits of restoring forests to the communities. The project neatly navigated this by connecting the dots between tree cultivation and improved household economy. The most profound lesson the community learned is the power of context-driven engagement. By crafting messages that resonate with the community's own experiences and concerns, they've fostered understanding and participation and harnessed the power of local wisdom.

By giving women the autonomy to select trees that resonated with their needs and aspirations, the initiative transformed from a theoretical endeavour into a practical lifeline. As trees flourish and absorb carbon from the atmosphere, they become storehouses of environmental benefits. This transformation doesn't just end with cleaner air; it's translated into tangible financial gains for the communities through the carbon market. By harnessing carbon credits, these women are not only planting trees but planting the seeds of a sustainable income stream that stretches over two decades. The initiative also initiated a partnership with CO2 Operate, a social enterprise based in the Netherlands involved in the carbon credit market, exemplifying the potential of such collaborations, bridging local context with international expertise to create a lasting impact and leveraging carbon credits for the communities.

Simon emphasised, "CO2 Operate plays a pivotal role in supporting our communities through the carbon credit process. Out of the income generated from carbon credits, 20% contributes to CO2 Operate, 10% supports Yayasan Besi Pae, and the remaining 60-70% directly benefits our households. The 10% allocated to Yayasan Besi Pae is instrumental in expanding our initiatives. Our long-term 25-30-year agreement with them ensures stability and consistent revenue streams, which in turn, positively impacts local NGOs like ours. Furthermore, we foster collaborative relationships with prominent organisations such as UNDP, and international NGOs, ensuring sustained impact and stability for local NGOs like ours."

Through these combined efforts, a narrative of transformation took shape. Women who were once tethered by the constraints of climate uncertainties found new agency and power. They diversified their income sources, sculpted their destiny, and secured a path for their children to flourish against stunting. Moreover, as the trees grew and bore fruit, so did the community, resilient and united against the challenges of a changing world. As the sun sets over West Timor, this story of hope and empowerment continues to unfold. The lessons learned here reverberate far beyond, reminding us all that with dedication, innovation, and collaboration, we can cultivate a future where climate resilience thrives and equality reigns.



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About this story:

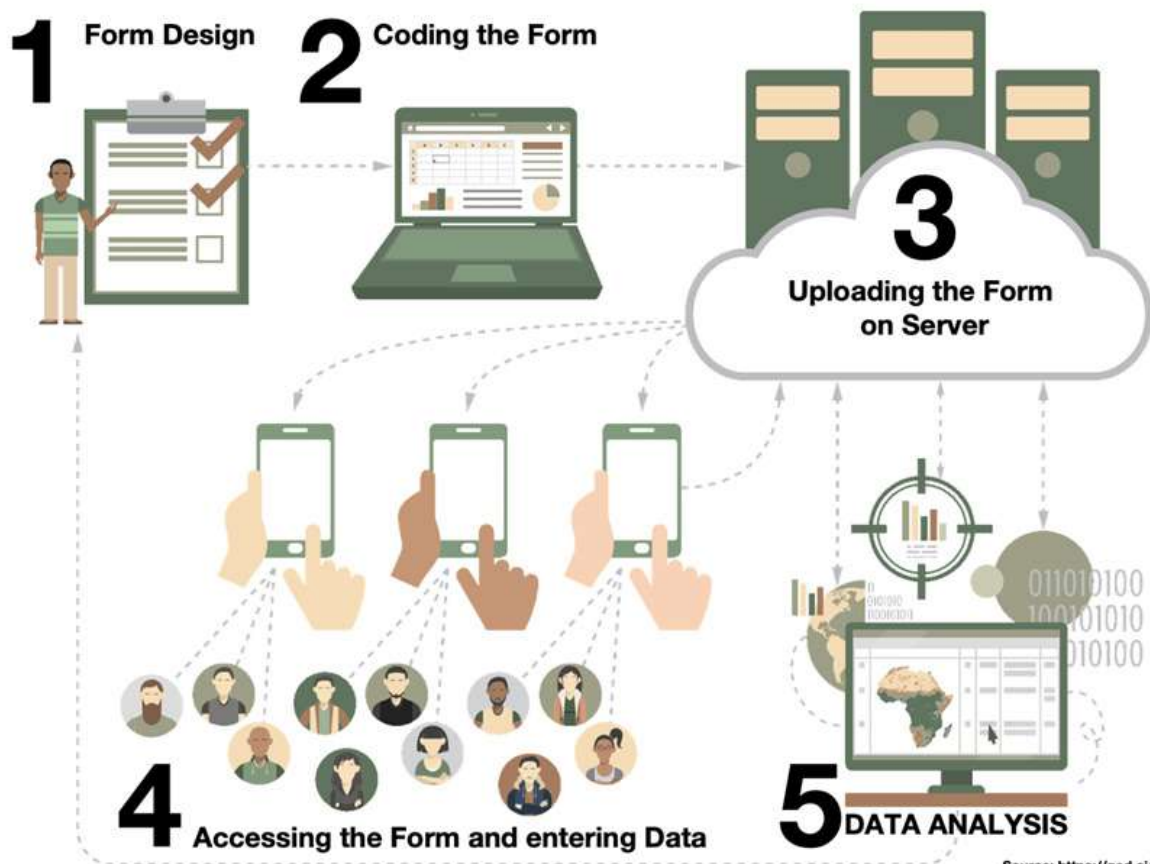
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SOLUTIONS

Closing the loop: Incorporating nature-based solutions in the Peri-Urban Region of Mumbai



Source: <https://qed.ai/kt/>

Image showing the resulting interface of Mapillary after uploading the data

COURTESY

Sheela Patel, Aneerudha Paul, Abhijit Ekbote, Maria Lobo, Bindiya Waghela, Pracheta Sawardekar,

Mumbai is the sixth most densely populated metropolitan region globally, with its urban population continuing to expand. The nation grapples with the challenges posed by climate change amid its economic progress. Rapid urbanization puts immense pressure on the environment. To address this, the country drafted the Mumbai Metropolitan Region Plan (MMRP) 2016-26 (<https://mmrda.maharashtra.gov.in/regional-plan>). This plan describes some

crucial points like population growth trends, housing needs, environmental status, and the city's challenges due to rapid urbanization.

Rapid urbanization impacts the environment with increased emissions and leads to failures in the sanitation system, management of solid waste, and clean water issues. The plan shows that 32% of land is urbanized, and 68% consists of forests, mangroves, mudflats, and intertidal zones. The vast majority of people who migrate here settle around bodies of water. The migrant community includes farming, fishing, and tribal people. As a result, these natural resources are under

pressure.

From the scarcity of infrastructure, the community faces issues like proper sanitation systems, which later lead to untreated sewage, wastewater, and solid waste, polluting the groundwater table. The municipality struggles to provide proper infrastructural systems to the new townships. In some cases, they focus on existing bodies of water and build concrete edges with walkways and manicured gardens in the name of beautification.

The Society for Promotion of Area Resource Center (SPARC), funded by the Adaptation Fund Climate Innovation Accelerator (AFCIA), Adaptation Fund, and the European Union, proposes to design a passive decentralized wastewater, sewage, and solid-waste system managed by the inhabitants of the villages of Mumbai city and to integrate them with the surrounding ecosystem. SPARC, with the help of community-based organizations, has strengthened the community's capacity and made a plan to treat the wastewater and sewage that would receive primary anaerobic treatment through reed beds. Reed beds provide a natural filtration system that can treat and improve water quality before it is discharged into the environment. The villagers can then use the nutrient-rich water in the surrounding lake for their agricultural fields.

Technologies used in proper documentation

The study team's digital technology approach centers on utilizing Free and Open Source Software (FOSS) to enable any community-based organization worldwide to replicate the process for similar projects without incurring expenses. They used two open-source applications to collect the data, Open Data Kit and Mapillary. With ODK Collect (an Android app) the team gathered attributes, including name, ownership, pollution details, pollution causes, current use, coordinates (Latitude-Longitude), and photos.

The team employed a mobile crowdsourced street viewing platform, Mapillary, to capture selected water bodies' surroundings and physical context, primarily focusing on the water body's edge condition. Mapillary generates GPS tracks (movement paths) and photo locations, which can be viewed on the Mapillary website and in the QGIS desktop interface.

Challenges in implementing ideas on the ground

The team initially created a database of inland bodies of water using MMRDA maps and two layers of data from Mapbox Satellite Imagery and Google Earth Engine (GEE). This combination revealed 689 additional bodies of water on top of the 2190 identified by MMRDA. However, this method, while powerful, is only partially reliable. Subsequently, during ground truthing, the team discovered more bodies of water hidden by thick vegetation that could not be located through satellite analysis.

The research team faced several obstacles when trying to reach bodies of water that lacked proper road infrastructure. Additionally, the monsoon season posed difficulties in accessing certain bodies of water. There were instances

where the team encountered hostility from private water body owners. However, since the primary focus of this project is on public water bodies, this was not a major concern for the research team.

After remote mapping, the team engaged with local community members and organizations in various talukas known as sub-districts of Mumbai city. They explained the project's purpose and requested assistance in ground-truthing these bodies of water. While some communities understood and

““ The team initially created a database of inland bodies of water using MMRDA maps and two layers of data from Mapbox Satellite Imagery and Google Earth Engine (GEE) ””

agreed to help, others were not interested in projects focused solely on their own bodies of water. Convincing them to contribute to the broader region's well-being and climate change mitigation was challenging.

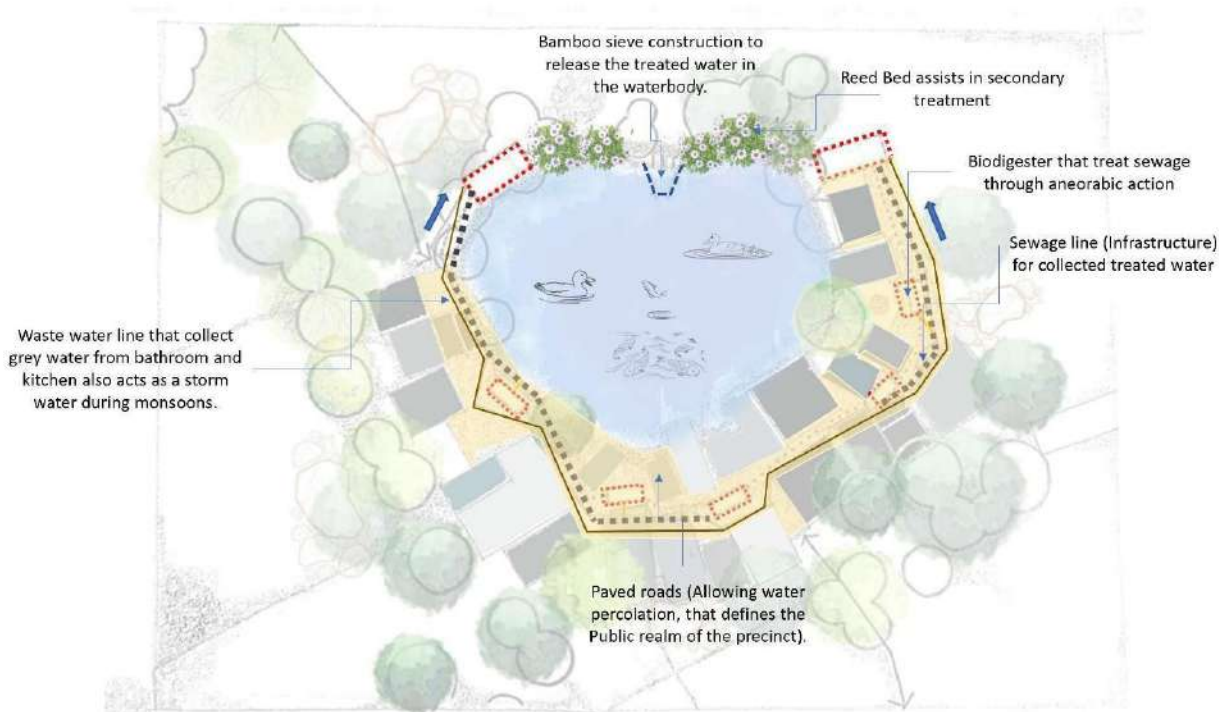
In Bhawandi Taluka, local community leaders were highly supportive and pledged to assist the study team in securing government funds once detailed implementation plans for the bodies of water were developed.

Research Findings

The study team found densely populated, economically disadvantaged settlements extending to the water's edge, with narrow alleys, lack wastewater management and contribute to water pollution from kitchens, baths, toilets, and solid waste.

Settlements that were separated from the water's edge by a road or pathway had a different relationship with the water. Typically, these settlements did not appear to pollute the waterbody with liquid or solid waste and have access to a centralized sewage system.

Bodies of water that have a hard edge, with a landscaped public space around it, and are separated from the settlement by a road still have some issues with waste. Local authorities enhanced this type of waterbody by constructing concrete re-



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taining walls and creating a gated public space. The adjacent settlement, although somewhat distant, still had issues with solid waste. The surrounding community displayed a diverse mix of economic statuses and livelihood activities.

In privately owned plots with individual houses either directly adjacent to the waterbody or separated by a landscaped public space or an access road, the community living in this area is affluent and benefits from a centralized sewage system.

Proposed intervention on site from the findings

After researching nature-based sewage solutions in India, we aim to build a treatment system for vulnerable settlements. Currently, untreated sewage flows directly into nearby water bodies, harming biodiversity and causing microclimate changes. The team plan involves using bio-digesters for anaerobic sewage treatment, followed by secondary treatment in reed beds. The below plan shows the sewage, wastewater, and public space intervention with a typical settlement.

Plan showing the sewage, waste water, and public space intervention with a typical settlement.

Furthermore, the plan demonstrates how treated sewage, rich in sunlight-activated bacteria, can contribute to beneficial algae growth, serving as an alternative to traditional fish feed. When this treated sewage flows into nearby water bodies, it acts as a tertiary treatment. In this natural setting, bacteria thrive in the presence of sunlight, and fish benefit

from the excess nutrients, ultimately increasing available dissolved oxygen. This symbiotic relationship promotes a balanced and thriving ecosystem. The project plans to create women's cooperatives in settlements to engage in fish rearing and duck breeding, harnessing this phenomenon. This approach mitigates climate change impacts and enhances community resilience over time.

Rural Mumbai Metropolitan Region villages can tap into Mahatma Gandhi NREGA funds once the projects' positive impact on livelihoods is evident. Municipalities can allocate funds from their infrastructure budgets in urban areas, provided they recognize the benefits of choosing nature-based solutions over traditional concrete infrastructure.

This story has been co-created with the support from ICCAD, UNDP, and SEFFA, in the framework of the UNDP-managed Adaptation Fund Climate Innovation Accelerator (AFCIA). The UNDP AFCIA programme counts on financial contributions from the Adaptation Fund and the European Union and has awarded 44 micro and small grants to locally-led organizations across 33 countries worldwide, accelerating their innovative solutions to build resilience in the most vulnerable communities.

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A disabled father being assisted by his wife to weed their backyard garden in NW Santo COURTESY

Santo Sunset: Local Network Addressing Climate Risks and Empowering Women and Youth Leaders

Farah Anzum

In the heart of the remote and beautiful Western Santo region in Vanuatu lies a beacon of hope and resilience known as the Santo Sunset Environment Network (SSEN). Established with a vision to safeguard the environment, marine resources, and traditional practices from the relentless impacts of climate change, this community-driven initiative stands as a testament to local ownership and empowerment. Western Santo, like many other regions, faces the brunt of climate change impacts. Rising sea levels, more frequent tropical cyclones, landslides, and fires have been common occurrences, posing threats to the livelihoods and well-being of the local communities. SSEN recognized these challenges and made it their mission to address them.

The network employs a multi-faceted approach to combat the impacts of climate change and thrives on community collaboration and government partnerships. To combat the pressing issue of climate change adaptation, SSEN has pioneered efforts to enhance food security. They have introduced initiatives such as backyard gardening and the cultivation of traditional food crops, maintaining a delicate balance between traditional and modern farming practices. These endeavors ensure a consistent food supply year-round, especially crucial for a region often cut off from external markets.

“Our organization is dedicated to encouraging local communities to continue practicing traditional methods of food cultivation and preparation. We believe in striking a balance between traditional and modern crops. We promote local staples like yams, cassava, bananas, and taro to reduce de-

pendency on imported food supplies. By doing so, we aim to foster resilience against the effects of climate change and reduce reliance on external food sources. These efforts represent a valuable step towards addressing the climate change adaptation needs of our community”, says Mr. Jose Togase, the SSEN Project Manager.

This network, founded in local ownership, is a community-driven endeavor, owned and operated solely by the people of Western Santo. Operating in a remote region with limited road access and connectivity challenges, the network has successfully introduced internet access in key villages across 42 communities. This step has improved communication and connectivity, even in this remote location.

The network has been focusing on rescuing indigenous knowledge and practices that can contribute to the construction of more resilient ecosystems and communities on these islands. SSEN has strengthened its work with a grant from the UNDP-Adaptation Fund Climate Innovation Accelerator (AF-CIA), a programme that aims to foster and accelerate innovative technologies, practices, and business models for local adaptation through tapping into the incredible potential of NGOs, civil society, women and young innovators.

Women play a crucial role

The network’s remarkable dedication to increasing women’s participation in community activities is a key facet of promoting gender equality and empowering women to assume pivotal roles within their communities. The project provides training and support for community members to establish sustainable local businesses, mitigating the challenge of limited access to external markets.

In the communities where the network operates, gender empowerment and equality play a major role. Women are actively involved in decision-making processes, and the network provides training and support for small businesses, enhancing their economic independence. The empowerment of women has fostered a more equitable distribution of power between genders in the community.

The network has also adopted a comprehensive approach to address loss and damage in the region. For example, landslides impact the community, leading to garden destruction and flooding. In response, the network conducts assessments and procures tools and materials. Women play a pivotal role in disaster response efforts, including rebuilding efforts in new locations and relief distribution. The network has also established women ranger groups to document and report environmental changes, enabling prompt responses and interventions. In the aftermath of cyclones, women rangers assess damage, collect data, and capture images. The information informs relief and recovery measures such as planting new crops and reinforcing infrastructure like sea walls.

“As we continue to come together and harness the collective wisdom of our community, we recognize that women

play a crucial role in shaping our future. The empowerment of women has proven to be a catalyst for positive development, and we’ve seen tangible outcomes stemming from their active involvement in decision-making processes. This shift toward gender equality has become a driving force behind the progress and development we are experiencing,” says Mr. Allan Taman, Chairman of SSEN Executive Committee.

Involving youths

Young people, who represent the largest segment of Western Santo’s population, also play a pivotal role in the network’s initiatives. They serve as rangers, monitor community conservation areas, and are actively involved in leadership roles within the Network’s executive team. Young people are also at the forefront of forming Community Disaster Climate Change Committees (CD triple Cs) in all 42 communities, highlighting their commitment to addressing climate change and disaster risk management.

““ The network has also adopted a comprehensive approach to address loss and damage in the region ””

Project challenges

The journey has been riddled with challenges and addressing them has been vital. One significant challenge they encountered was related to communication. Communication barriers were addressed by partnering with local satellite communication providers. Another challenge is transportation, particularly for bulky items like building materials. The Network has made 80% progress by securing an additional boat and outboard motors to support team travels by sea to implement project activities among the 42 scattered communities in Western Santo, as well as making regular 8 hours boat trips to Luganville town, located at the southeast end of Santo Island, to procure and ship project supplies back to the region. Regular shipping services to Western Santo remain infrequent, causing occasional delays in procuring supplies.



SSEN Team conducting adaptation awareness with chiefs and community leaders

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“Regarding funding, we encounter challenges since we do not have our own revenue streams yet. However, we require technical support to develop project proposals effectively. Even though we maintain a positive partnership with the government, aligning our projects with government priorities can be challenging due to government resource constraints and their own business plans,” says Mr. Togase.

“However, through our efforts to build community capacity in climate change and conservation, we have enabled individuals to better prepare for cyclones. For instance, some community members now utilize satellite internet to communicate, order basic retail goods and supplies in town, and connect with children attending schools far from Western Santo. We provided small business training, teaching women from Western Santo how to produce local soap and coconut oil. This training has allowed them to generate income even during challenging times when access to external markets was limited. Our work extends to all 42 villages in Western Santo, fostering awareness, capacity building, and economic empowerment among community members”, says Ms. Donackly Bune, the Santo Sunset Women Network (SWEN) Project coordinator.

A more resilient and sustainable future

Looking ahead, the Santo Sunset Environment Network envisions expanding its reach beyond Western and Central Santo. They believe that other communities can benefit from their knowledge and experience, acquired through partnerships and stakeholder collaborations. To achieve this vision, they are actively preparing to scale up their efforts. The organization has the capacity to share knowledge and best practices

with other islands and communities. However, sustainable funding streams are vital to support this expansion and maintain operations.

In the remote and resilient Western Santo region, the Santo Sunset Environment Network stands as a shining example of community-driven climate change adaptation. Their commitment to local ownership, gender equality, and empowering young people paves the way for a more resilient and sustainable future, not only for Western Santo but for communities far beyond its boundaries.

About this story:

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SUSTAINABILITY



Learning to trellis

COURTESY

A Small Grant's Big Impact on Ensuring Sustainable Harvests in Nigeria

Rukhsar Sultana

Gurapwana and Dawhol Bob are two small villages in Plateau State, Nigeria that are transforming their agriculture landscape and are being empowered through small-scale farming initiatives. At the heart of these initiatives is the Sustainable Environment and Fisheries Foundation (SEFFA).

SEFFA is leading the way with a project called “Building Resilience to Climate Change Through Integrated Climate Smart Agriculture and Greenhouse Technology Skills,” which is supported by Adaptation Fund Climate Innovation Accelerator (AFCIA) programme, implemented by the United Nations Development Programme (UNDP) and funded by the Adaptation Fund, and the European Union. SEFFA’s locally led adaptation solution, harnesses the power of integrated climate-smart agriculture along with greenhouse technology and skills to empower local communities and revolutionize their agricultural practices.

Recognizing the profound impact of climate change-induced drought, variable rainfall, land degradation, and extreme weather on agriculture, this project has been at the forefront of empowering rural communities to adapt and to build resilience. With help, farmers in Gurapwana and Dawhol Bob are now able to grow crops year-round in the green-

“ Through the use of drought-tolerant crop species like rice, bell peppers, tomatoes, maize, soybeans, mangoes, guava, and papaya, communities are not only weathering the challenges but thriving ”



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houses regardless of the harsh climate change affected weather conditions. Hanatu Bulus, a member of the Gurupwana community who has benefited from these initiatives, shares, “Through SEFFA’s project, I discovered a world of new possibilities. We learned how to rear fish, cultivate vegetables, and trade in the market. The impact on our community has been substantial. What was once unfamiliar territory has now become a source of livelihood for many.”

Through the use of drought-tolerant crop species like rice, bell peppers, tomatoes, maize, soybeans, mangoes, guava, and papaya, communities are not only weathering the challenges but thriving. This has helped to reduce crop failure and improve food security. With SEFFA’s guidance and training interventions, farmers are equipped with the knowledge to make meaningful changes in their agricultural practices. With hands-on training, workshops, and practical demonstrations, community members are learning the intricacies of greenhouse farming, which is an integrated system practiced with fish tanks inside the greenhouse. The waste produced by the fish serves as a natural fertilizer for the produce, creating a symbiotic ecosystem. Moreover, greenhouse technol-

ogy helps alleviate the pressure on the land as many farming practices, including the use of fire in slash-and-burning farming, can degrade soil quality. By providing a controlled environment, the greenhouse allows for year-round farming, reducing dependency on rain-fed systems. Through these, they realize income from multiple streams.

SEFFA’s project objectives are clear: increase farm production, improve food security, and boost income levels. The project’s training programme on rice processing has helped farmers add value to their products and increase their income. Farmers are now able to sell their processed rice directly to consumers at a better price. With two greenhouses and solar-powered boreholes, the target is to harvest 17 tons of produce and create 150 new jobs. These technologies, once foreign to the communities, are now becoming integral parts of their farming practices. Moreover, the initiative aims to raise nutrition levels in 150 households and achieve a fivefold increase in monthly income.

“What sets our approach apart is not just the provision of drought-tolerant seeds, but the technical training we provide on production, processing and marketing these crops. This was a demand we identified through our hands-on experi-



Community being able to harvest and sell their rice

COURTESY

ence and extended beyond our initial project scope. We are leveraging technology and financial inclusion, which will include mobile phones, for information management and product marketing, said Mrs. Ololade Adegoke, founder and CEO of SEFFA. She highlighted how the community itself has been a source of innovative solutions. “SEFFA’s role has been to facilitate and enhance the existing knowledge of the community. For instance, the community has developed a traditional financing mechanism called “esusu,” which we are working to incorporate into our initiatives.”

By integrating climate-resilient farming practices, the project is strengthening the communities’ sustainability and economic well-being. The UNDP-AFCIA grant has played a crucial role in facilitating these initiatives of community engagement. It has enabled SEFFA to enhance staff capacity, motivate the team, and create job opportunities to deploy more extension officers for on-field work. The success of the rice initiative has been particularly encouraging. Ensuring that the community can harvest rice from their own fields and have it on their tables has been a significant milestone, as having more community onboard with the initiatives. Collaboration with government officials has been pivotal in amplifying the reach as well as extending beyond, creating a ripple effect of positive change.

Compelling narratives of community resilience come to life when they are grounded in sustainable, replicable, and scalable projects. In this case, the power of small-scale farming initiatives amplified by a small grant has been transforming the narrative of the villages of Gurapwana and Dawhol

Bob in Nigeria. This initiative exemplifies the incredible impact a small grant can have on a community. SEFFA’s comprehensive approach to integrated farming is leading the way towards a more secure and prosperous agricultural landscape in Nigeria.

This article is written from the interview with Ololade Adegoke, she holds the position of CEO at the Sustainable Environment and Fisheries Foundation (SEFFA), working in this field for the past 15 years.

This story has been co-created with the support from ICCAD, UNDP, and SEFFA, in the framework of the UNDP-managed Adaptation Fund Climate Innovation Accelerator (AFCIA). The UNDP AFCIA programme counts on financial contributions from the Adaptation Fund and the European Union and has awarded 44 micro and small grants to locally-led organizations across 33 countries worldwide, accelerating their innovative solutions to build resilience in the most vulnerable communities.

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Cultivation of cricket farming

COURTESY

Cricket Farming in Cambodia: Transforming Challenges into Sustainable Livelihoods

Rukhsar Sultana

Cambodia, located in the Southeast Asia region, is one of the countries listed on the UN List of Least Developed Countries (LDC). Although it has witnessed economic growth over the past decade, it continues to face challenges. Marked by a comparatively low Gross Domestic Product (GDP) and significant rates of poverty and food security. Cambodia is particularly susceptible to the effects of climate change. The area experiences recurrent climate change-induced disasters, including annual floods, droughts, and elevated temperatures, attributable to its geographic positioning.

The backbone of Cambodia's economy lies in rural small-holder farming, predominantly relying on rain-fed cultivation. This presents substantial challenges, especially during the dry season, posing difficulties for essential vegetable gardens. A large segment of the Cambodian population relies on agriculture for sustenance, making them particularly susceptible to the devastating effects of flooding. Consequently, small backyard plots often lie unused. Given the prevalence of natural disasters, achieving food security in the country can be quite challenging. Analysts predict that approximately

seven million Cambodians will be at high risk of severe impacts from climate change by 2050 (Talberth & Reytar, 2014).

To address these challenges, the Livestock Development for Community Livelihood (LDC) project introduced cricket and Chaya farming as livelihood options. This initiative was supported by a grant from the UNDP-Adaptation Fund Climate Innovation Accelerator (AFCIA). The cricket farming model was designed to mitigate the impact of climate change by requiring less water, labor, and space. It not only created job opportunities and generated cash income but also offered a cost-effective, high-nutrition food source for the community. Additionally, the smart cricket pens, designed to float during floods, enabled farmers to continue their farming activities even during the rainy season. For instance, Mr. Chhay Phien, who had practiced cricket farming since 2019, faced difficulties during the monsoon season from June to October in the following years when his cricket pens were grounded. With the training and financial assistance of the project, he can now sustain cricket farming throughout the year without any concerns.

Both chaya cultivation and cricket farming showcase impressive resilience to climate challenges, requiring minimal water and space. Chaya plants can be effectively cultivated alongside the fences of backyard gardens/houses, contributing to green coverage and enhancing air quality in the village. Mrs Pang Ouk, a beneficiary of the initiative from the Ou Rum Chek village in Doeum Doung Commune, Angkor Chey district, Kampot province, Cambodia, expressed her amazement: ‘I never imagined that my small fallow land could be so effectively utilized, generating at least \$4 per square meter within just forty days.’

The maintenance of the smart cricket pens is cost-effective as they can be used for up to seven years without the need for part replacements. Each unit (size of 1.2m x 2.4m x 0.8m) can yield 15 kg of fresh crickets, 40 bowls of cricket eggs, and 30 kg of cricket frass. This translates to a gross total income of \$62.6 per unit pen (a structure used for cricket farming) within a 40-days production cycle. For example, Mr Chhay Phien, who manages four pens, spends an average of 15 minutes per day on their upkeep. As a result, he can generate \$250, a substantial return from his investment of \$40 in 4 pens of cricket farming.

Various structures can serve as habitats for crickets. The primary goal of these enclosures is to create a secure environment that facilitates optimal growth by containing and isolating the crickets. The cricket farming pens can be constructed using a variety of locally available materials and styles. In the early stages of it, cylindrical concrete well tubes with an 80-cm diameter were commonly employed. However, recent trends have shifted towards rectangular pens.

While concrete blocks are commonly used for the sides, alternatives such as gypsum board sheets and plywood are also options, though they may be less durable. Additionally,

crickets can be reared in custom-made plastic boxes or commercially available plastic basins.

To prevent crickets from escaping, a metallic non-slip surface is essential along the top edge of the pen. While adhesive tape was previously used for this purpose, contemporary recommendations for permanent concrete pens include using a strip of glazed tiles on the tops of the pen walls. Managing heat within the pen is also crucial, as overheating can lead to disease outbreaks and high mortality rates among crickets. Additionally, Concrete has the ability to absorb and radiate heat, necessitating shading from direct sunlight. Placing the pens under a roofed structure with ample air movement above the enclosure helps regulate temperature and create a

“ The elderly and women are the most susceptible to facing limited access to financial resources and are the most impacted in this regard ”

more favorable environment for cricket rearing.

The elderly and women are the most susceptible to facing limited access to financial resources and are the most impacted in this regard. Women often rely on men for financial support and are primarily occupied with childcare and household responsibilities. On the other hand, elderly people like Mr. Chhay Phien, explained that due to his advanced age, finding job opportunities was impossible. And later he added with the support of the LDC project, he now can work from home, earning a regular income.”

Thanks to the grant, LDC has successfully trained 44 households, benefitting 214 individuals directly, and creating a positive ripple effect on 6,757 indirect beneficiaries. The production of 6,400 kilograms of cricket has not only contributed to the income of local farmers, with a monthly increase of \$37.5, but it has also fostered economic empowerment within the community. Moreover, the grant has played a crucial role in establishing six women’s cooperatives that took the initiative to initiate chaya farming in their homestead gardens or on unused lands. Women played a more significant

role in this endeavor, requiring just one hour of their daily time. The impact of this shift in livelihoods was substantial as women gained greater financial independence and even assumed leadership roles. Mrs Uy Oun, a participant in the LDC project, for instance, shared her journey, explaining that her traditional cake business could not always guarantee to generate enough income to meet her basic needs. However, now that she operates a cricket farming business with two pens, not only does she earn more but it also has a significantly less time commitment.

The initiative has already shown significant promise and made a notable impact. Phalla Miech, the Director of LDC, has expressed the organization's intention to broaden participation by involving 100, as the existing engaged farmers are still striving to meet the escalating demand. Their strategy also involves increasing the number of cricket pens in each household from two to 10, thereby enhancing production capacity. Additionally, the organization also plans to establish connections with intermediaries to bolster the cricket supply chain. In the long term, they intend to collaborate with agrifood organizations to establish a sustainable market for cricket farming.

Farming these highly nutritious crickets as a viable tool to enhance solution climate resilience and as a stable source of income offers numerous opportunities but also comes with its inherent challenges. These challenges include securing capital for training and necessary farming materials, addressing post-harvesting processes, effective packaging, marketing strategies, ensuring a consistent supply aligned with demand, affordability of cricket eggs, and a lack of research for ongoing by-product development.

Crickets hold the potential to address food and nutrition insecurity while championing food sovereignty. Driven by strong demand at both the local and global levels, farmers recognize a significant potential for growth in the cricket farming industry. More people are turning to cricket powder as a nutritious addition to their beverages. The success of cricket farming in Cambodia is an example for other regions. Exemplifying the transformative impact that sustainable agricultural practices can have on communities, inspiring us to forge ahead on this promising path of this sustainable food source.

The article is written from the interview with Dr. Phalla Miech, Director of Livestock Development for Community Livelihood Organization (LDC), from Cambodia. Dr. Phalla also conducted the first Swedish PhD thesis on crickets as food and feed.

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Chaya farming in their homestead gardens

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