TURNING THE TIDE

From climate crisis to climate action

Global project under UNDP Climate Promise's Pledge to Impact Programme financed by the Japan Supplementary Budget

November 2024

About UNDP

UNDP is the leading United Nations organization fighting to end the injustice of poverty, inequality and climate change. Working with our broad network of experts and partners in 170 countries, we help nations to build integrated, lasting solutions for people and planet.

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About Climate Promise

UNDP's Climate Promise is the UN system's largest portfolio of support on climate action, working with more than 140 countries and territories and directly benefiting 37 million people. This portfolio implements over US$2.3 billion in grant financing and draws on UNDP's expertise in adaptation, mitigation, carbon markets, climate and forests, and climate strategies and policy. Visit our website **climatepromise.undp.org** and follow us at **@UNDPClimate**.

About this publication

This report was developed under UNDP's Climate Promise by the Pledge to Impact Programme. It presents the results from 16 countries that were specifically supported by the Japan Supplementary Budget, Fiscal Year 2022. The Pledge to Impact Programme is delivered in collaboration with a wide variety of partners, the initiative has supported over 120 countries to enhance and implement Nationally Determined Contributions (NDCs) under the Paris Agreement. As a leading supporter of the Pledge to Impact Programme, Japan recognizes the climate crisis is a threat to the human security. Japan's support joins other longstanding support from the governments of Germany, United Kingdom, Sweden, Belgium, Spain, Iceland, the Netherlands, Portugal and other UNDP core contributors. This Programme underpins UNDP's contribution to the NDC Partnership.

UN Disclaimer

CLIMATE PROMISE

From the People of Japan

Federal Ministry for Economic Cooperation and Development

Supported by: Federal Ministry for Economic Affairs and Climate Action on the basis of a decision by the German Bundestag

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Acronyms

AI – Artificial Intelligence

BAU – Business as Usual

DRM – Disaster Risk Management

DRR – Disaster Risk Reduction

EV – Electric Vehicle

GHG – Greenhouse Gas

GLOF – Glacial Lake Outburst Floods

HRVA – Hazard, Risk & Vulnerability Analysis

IPCC - Intergovernmental Panel on Climate Change

JICA - Japan international Cooperation Agency

JSB – Japan Supplementary Budget

LEV – Low Emission Vehicle

LPG – Liquified Petroleum Gas

LT-LEDS – Long-Term Low Emission Development Strategy

MICS – Metallic Improved Cooking Stoves

NAP – National Adaptation Plan

NDC - Nationally Determined Contribution

PHL - Post-Harvest Losses

PV – Photovoltaic

PLWDs – Persons Living With Disabilities

R&D – Research and Development

RE – Renewable Energy

RES – Renewable Energy Solutions

SDG – Sustainable Development Goal

SDG&EV – Sustainable Development Goals and Electric Vehicles

SHS – Solar Home System

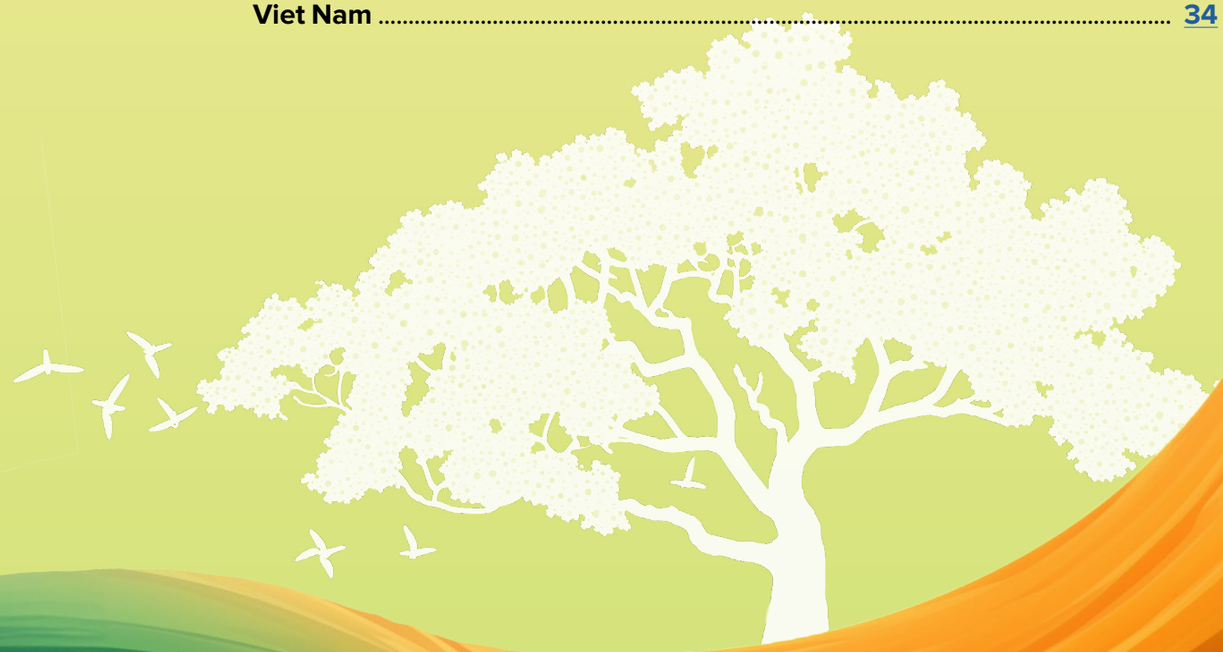
SPI – Solar Powered Irrigation

TVET - Technical and Vocational Education and Training

WUA - Water User Association

WUG – Water User Group

Content



Foreword

The future of people and the planet is at stake. The world is heading towards a temperature increase of nearly 3°C, risking irreversible impacts on climate, biodiversity, and human development. Already, we are experiencing more frequent and severe extreme weather events, droughts, and sea-level rise. Meanwhile, land degradation and resource scarcity are driving conflict and threatening sustainable development.

If the world does not take bold and urgent action, the climate crisis will reverse the progress the world has made so far on the Sustainable Development Goals (SDGs).

If we want to prevent global catastrophe, we have no choice but to urgently take bold action now. We need all hands on deck to keep temperature rise limited to 1.5°C, as dictated by the science. Global greenhouse gas (GHG) emissions must **peak by 2025, and fall by 43 percent by 2030**. Collective, accelerated efforts must be made by all nations, especially the largest emitters. That means decarbonizing energy systems and shifting from fossil fuels to renewable energy, implementing nature-based solutions, and transforming our food and agriculture systems.

As UNDP, we are doing our part. Over the past year, with financial support from the **Government of Japan,** we assisted 16 countries in Africa, Asia, Arab States, and Europe and Central Asia regions to implement their **national climate pledges**. These efforts made vital progress in mitigating climate change, while also helping vulnerable groups adapt to increasing weather extremes already impacting their lives and livelihoods.

Investments are urgently needed to achieve both the climate pledges and the SDGs. Yet tightened public budgets and economic slowdowns post-COVID-19 recovery, aggravated by supply chain disruptions due to global conflicts, have squeezed fiscal space usually reserved for long-term, sustainable investments. Consequently, the SDGs face an estimated **US$4 trillion annual financing gap**, compromising the climate agenda.

Yet it is possible to reverse this negative trend. Just one percent of global wealth could close the existing gap, if public and private sectors combine their resources and expertise.

The support from Japan Supplementary Budget shows us that, with targeted investments, progress is possible. This report will show you innovative and successful examples of how countries are making an impact on the ground.

Whether protecting vital forests in **Georgia** and **Kenya**, setting up solar home systems in **Nepal**, smart irrigation in **Armenia**, urban gardens in **Jordan**, irrigating remote regions such as the highland paddies in **Bhutan**, or setting up artificial intelligence (AI)-driven monitoring of early warning systems in **Kyrgyz Republic**, the case studies you'll see in this report are a testament to the necessity and impact of international climate finance.

As UNDP, we stand ready to continue to support developing countries all over the world in fulfilling their climate ambition. We leverage our global infrastructure built on country teams, local expertise and community trust. We will continue to engage with diverse stakeholders, combining resources into green investments that uphold the promise of a sustainable future, leaving no one behind.

We extend our thanks to all contributing partners for their invaluable support in making this happen, with sincere gratitude to the Government and people of Japan for their generous contributions towards climate action and human security, in times and places where it is needed most.

Jennifer Baumwoll
Director a.i., UNDP Climate

Global Results

111,199
People gained access to clean energy

95,075
People with enhanced resilience to climate change

4,999,881
People benefited indirectly

115,183
People trained

63,531
Sustainable/ green jobs created

GHG emissions to be reduced:

51,739 tonnes of CO_2 e/year OR
362,176 tonnes of CO_2 e by 2030

GHG emissions to be avoided:

1,196,729 tonnes CO_2 e/year or
8,377,104 tonnes CO_2e by 2030

1.70
Megawatts of renewable or low-emission energy capacity was added

26
Policies developed towards the goals of the Paris Agreement

Since 2021, the **Government of Japan** has supported developing countries in meeting targets of their NDCs to the Paris Agreement, by funding projects, implemented under UNDP's global Climate Promise initiative, through the Japan Supplementary Budget (JSB). These aim to respond to the climate emergency and establish resilient development pathways for sustaining human security, with just over half a decade remaining to prevent the worst effects of climate change and ensure our planet remains capable of sustaining life.

In 2023-2024, 16 countries from **Africa, Asia, Arab States, Europe and Central Asia**, undertook vital projects to strengthen carbon mitigation and climate adaptation with support from the **Government of Japan** under the Fiscal Year 2022 JSB, together with UNDP. Transformative progress was realised globally both in mitigation and climate adaptation activities, under two pillars:

1. Clean energy and a just transition towards net-zero pathways

- Driving investment in clean energy
- Support to Ministries of Energy, Finance, Environment and Planning to address key energy-related decisions towards a just transition
- Alignment of energy targets in NDCs with net-zero pathways

2. Helping vulnerable and fragile settings to be more resilient to climate impacts

- Scaling-up adaptation, resilience, and disaster risk reduction tools and ensuring they are available in fragile settings and to marginalized groups
- Aligning targets in NDCs with national adaptation strategies and plans

Participating countries succeeded in mitigating GHG emissions by a total of over 51,739 tonnes of CO_2e /year or 362,176 tonnes of CO_2e by 2030, and avoiding 1,196,729 tonnes of CO_2e/year or 8,377,104 tonnes of CO_2e by 2030 through a combination of emission reduction efforts. To reduce emissions, countries accelerated dissemination of Low Emission Vehicles (LEVs), including overcoming barriers to buying electric vehicles (EVs) in **Viet Nam** by offering loans to drivers. In **Thailand**, a prototype Climate Credit Program was launched for testing, to boost LEV use and assess emissions reductions. Carbon sequestration meanwhile was supported in **Jordan**, where over 3,600 seedlings of endangered species were planted using the Miyawaki method – which mimics how trees would naturally grow by planting only native species. To help safeguard **Indonesia's** forests, a new carbon trading platform was finalized with the Directorate of Forest Utilization Planning.

With support from Japan, over one megawatt of renewable or low-emission energy capacity were added and 111,199 people gained access to renewable energy (**RE**) **worldwide**. This included solar installations for 261 vulnerable families in a protected **Georgian** landscape, replacing their firewood use. In **Nepal**, lower emitting energy efficient improved cooking stoves benefited 1,700 families, while clean cooking stoves added in 10,000 **Kenyan** homes and five schools drastically reduced biomass use, along with indoor air pollution and emissions. **Over 110,000 people across the globe were also trained in how to use RE technologies**, including in **South Africa**, where 234 women, students and young professionals gained knowledge and technical skills to further support RE upgrades.

To boost adaptation and food security by strengthening farmer livelihoods, irrigation and agricultural innovations were made in many participating countries. Solar powered irrigation boosted agricultural productivity in **Malawi**, by enabling cultivation even during the dry season. Crops also successfully grew in some of the most fragile landscapes on earth, including more than 3,000 metres above sea level in **Bhutan**, via drip-irrigation systems in greenhouses. Five communal solar gardens were also developed in impacted by desertification and drought peri-urban areas of **Namibia**, supporting horticulture, while demonstrating the potential of crops grown in local rocks during a new Geological Agriculture study. In **Sri Lanka**, new solar powered milk can coolers delivered to farmers have almost doubled daily milk collection and reduced post-harvest losses, while solar-powered LED insect repellents are protecting crops from pests. Such results have supported vulnerable smallholder farmers, through their country's worst economic and energy crisis to date.

Digital innovation is a vital part of adaptation efforts in **Armenia**, where a new Unified Data Management System is digitizing water monitoring processes for data-driven decision-making, linking water use to its spatial distribution and boosting agricultural efficiency. In the **Kyrgyz Republic**, a new centralized artificial intelligence (AI) model to monitor and forecast Glacial Lake Outburst Flood (GLOF) risks was developed with open-source satellite imagery and gender-responsive algorithms.

Climate-related DRR was also strengthened in India, where over 100 people, including officials and students, gained strengthened DRR capacities for early warning services through training, while Hazard Risk and Vulnerability Analysis (HRVA) studies were completed for three flood-prone cities. To improve flood management in **Nepal**, two hydrological stations were built to assess river threshold levels and bolster the Early Warning System (EWS), while a new automated weather station has improved forecasting.

26 new policies developed across participating countries have helped to integrate NDC targets or net-zero goals into national policies. This includes in **Serbia**, where a policy framework was developed to enhance monitoring and reporting efforts for a just, low-carbon transition and an end to energy poverty, learning from the experiences of developed countries, including Japan.

Finally, the project forged 18 partnerships with Japanese organizations, including six companies, four NGOs, at least one academic institution, several industry associations and JICA representative offices. Japanese partners shared invaluable technical knowledge and equipment leading to transformative interventions - from solar-powered moth repellents developed by TOS Lanka Pvt Ltd in Sri Lanka to green hydrogen training through Toyota Motors, in South Africa.

Toyota also played a key part in a South-South exchange workshop held in Chile in March 2024 that was part of a comprehensive study on low-emission transport in the region – where transport remains the greatest source of GHG emissions. The exchange involved countries in Latin America and Asia that reviewed their climate action progress in the transport sector against their NDC and long-term commitments and shared successful experiences. Toyota Latin America and the Caribbean presented vision on the future of low-emission transportation.

Irrigation transformation

RESULTS

Locations:
Lori and Shirak regions

Budget:
US$1,000,000

People who benefitted:
Directly: **37,000** people (**18,028** men, **18,972** women)
Indirectly: **35,000** people (**16,137** men, **18,863** women)

People informed / trained:
105 people (**38** women and **67** men)

Green jobs created:
4,200

RE capacity installed:
0.4MW

GHG emissions reduction per year:
375 tonnes CO_2e

SDGs:
SDG 2, SDG 6, SDG 7, SDG 8, SDG 11, SDG 13

Contributions to national climate pledges

As a landlocked mountainous developing country, Armenia is especially vulnerable to climate change and its effects. The IPCC projects Armenia's temperatures could rise by up to 4.7 °C by the 2090s, from the 1986-2005 baseline. This significantly raises risks of extreme weather disasters including droughts, along with food insecurity, by diminishing arable land, crop yields and water availability. Despite contributing only 0.02 percent of global GHG emissions Armenia has committed firmly to climate mitigation, including to reduce total emissions by 40 percent by 2030 from 1990 levels in its NDC (2021). Adaptation is also prioritized for vulnerable sectors, including water and agriculture.

The project supports Armenia's NDC both in mitigation and adaptation, by targeting energy and agriculture, the two sectors generating most of Armenia's GHG emissions (66.7 percent and 18.5 percent, respectively). Activities funded by Japan contributed to Armenia's energy sector targets to double the share of renewables by 2030, along with another NDC target to modernize its irrigation network and agricultural management. The project also supported national climate pledges, including the Long-Term Low Emission Development Strategy (LT-LEDS), through capacity-building and removing technological constraints, by training farmers and decision-makers, as well as modernizing water pumps and irrigation systems, expanding solar-powered and energy efficient water management, along with digitizing the water management system.

Achievements

To mitigate GHG emissions and boost food security, Armenia upgraded irrigation water pumping stations, installing seven energy-efficient pumps and equipped the Lori and Shirak regions with grid-connected photovoltaic (PV) stations (400 kW total capacity), also saving 584 MWh year via energy efficiency gains. This helped to reduce GHG emissions by approximately 375 tonnes per year in the two regions, while cutting energy consumption and pumping station costs by 100 percent in Beniamin pumping station in Shirak, along with 90 percent in Lori, respectively. Estimation of crop water requirements for a set of four crops (winter wheat, potato, alfalfa and cabbage) in Lori and Shirak regions of Armenia was carried out using remote sensing technologies. These results will guide replication in other regions, to update the existing irrigation norms and regimes, too.

Water management capacities of decision-makers in target regions were strengthened, via a Unified Data Management System developed with the State Water Committee (SWC) to digitize the monitoring activities of Water User's Association (WUA) authorities. This allows data on energy use, water use, pump conditions, energy savings etc. to be collected, recorded, visualized and transferred, for data-driven decision-making. A Geographic Information System (GIS)-based data management system – linking water use to its spatial distribution – was also developed for Ayrum-Chochkan, Ayrum and Beniamin WUAs. This helps to show how the water is used for different crops, supporting agricultural digitization for more efficient water use and greater climate resilience. The model is being replicated in other provinces, cutting the costs and carbon footprint of irrigation further.

A feasibility assessment at other four pumping stations in Shirak, Aragatsotn and Ararat provinces was completed by OFMA PLUS LLC, so the national government can provide additional funds to improve them within the next three years. Based on successful project results, the national government has also allocated additional $150,000 to upgrade a 2.5 km water pipeline in Ayrum-Chochkan and modernize water pumping stations there, to ensure irrigation for a further 1,500 farmers in Lori region.

Partnerships

The project worked closely with the Ministry of Territorial Administration and Infrastructure (MTAI), responsible for water systems and supplies, along with the Water Committee and WUAs (via MTAI) at regional and community levels, who helped with training, installations and feasibility assessments.

"We're really excited about the improvements registered in our irrigation water management infrastructures, as well as in professional capabilities,"

said Martiros Nalbandyan, Vice-President of the Water Committee, Ministry of Territorial Development and Infrastructures of The Republic of Armenia.

JICA provided expertise in developing technical specifications to modernize energy efficient pumps. The Embassy of Japan was consulted in the project design and implementation.

UNDP Armenia (2024)

UNDP Armenia (2024)

Yervand Andreasyan in Lori region, reaping the fruits of energy efficient irrigation with his family.

UNDP Armenia (2024)

IRRIGATING RURAL RESILIENCE

47-year-old Yervand Andreasyan, from Mets Ayrum village in the Lori region, has been farming for two decades. As Armenia's irrigation systems are outdated, he previously struggled with inconsistent water supply provided through Soviet-era pumping stations that were both energy-inefficient and incapable of meeting modern agricultural needs – compounding challenges of ensuring crop health in the face of climate change.

"When the pipes broke, which happened several times a year, our crops could go without water for up to a week," he said.

Since local pumping stations were upgraded with support from Japan and UNDP, his 12 hectares of corn fields and fruit orchards now receive a more consistent, reliable water supply.

"Before the modernization... we had water for only 3 to 4 hours a day. With the new energy-efficient pumps, the irrigation water supply capacity has increased, now reaching 8-12 hours a day."

With a more dependable water supply and income, the father of three now plans to expand his fig, peach and raspberry orchards by another two hectares.

"I am glad I can not only thrive as a farmer, but also stay in my country, be next to my family, and contribute to the development of agriculture in Armenia."

Climate resilient highland farming

RESULTS

Locations:
Bumthang, Samste, Trashiyangtse, Pemagatshel, Haa, Dagana, Tsirang, Chhukha, Paro, Samdrupjongkhar and Wangduephodrang districts

Budget:
$ 1,504,650

People who benefitted:
Directly: **3,160** (**2,079** men, **1,081** women)
Indirectly: **38,878** (**20,396** men, **18,482** women)

People informed / trained:
536 (**236** men, **300** women)

Green jobs created:
36

SDGs:
SDG 1, SDG 2, SDG 5, SDG 8, SDG 9, SDG 13

Contributions to national climate pledges

As a small, landlocked nation, with fragile mountainous ecosystems and an economy heavily dependent on climate-sensitive sectors, like agriculture, forestry, tourism and hydropower, Bhutan is especially vulnerable to climate change. Bhutan's Third National Greenhouse Gas Inventory recorded GHG emissions of just 3.8 million tonnes of CO_2, and 9.4 million tonnes of CO_2, sequestered through forests, resulting in net negative emissions of 5.6 million tonnes CO_2. The Bhutanese Government claims the country is thus, amongst the very few "carbon negative" countries. However, economic development is now causing emissions to rise more quickly. In its updated **NDC (2021)**, Bhutan maintains its carbon neutrality commitment, depending on technical and financial support received.

The project supports Bhutan's NDC, particularly by strengthening the climate resilience of its agriculture systems. This support also aligns to Bhutan's **LT-LEDS** for food security, by enhancing agricultural resilience through innovative irrigation schemes and by improving storage and distribution of farm produce

Achievements

Sustainable Land Management (SLM) methods were applied to 102 acres of steep, degraded land in Samtse benefiting 90 farming households (with 269 women) in enhancing the resilience of their agriculture-based livelihoods. Along with boosting crop yields, productivity and incomes, SLM prevents soil erosion, ensures water and nutrient retention, as well as optimizing land use. This will support cultivation of paddy fields, maize, legumes, winter vegetables and fruits.

To boost food security and climate resilience at 3,000+ meters above sea level, farming in Bumthang was adapted for year-round cultivation. Crop diversity, productivity and economic opportunities grew, through specialised greenhouses featuring drip irrigation systems supplied to 182 households, reducing high winter vegetable imports. The farmers group expanded these efforts, contributing 20 percent of the finance to build another two mega greenhouses in Bumthang and Samtse. These accommodate a greater variety of crops and operate on a commercial level, lifting incomes for 195 households.

Herder and farmer livelihoods were strengthened by diversifying and extending their product lifespans. Seven blast freezers were set up in seven key agricultural locations along with one cold storage unit, to overcome logistical challenges farmers face, including post-harvest losses. By extending the shelf life and transportability of produce, these are expected to produce about 149 tonnes of pork and 151 tonnes of chicken every month which would otherwise not reach the market. A new Highland Dairy Processing Unit in Haa District was also built with project support, processing dairy products made by the Bhutan Yak Federation (470 households, including 202 led by women). This has developed three premium yak cheeses (Tomme, Gumdhel and Caciocavallo), which were introduced to the market.

To overcome threats to bees posed by longer, hotter summers, beekeepers in six districts (Bumthang, Haa, Paro, Thimphu, Trongsa and Wangduephodrang) were provided with new resources and skills. 250 flow hive technology products and accessories (honeybee colonies, bee feeds, essential beekeeping equipment and tools) were supplied, along with programs to build their capacities. To share beekeeping knowledge by demonstrating flow hive technology, the programme supported construction of the Mother Apiary's solar-powered fencing and Pyramid Shed at the National Livestock Research Centre in Bumthang.

Water shortages were overcome by constructing seven km of smart irrigation channels, with the women-led WUA in Trashiyangtse District. These will be monitored by cameras, with water supply managed via mobile applications. The two channels will irrigate 197 acres of paddies, benefiting 139 families (including 77 women). Micro-irrigation facilities were also supplied to 138 vulnerable farmers in Pemagatshel District (including 55 women). A mega greenhouse in the same district operated by seven young women was also added under this project with automated irrigation, operating on a commercial scale, with diversified crops. 11 participants, including farmer groups and agriculture extension officials, were trained to operate and maintain the system, and will teach others to do the same.

To drive technology solutions for climate-smart farming, an innovation challenge was expanded with greater coverage and impact, securing an additional $27,000 through a local Civil Society Organization, Loden Foundation. This helped scale agribusiness of farmer groups, cooperatives and dairy-processing, along with agri-startups, through six agri-tech entrepreneurs. This helped to create 36 new sustainable jobs (including for 15 women) and employ more than 100 people indirectly. The project provides a ready market for milk for some 13 farmer cooperatives.

Partnerships

In partnership with the National Livestock Development Centre (NLDC), along with the Ministry of Agriculture and Livestock, UNDP helped establish the country's first apiary, where innovative hive technology will be demonstrated and long-term research initiated. NLDC procured the new hives and will study their performance. In future, it will also collaborate with UNDP further to promote them.

UNDP Bhutan (2024)

Ugyen Dhendup looks forward to expanding into cheese production, with new equipment in Thimphu. UNDP Bhutan (2024)

CHEESE LIVELIHOODS BOOST

Serkar Dairy Plant, in Thimphu, is dedicated to enhancing the value of dairy milk sourced from local farmers in Thimphu. Currently producing yogurt and pasteurized milk with 19 workers and nine dairy cooperatives, Serkar plans to introduce cheeses, by acquiring an automated cheese packaging machine. This is expected to create 13 new jobs, triple their intake of milk from local cooperatives, and reduce reliance on imported dairy.

According to Co-founder and CEO (Serkar Dairy Plant), Ugyen Dhendup:

"We are very grateful to have secured the grant, as we have been able to buy the machinery required to automate the processes. As operating the machines requires skills, we have also built the capacity of our employees through staff training."

"Our productive capacity has increased from 300kg / day to 3,000kg / day, almost ten-fold,"

he added.

Saving forests, foregoing fuel

RESULTS

Locations:
Machakhela Protected Landscape (MPL) territory

Budget:
US$594,486

People who benefitted:
Directly: **1,350 people (634 men / 716 women)**
Indirectly: **1,700 people**

People informed / trained:
261 people

RE capacity installed:
652 kW

GHG emissions reduction per year:
900 tonnes CO_2e

Trees Saved
36,000 trees over the 20 years period

SDGs:
SDG 1, SDG 7, SDG 13, SDG 15

Contributions to national climate pledges

The effects of climate change, combined with its complex, mountainous landscape, make Georgia more vulnerable to natural disasters, which have grown three times more likely in recent years. Its population of about 3.73 million (2018) generates only 0.03 percent of total global GHG emissions according to **EU4Climate**, despite their significant rise in recent decades of rapid economic growth, from 9.6 M tonnes CO_2 e (2001), to 17.8 M tonnes CO_2e (2017). In its updated **NDC (2021)**, Georgia commits to limiting national GHG emissions to 35 percent below the 1990 level by 2030, or 50-70 percent with international support. Its **LT-LEDS (2023)** aims to realize carbon neutrality by 2050, with sustainable management of forests - covering 43.5 percent of Georgia's territory – to play a key part, as critical carbon sinks.

This project contributes to Georgia's NDC mitigation goal by installing solar power systems, which also support the country's European Union (EU) Association Agreement to boost renewables in the energy mix. Additionally, it facilitates Georgia's forestry NDC target to enhance the GHG absorption and adaptive capacities of forests, improving their carbon capture capacity by 10 percent compared to 2015, by 2030.

Achievements

To support emission reductions, 200 solar water heaters and 75 solar PV panels were installed for 261 families in the Machakhela Protected Landscape territory by the Agroservice Centre. These measures are estimated to save a total of 900 m3 of fuelwood on average every year, capturing around 900 tonnes of CO_2e annually and saving roughly 1,800 trees a year,. With the average life expectancy of certified solar water heaters at 20 years, this is expected to save 18,000 tonnes of CO_2 and 36,000 trees over their lifetime. Reducing long-term forest degradation will greatly help in keeping the globally unique Colchic forest ecosystems healthy and functional, for sequestering emissions and conserving nature.

Solar systems contribute to the wellbeing of these 261 families by allowing free or affordable clean energy, with reduced or zero costs for fuelwood during warmer months for water heating, or in case of surplus power generation. These heaters are forecast to save each household around $140 (400 GEL) a year on fuelwood, while the 2.8 kWp on-grid solar panel system produces about 3,100 kWh energy per year, saving each of the 75 households on average $220 (600 GEL) on electricity annually.

This supports a more inclusive low-carbon transition, as energy savings are critical for women-led households (83), socially vulnerable families (25), along with those with disabled family members (17), who tend to have lower incomes. Overall, up to 1,000 beneficiaries now have access to solar-heated water. At least one member of each family gained knowledge on how to use their solar PV device after being trained.

Partnerships

Japanese consultancy company, Asia Air Survey, together with national experts, cooperated to finalize a feasibility study on biomass fuel production in Ajara Autonomous Republic. The final report was prepared and translated into Georgian, and submitted to the project beneficiary institution, the Ministry of Agriculture of Ajara A.R.

UNDP Georgia (2024)

UNDP Georgia (2024)

Leila (in the middle), with her mother and sister-in-law.
UNDP Georgia / Giorgi Tsetskhladze (2024)

SOLAR-POWERED TRANSFORMATION

55-year-old Leila Kakhidze, a primary school teacher in Upper Chkhutuneti, Machakhela Protected Landscape, faced high costs for heating and cooking, relying on fuelwood from nearby forests as their family's primary heating source during winter, and for hot water all year.

"I used to pay 160 GEL ($60) per month for electricity," she said.

With the new solar PV panels and water heaters installed through the project, Leila says energy costs for their family are now much more affordable.

"Last time I paid 25 GEL ($9), while five refrigerators are constantly on, kitchen appliances are on, with lots of heaters and other things. This is how efficient the solar panels are."

"For the valley, this means that our famous Colchic forests are not damaged and remain preserved," she added.

These savings will boost the profitability of their home café and catering business, which Leila founded two years ago, for neighbours who host tourists, lifting their incomes further.

Building a just, resilient green transition

RESULTS

Locations:
Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Maharashtra, Meghalaya, Nagaland, Odisha, Punjab, Sikkim, Tamil Nadu and Uttarakhand

Budget:
$5,174,839

People who benefitted:
Directly: **8,677 people (2,603 men / 6,074 women)**
Indirectly: **1,153,833 (576,915 men / 576,917 women)**

People informed / trained:
2,610 (100% women)

Green jobs created:
5,942 (1,783 men, 4,159 women)

GHG emissions reduction per year:
302.34 tonnes CO_2e

SDGs:
SDG 1, SDG 5, SDG 8, SDG 9, SDG 10, SDG 11, SDG 13 & SDG 17

Contributions to national climate pledges

As the world's most populous country (1.43 billion people) and fifth largest economy, India's development trajectory will be decisive to meeting the Paris Agreement globally. Its CO_2 emissions grew by seven percent in 2023, a faster rate than its Gross Domestic Product (GDP) (6.7 percent) in 2023, rising around 190 Mt to reach 2.8 Gt, according to the **International Energy Agency.** This was fueled by a Covid-19 recovery in steel and cement output, along with the 2023 monsoon and floods, which drove up energy use. India is committed to seeking low-carbon growth to reach net zero by 2070, while ensuring enough energy for all households and sectors. Its **NDC (2022)** aims to reduce the emissions intensity of its GDP by 45 percent by 2030, as well as ensure half of its electricity generation capacity from non-fossil fuel sources, by the same time.

This project furthers India's mitigation NDC targets by boosting energy efficiency in the hard-to-abate steel sector and increasing the share of energy generated from renewable sources (via demonstration of decentralized renewable energy solutions for livelihoods), in line with SDG 7 (clean energy). It also supports India's climate adaptation through local government and youth DRR trainings, as well as assisting national risk mitigation programmes, flood management plans and systems for disseminating climate information.

Achievements

To support a future-ready Jharkhand, a macroeconomic study was undertaken to explore economic diversification pathways and the future of work. Simultaneously, a microeconomic survey covering over 5,000 respondents was conducted to understand their livelihood aspirations. Together, these studies will be used to develop the livelihoods transition roadmap for the state.

To develop sustainable, resilient livelihoods as part of climate mitigation, 130 Master Trainers enhanced their knowledge of low-carbon millet food processing technologies through training. 2,610 women were trained in millet production by producer companies, offering alternative livelihood opportunities to strengthen their resilience and that of their communities during the green transition.

430 decentralized renewable energy solutions, including 220 solar powered sewing machines, 50 solar powered refrigerators, 10 solar cold storages, 30 solar powered silk reeling machines, 30 solar food processing machines, and 102 solar water pumping systems, strengthened the livelihoods of small business owners and micro-entrepreneurs, (primarily women) from low-income communities across five states – Bihar, Meghalaya, Nagaland, Odisha and Tamil Nadu. Training in using these technologies was provided by local CSOs engaged under the project in each state.

DRR capacities for climate information and early warning services were strengthened for over 55 officials and 60 students in Sikkim and Uttarkashi via training. To strengthen National Disaster Management Agencies (NDMA) risk mitigation capacity, a technical expert at the NDMA coordinated a National Urban flood Mitigation programme, as well as supported the NDMA's plans to expand it further. To improve flood management, HRVA studies were completed for three cities (Nashik, Nagpur and Aurangabad), to mobilize urban flood management investment.

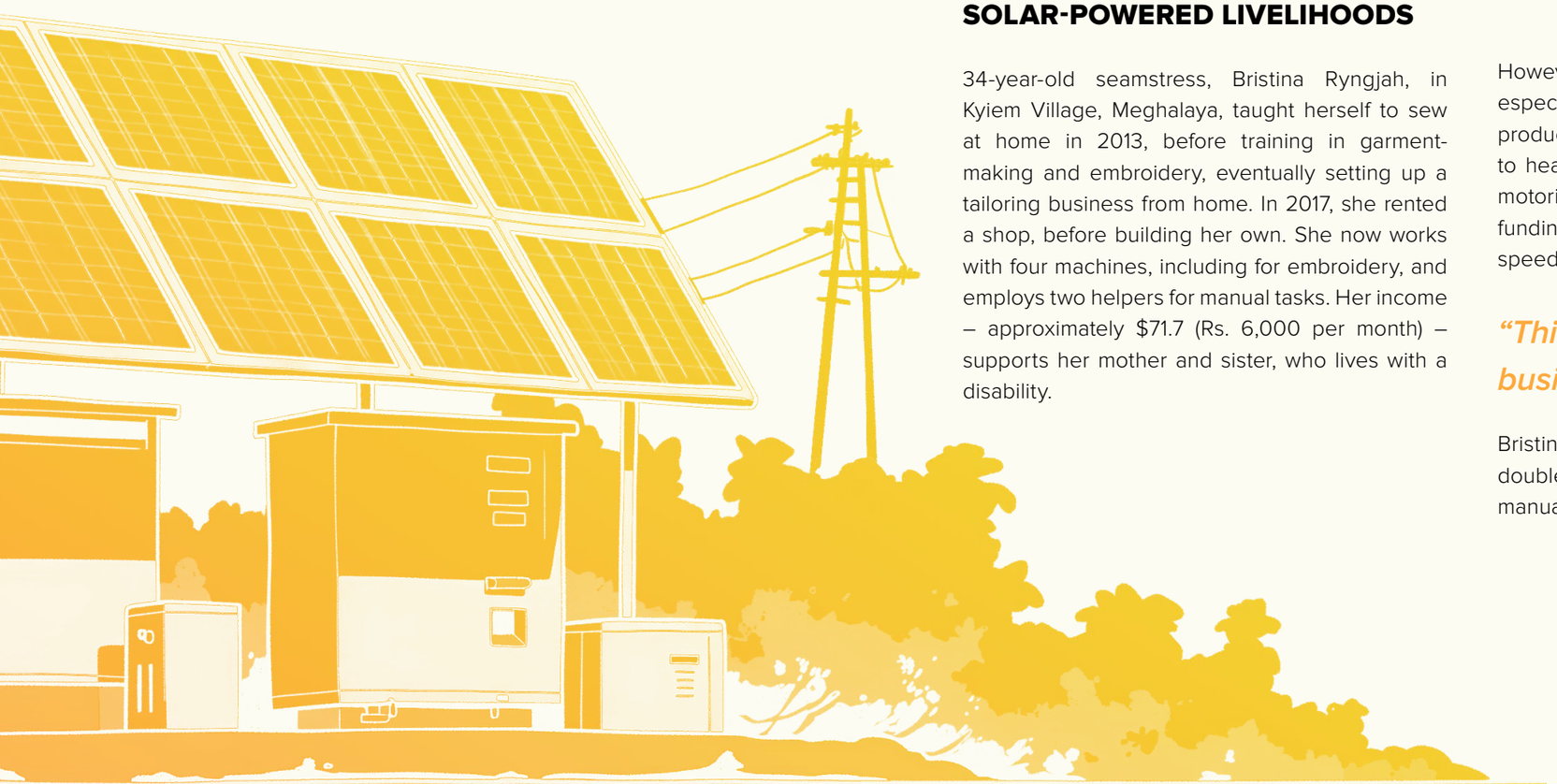
50 EVs for waste collection were deployed across six Urban Local Bodies (ULBs) in Assam and Maharashtra. The EVs will be used primarily by women self help groups involved in waste collection, established under the National Urban Livelihood Mission of the Ministry of Housing and Urban Affairs. The Ministry aims to scale up this initiative, based on lessons learned here.

125 mini-steel units across four clusters in Chhattisgarh, Gujarat, Punjab and Tamil Nadu adopted energy efficiency interventions, which resulted in energy savings of at least 5 percent, based on energy audit recommendations provided. A decarbonization roadmap for the secondary steel sector has also been developed.

Partnerships

UNDP's support to the Jharkhand Just Transition Taskforce has been recognized and led to the Taskforce seeking further support from UNDP in finalizing the Roadmap for a Future-Ready Jharkhand. UNDP's support to the National and State Disaster Management Authorities contributed to approval of a larger project through government support. EVs for waste collection were demonstrated through cooperation between UNDP and the Ministry of Housing and Urban Affairs. UNDP's partnership with the Indian Meteorological Department, under the Ministry of Earth Sciences (established under JSB 2021), was further strengthened under JSB 2022 in building climate information services capacities.

Bristina with her solar-powered sewing machine
CES Foundation (2024)



SOLAR-POWERED LIVELIHOODS

34-year-old seamstress, Bristina Ryngjah, in Kyiem Village, Meghalaya, taught herself to sew at home in 2013, before training in garment-making and embroidery, eventually setting up a tailoring business from home. In 2017, she rented a shop, before building her own. She now works with four machines, including for embroidery, and employs two helpers for manual tasks. Her income – approximately $71.7 (Rs. 6,000 per month) – supports her mother and sister, who lives with a disability.

However, Bristina faced erratic power supply, with frequent power cuts, especially during the rainy season, often lasting 2-3 days. This limited her productivity, causing Bristina to work longer hours later to compensate, leading to health issues such as leg pain. This year, she received a solar-powered motorized sewing machine procured by UNDP from SNL Energy Solutions with funding from Japan, along with training to use it. She was impressed by its speed and ease of pedal operation.

"This innovation has significantly impacted my business,"

Bristina said. "With the solar-powered motor, my stitching productivity has doubled, and I no longer experience physical discomfort from extended manual operation."

Enhancing reporting to reduce emissions

RESULTS

Locations:
Indonesia nationwide

Budget:
$1,996,499

People who benefitted:
Directly: **2,956** (**1,870** men, **1,086** women)
Indirectly: **20,692** (**13,090** men, **7,602** women)

People informed / trained:
1,020 (**639** men, **381** women)

Green jobs created:
44 (**33** men, **11** women)

GHG emissions reduction per year:
1,196,723 tonnes CO_2e

SDGs:
SDG 7, SDG 9, SDG 11, SDG 13

Contributions to national climate pledges

Indonesia is home to the world's fourth-largest population, relying heavily on agriculture and fishing. It ranks in the top third of countries most at risk of climate hazards (48th out of 191 on the 2023 INFORM Risk Index), including flooding, storms, heatwaves and droughts. Its enhanced NDC (2022) targets reducing GHG emissions by 31.89 percent unconditionally compared to a business as usual (BAU) scenario, and by 43.2 percent with international support in financing, technology transfers, and capacity-building. According to its Long-Term Strategy for Low Carbon Climate Resilience (LTS-LCCR, 2021), Indonesia aims to peak national emissions in 2030 and reach net zero by 2060.

This project encouraged dialogue and catalyzed formation of policies towards Indonesia's NDC energy target. It significantly strengthens Indonesia's emission reduction verification framework, by supporting the readiness of selected industries in domestic carbon markets, making businesses more incentivized to adopt climate-friendly practices and invest in mitigation. It also reinforces the capacity-building target of Indonesia's NDC, by boosting business and public resilience to climate challenges via training.

Achievements

To improve emissions monitoring, reporting and verification to achieve the NDC target, coordination between technical ministries has been strengthened. Building on previous support from Japan to enable carbon trading, the latest phase boosts the platform's integration, by allowing data interoperability between the platform (Sistem Registri Nasional) and the application used by electricity generation companies to calculate and report their GHG emissions (APPLE-GATRIK). The smooth sharing of emissions data from electricity companies also supports energy sector emission reductions that are critical to meeting the country's NDC targets.

High-level events were held to encourage dialogue and policies promoting Indonesia's energy sector NDC target, together with the Ministry of Energy and Mineral Resources (MEMR), the Ministry of Environment and Forestry (MoEF), and other key stakeholders. A training workshop and subsequent event were held to introduce and launch the National Registry System (SRN) and Sertifikasi Penurunan Emisi Indonesia (SPEI), driving emissions reduction strategies.

The project supported emission reduction verifications and carbon credit issuance, by setting up coaching clinics for private sector beneficiaries, together with the Ministry of Energy and Mineral Resources, the Ministry of Environment and Forestry, and others. 47 people (including 15 women) gained emission verification techniques and know-how for the electricity generation subsector after a training session. 39 people (including 13 women) now have a greater understanding of emission verification reporting guidelines, through expert advisory sessions. 60 people (including 20 women) also developed skills to produce effective climate mitigation action plans following workshops. A modelling study and roadmap are also showing how energy and high-emitting industries (such as ethylene and cement production) can cut emissions, through specific technologies and concrete next steps. The project facilitated the validation process for 105 emission reduction projects, enhancing the overall impact of climate mitigation efforts.

The project provided key support for projecting and calculating emission cuts of key industries, including ethylene, pulp and paper, and others, through close collaboration with stakeholders, such as the Ministry of Industry and the Indonesian Pulp and Paper Association. The project's comprehensive study on Long-Term GHG Targets and Action Plans for the ethylene - industry which generally has energy-intensive processes and significant emissions - produced a detailed framework, tackling sector-specific challenges and opportunities for emission reductions. This guides ethylene companies towards informed investment decisions on low-carbon technologies, while setting a clear path for transitioning to a sustainable, low-carbon target for the company, as well as Indonesia.

Partnerships

UNDP facilitated extensive collaboration among stakeholders to support achievement of energy sector NDCs. Government stakeholders, including the Ministry of Energy and the Ministry of Industry, worked closely with the project to facilitate discussions and actively monitor progress in low-carbon development, including training and capacity-building for the private sector.

A strong partnership was established with the Embassy of Japan in Indonesia, whose contributions were critical in shaping strategies to involve the private sector in validation of emission reductions.

The Japan External Trade Organization (JETRO) offered key recommendations to overcome policy barriers and accelerate decarbonization investments in high-level discussions facilitated by the project.

Out of the 105 domestic companies supported by the project, eight were Japanese-affiliated. These included a textile manufacturer with 49 percent Japanese ownership, an ethylene producer financed by Japanese institutions, and a pulp and paper company owned by Japan.

Rochim, left, with their new retrofit Primer and Secondary Chiller.
UNDP Indonesia (2024)

UNDP Indonesia (2024)

ENABLING EMISSION REDUCTION REPORTING

Amerta Indah Otsuka Company distributes consumer health and food products throughout Southeast Asia. It is committed to reducing emissions, by switching from gas to electricity, retrofitting chillers, optimizing boiler operations and modifying heating, ventilation, and air conditioning (HVAC) systems. However, it had previously faced significant challenges in identifying and calculating its GHG emissions reduction activities, as well as reporting these to the National Registry System for certification.

To overcome this, the project trained Otsuka staff in calculating reductions and developing a comprehensive GHG mitigation action plan, validated by the National Registry System. This “will lead to our company’s participation in the domestic carbon market,” said Rochim Luqman, Head of EHS – EnMS (Energy Management System), Amerta Indah Otsuka.

“The support not only has an impact on reducing carbon emissions, but also… has provided significant energy cost savings…and has enhanced the technical capacity of the team in designing and implementing effective mitigation strategies, further contributing to Indonesia’s Nationally Determined Contributions targets.”

Urban farming for carbon sequestration and food security

RESULTS

Locations:
Amman

Budget:
$1,000,000

People who benefitted:
Directly: **730** (**312** men / **418** women)
Indirectly: **739,795** (**391,526** men / **348,269** women)

People trained:
693 (**287** men / **406** women)

Trees Planted
3,600 trees planted

Green jobs created:
15 (all women)

GHG emissions reduction per year:
79.2 tonnes CO_2e

SDGs:
SDG 2, SDG 11, SDG 13

Contributions to national climate pledges

Despite being one of the world's lowest emitters - releasing just 28 million tonnes CO_2e, per its latest (2012) GHG emissions inventory - Jordan raised its emission mitigation target in its updated NDC (2021) to a 31 percent reduction compared to the BAU track, contingent on international support. The NDC also contains an Adaptation Vision reflecting the National Adaptation Plan (NAP). This is critical for Jordan, which consists of 75 percent desert and is highly affected by climate change impacts, including droughts, floods, extreme heat and fluctuating rainfall, undermining agriculture, water and food security.

This resilience and adaptation project supported vulnerable people by increasing their food security, including for emergencies (e.g. extreme weather shocks, pandemics etc.), while strengthening resilience to flash floods by expanding green areas, in line with Jordan's NDC adaptation targets (4.2.7 and 4.5.2). It also enables mitigation, by expanding Amman's gardens and urban forests, to enhance carbon sequestration, contributing to mitigation target 3, including climate-smart agriculture and urban tree plantations.

Achievements

This project has helped to mitigate emissions by enabling carbon sequestration through urban afforestation, along with boosting food security by expanding rooftop gardens and urban farming in the capital, Amman, home to half of the Jordanian population. This benefits vulnerable communities in densely populated districts, who were most exposed to food insecurity during COVID-19, while also increasing the city's green areas.

Institutional capacities for urban farming within municipalities improved through training. Urban farming knowledge was further strengthened through instrumental and technical urban farming guidelines for city planners, and urban farming guidelines for the residents of Amman

Urban farming was demonstrated through key pilots. This includes the establishment of a plant nursery, with climate-smart irrigation, as well as an efficient cooling and heating system for climate-smart agriculture, at Al-Qadisiyah Garden Center of Greater Amman Municipality. This serves as a fruit tree seedling production and distribution center for Amman residents, providing resources for urban farming and improving food security in the community.

Plantation sites for fruit trees were selected and planted. Seedlings were procured and shared among community groups, who learned to cultivate their own rooftop and indoor farming, and gardens to grow food.

Vulnerable households, including persons with disabilities and those headed by women, gained best practices and skills in new urban farming techniques. This includes capacity-building in hydroponic use and crop production techniques and being equipped with complete hydroponic units and planting materials to begin household-level hydroponic farming. This support enhances their capacity to grow vegetables for personal consumption and potentially generate additional income.

To further strengthen food security, an Urban Farming Community Garden and Training Center were established in Al-Muqabalayn District of Amman, which includes a training hall, hands-on workshop and demonstration greenhouse.

To increase green space in the city and boost carbon sequestration, the Miyawaki Urban Forest in Al Jubeiha was established, with over 3,600 seedlings of endangered species planted by more than 550 volunteers. Applying the Miyawaki method for afforestation in cities, degraded urban soil was rehabilitated to emulate natural processes, using the most suitable native wild species for urban environments. This produced five times more tree growth than usual and will be replicated in Amman in future.

Partnerships

The Midorization Project, a Japanese NGO dedicated to urban resilience through native forest regeneration and community development, brought valuable technical expertise in implementing the Miyawaki Method in Amman, supporting community well-being and biodiversity restoration.

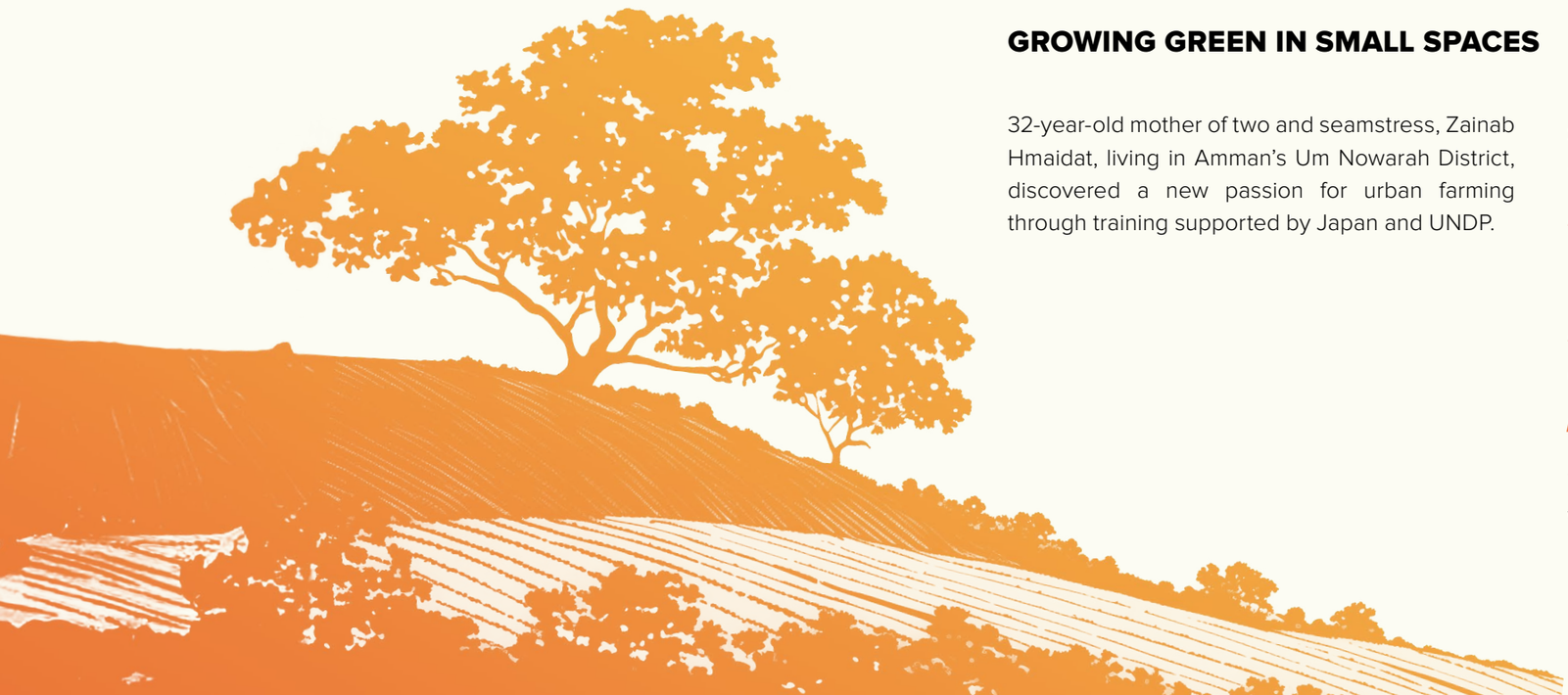
The project cooperated with the Community Development Affairs Sector, and the Agriculture Affairs Sector of Greater Amman Municipality on the urban farming training curriculum.

Greater Amman Municipality and German Jordanian University facilitated a Science Day, with 100 participants from government, NGOs and academia, strengthening their understanding of food security challenges, urban farming prospects, and land and water management, through panel discussions.

UNDP worked with iPlant to empower women through home hydroponics, offering them the chance to explore cutting-edge, yet simple to use, water-efficient hydroponic techniques and promote sustainable urban farming practices in Jordan.

“Our connection with Urban Farming Network will help us further support these women by providing ongoing resources, knowledge-sharing, and a platform to expand their urban farming efforts in Amman and Jordan,” said iPlant co-founder, Omar Bawab.

Zainab Hmaidat, in Amman’s Um Nowarah district, studies a seedling.
UNDP Jordan (2024)



GROWING GREEN IN SMALL SPACES

32-year-old mother of two and seamstress, Zainab Hmaidat, living in Amman’s Um Nowarah District, discovered a new passion for urban farming through training supported by Japan and UNDP.

She said. ***“Despite limited space in my home, I learned to grow plants using hydroponics—a method I initially thought required a lot of water,”***

“The program provided me with techniques and materials, showing me that hydroponics is water efficient. I’ve started indoor farming to bring fresh produce to my family.”

This offers her family greater security against food crises and climate shocks, while also inspiring her community to embrace sustainable living.

Accelerating clean cooking

RESULTS

Locations:
Nairobi, Tana River, Laikipia, Kajiado, Machakos

Budget:
$1,327,090

People who benefitted:
60,000 directly (**16,800** men, **43,200** women)
2,000,000 indirectly (**1,100,000** men and **900,000** women)

People informed / trained:
556 women and youth

Green jobs created:
556 (**400** women and **156** men)

GHG emissions reduction per year:
25,000 tonnes CO_2e

SDGs:
SDG 1, SDG 7, SDG 13, SDG 15

Contributions to national climate pledges

Contributions to national climate pledges
Like many African countries, Kenya is severely affected by extreme weather brought by climate change, including floods, droughts and cyclones, costing its economy 3-5 percent GDP every year, according to the World Bank. Despite contributing less than 0.1 percent of global GHG emissions in 2018, per Kenya's updated NDC (2020), it makes a strong conditional commitment to reduce GHG emissions by 32 percent by 2030 compared to a BAU scenario. This means that commitments are dependent on international support, which has been calculated at 87 percent of the required cost to achieve targets.

The project contributes to Kenya's mitigation NDC targets, including boosting energy efficiency technologies to reduce use of fossil fuels and forests for biomass. It also supports Kenya's goal of enabling 4.55 million households to adopt clean cooking solutions between 2020 and 2030, reducing carbon emissions by 9 M tonnes CO_2e.

Achievements

Deforestation, GHG emissions and indoor air pollution were reduced by providing 10,000 vulnerable households with higher efficiency cooking stoves (using firewood, charcoal, bioethanol and electricity). This is estimated to save 25,000 tonnes CO_2e emissions a year and contributes to Kenya's sustainable energy target of achieving 100 percent clean cooking by 2028, by reducing reliance on biomass through improved energy efficiency, while boosting public and environmental health.

Clean cooking livelihoods were cultivated by empowering 556 women and youth entrepreneurs selling to grassroots consumers, who gained skills in clean stove production, marketing, distribution and maintenance, after training with the Clean Cooking Association of Kenya. 81 percent adopted clean cooking methods, and 37 percent now engage in clean cooking businesses, expanding the clean stove value chain to boost distribution for end users. County and national governments received a clean cooking training curriculum to build capacities of new clean cooking trainers, who are attached to renewable energy and rural electrification (REREC) clean cooking energy hubs, that have facilities to share clean cooking information.

Clean cooking was enabled in five boarding schools that gained liquified petroleum gas (LPG) facilities, replacing firewood for 5,650 students and staff, after refurbishing kitchens and installing LPG tanks as a transitionary method, in partnership with a Japanese non-governmental organization (NGO), CORE, which assessed schools identified by the Ministry of Energy and found that they were using inefficient rocket wood stoves, emitting black carbon. Replacing these reduced emissions of GHGs, as well as other gases and particles, while improving air quality, health and work environments of kitchen staff, who were also given LPG maintenance and safety training. The government plans to scale this approach and is already piloting another 20 schools, with plans to install clean cooking in 300 schools annually.

Local energy plans for three counties were strengthened in Tana River, Kajiado and Machakos. Their populations rely heavily on biomass, degrading already fragile arid environments. This includes a more holistic approach, working with the forestry, agriculture and energy sectors to reduce fuelwood use. After submission to the Cabinet secretary for Energy, these county plans are being consolidated into one national integrated energy plan.

Partnerships

The project cooperated with Kenya's Ministry of Energy and Petroleum, along with the Clean Cooking Association of Kenya and Practical Action group, leveraging the existing clean cooking ecosystem they have built over past decades. Japanese NGO, CORE, was key in implementing school installations. With their civil engineering expertise, the project could retrofit rather than build new kitchens, cutting costs and saving time.

Chef Joash Diang'a, with their school's newly installed LPG tank. CORE Kenya (2024)

UNDP Kenya (2024)

A RECIPE FOR CLEAN AIR

Before the Moi Girls Secondary School Isinya switched to LPG to power their stoves, kitchen staff, including Chef Joash Diang'a, endured unhealthy and difficult working conditions.

"When we were not using LPG, we faced various health challenges, because the smoke filled the entire kitchen, which led to increased hospital admissions and increased the risk of developing cancer and other diseases," said Diang'a.

"Now, we are in good health. We are smoke-free and clean... I'm wearing white while walking around. It means that cleanliness is maintained."

Since the clean stove upgrade, Joash and his team no longer need to wake up at 3am to break up and light firewood. They now start work at 5am instead. Along with time, they are saving money, as school funds are no longer needed to cut, transport and offload firewood.

Reducing glacial flood risks

RESULTS

Locations:
Cholpon-Ata city, Bosteri and Chon-Sary-Oi villages

Budget:
$994,810

People who benefitted:
Directly: **1,176** (**647** men, **529** women)
Indirectly **31,520** (**14,184** men, **17,336** women)

People informed / trained:
267 (**131** men, **136** women)

SDGs:
SDG 3, SDG 5, SDG 9, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

Despite being a low emitter, the Kyrgyz Republic has committed in its updated (2021) NDC to reducing GHG emissions by 15.97 percent versus the BAU-scenario by 2030, and by 43.62 percent with international support. The country and its economy are highly vulnerable to the effects of climate change, including more frequent natural disasters. Among these are glacier lake outburst floods (GLOFs) and mudslides. The government has had limited capacity to monitor and mitigate these, particularly in hazardous high mountain areas, where satellite images were restricted, and data was not digitized, until now. Addressing such challenges, through improved adaptation and resilience, are key to the Kyrgyz Republic's climate action.

To date, glacial lake monitoring in the Kyrgyz Republic consisted mainly of regular helicopter flights over glaciated areas. This was unsustainable and inefficient, limiting: i) knowledge on distribution and severity of glacial lake flood threats; ii) identification of high-risk settlements and; iii) government-led risk reduction measures. This project has helped to overcome this challenge, by empowering local communities through substantially improving glacier lake monitoring, as well as mitigating outburst flooding risks with strengthened surveillance and proactive DRR measures. This supports the adaptation component of the country's NDC that aims to strengthen resilience to the negative effects of climate change, in line with the Paris Agreement.

Achievements

A new centralized AI model to monitor and forecast flood risks was developed through gender-responsive algorithms and modules. Using open-source satellite imagery, the unified monitoring system continuously analyses lake conditions – including temperature, borders, colour, reflectiveness, precipitation and humidity. From this, specialists are already predicting outburst risks and taking proactive measures: in August, the Ministry of Emergency Situations was able to safely evacuate 490 people in Ton District, after recording a rapid rise in water levels at nearby Lake Zyndan and warning them two weeks in advance of the possible breakthrough. Accuracy has also been strengthened through the option to add data from field research, along with retrospective analysis, enhancing risk mitigation and long-term planning. As such, the new system marks a major step forward in improving disaster risk management nationally, and in developing a new standard for monitoring, globally.

Ministry of Emergency Situations of the Kyrgyz Republic staff gained strengthened DRR skills to model, process and analyse satellite data in monitoring flood risks through training. Community-based Environmental Monitoring Groups (EMGs) were created in the pilot ayil aimaks (the smallest administrative unit) and the Cholpon-Ata City Mayor's Office (212 members), that included council deputies, activists, youth organizations, women's councils, water user associations, and residents from Chon-Sary-Oy, Bosteri and Cholpon-Ata town. Communities gained greater knowledge of sustainable development solutions to combat natural disasters and climate change through training, along with disaster response first aid skills, during a simulation and drill with the Issyk-Kul Red Crescent.

To improve household safety in the three most disaster-prone areas piloted, monitoring parameters were expanded with new equipment, while 1.6 km of mudflow channels were renovated with asphalt to be fit-for-purpose, which the local government will be responsible for maintaining. Joint monitoring of hazardous high mountain lakes was enabled by building the capacities of the local community and providing them with necessary equipment.

To bolster community disaster risk reduction preparedness, regulations on the lakes outburst monitoring group and instructions for monitoring safety were developed. Public education for glacial lake floods also increased through four TV programs the project produced, along with a newspaper article and two articles online, shared on social media. More than 250 people learned about mountain safety, the Issyk-Kul mountain lake ecosystem, community disaster risk management, flood risks and climate change, through the distribution of 3,200 booklets by EMG members and three local governments. 60 hotels, three kindergartens, five schools, ten hospital and midwife centers, as well as 25 government buildings, also received these booklets.

To improve national flood risk monitoring and forecasting up until the 2030's, new action plans, along with a new strategy and system, were designed. These were based on a technical assessment of the current system and a comprehensive review of research on mountain lakes in the Kyrgyz Republic at risk of bursting. The new strategy was accepted by the Ministry of Emergency Situations, based on the research the project supported.

Partnerships

Key partners include the Ministry of Emergency Situations of Kyrgyz Republic, along with local Governments and the Center of Emergency Situations and Disaster Risk Reduction (CESDRR) in Kazakhstan, which assessed the current national disaster monitoring system and developed a plan to improve it. Results were evaluated by Asian Disaster Reduction Centre (ADRC) experts in Kobe, Japan, who made additional recommendations, and established a network of glacial lake flood monitoring organizations. ADRC also shared technical know-how and tools, along with clarifying monitoring specifications, particularly for satellite imagery. The Embassy of Japan actively contributed to implementation, attending briefings and key milestones. Ambassador Hideki Goda stated: “This project improves the monitoring capability of Kyrgyz Republic and sharing (of) information to all affected people.”

Abdyldaeva Elmira, Cholpon-Ata city municipal officer, discusses DRR progress with UN Secretary General, Antonio Guterres. UNDP in the Kyrgyz Republic (2024)

EARLY MUDFLOW WARNINGS ACTIVATED

58-year-old Abdyldaeva Elmira, a municipal officer in Cholpon-Ata city with two adult children, observed that communities have noticed the number of mudflows increasing every year, creating “serious problems” for them.

However, she believes that:

“These initiatives have not only enhanced community resilience, but also fostered a culture of proactive disaster management and sustainable development.”

During UN Secretary General Antonio Guterres’ visit in July 2024, Elmira also shared with him her story of how the project is boosting local adaptive capacities and climate resilience.

Strengthening agricultural businesses

RESULTS

Locations:
Zomba and Nkhotakota districts

Budget:
$1,089,780

People who benefitted:
Directly: **18,223**
Indirectly: **59,890**

People informed

610 (**316** men, **294** women)

Green jobs created:
609 (**200** men, **409** women)

SDGs:
SDG 1, SDG 2, SDG 7, SDG 8, SDG 11, SDG 13

Contributions to national climate pledges

Malawi is severely affected by climate change, costing an estimated 5 percent of its annual GDP according to its NDC (2021), with extreme weather disasters such as droughts, floods and cyclones increasingly frequent and intense. As a least developed country (LDC) with many smallholder farmers reliant on subsistence agriculture, resources to cope with resulting crop failures are limited, undermining food security. The country generates just 0.04 percent of global GHG emissions (9.33 million tonnes CO_2e in 2017, per its NDC), mainly from agriculture and energy. 90 percent of Malawians depend on biofuels, such as firewood and charcoal, the Centre for Environmental Policy & Advocacy reports, depleting carbon sinks and polluting the air. Malawi's NDC aims to cut GHG emissions by 6 percent unconditionally compared to the BAU scenario by 2040, and by 45 percent with international support.

This project helped to strengthen food security, as well as reduce energy costs and increase rural electricity access, which currently only 11-19 percent of the total Malawian population has (and only 5 percent in rural areas). In doing so, this project supports both Malawi's NDC's mitigation target, along with its adaptation target of enhancing resilience through improved technologies and agricultural upgrades.

Achievements

Malawi's agricultural productivity was improved in Nkhotakota and Zomba through the construction of Chisomo and Nanyanga solar powered irrigation schemes. These systems use solar energy for pumping water year-round eliminating the need to use fossil fuels for pumping water, thus reducing emissions, while allowing cultivation to continue even in dry season. Importantly, local farmers were trained to use these new technologies. Newly installed greenhouses are also anticipated to boost crop production, with drip systems installed to boost water supply. Cooperating farmer groups also benefit from economies of scale and cost-sharing, by growing and selling certain crops together.

Agricultural market trading hours have been extended by solar streetlights provided to market centres. This will boost the income of small traders and farmers, as market traffic is highest after dark while also increasing food availability in local communities. 1,000 people gained awareness on the benefits of solar energy systems, to increase their adoption, while 123 people in Zomba (including 80 women) and 266 people in Nkhotakota (including 170 women) learnt how to use these systems through training.

Human security has also been enhanced through 389 solar home systems installed in Zomba and Nkhotakota Districts, to vulnerable households headed by women or with disabled family members, and limited connectivity. This will save money otherwise spent on energy, for food, health, education and other costs.

Climate-smart technology knowledge was shared by training 20 government community workers in target areas. This will be transferred to local communities, to strengthen food security in the short-to medium-term, by ensuring they understand what different solar products can achieve.

248 youth and women agricultural entrepreneurs gained business know-how, including on gross profit margins, record-keeping, business planning, and market and information access. Participants in Zomba District developed new skills for producing higher value goods, such as juices and jams through training, as well as receiving equipment to make these. Their products were showcased at an International trade fair in Blantyre in May, attended by thousands of people.

Partnerships

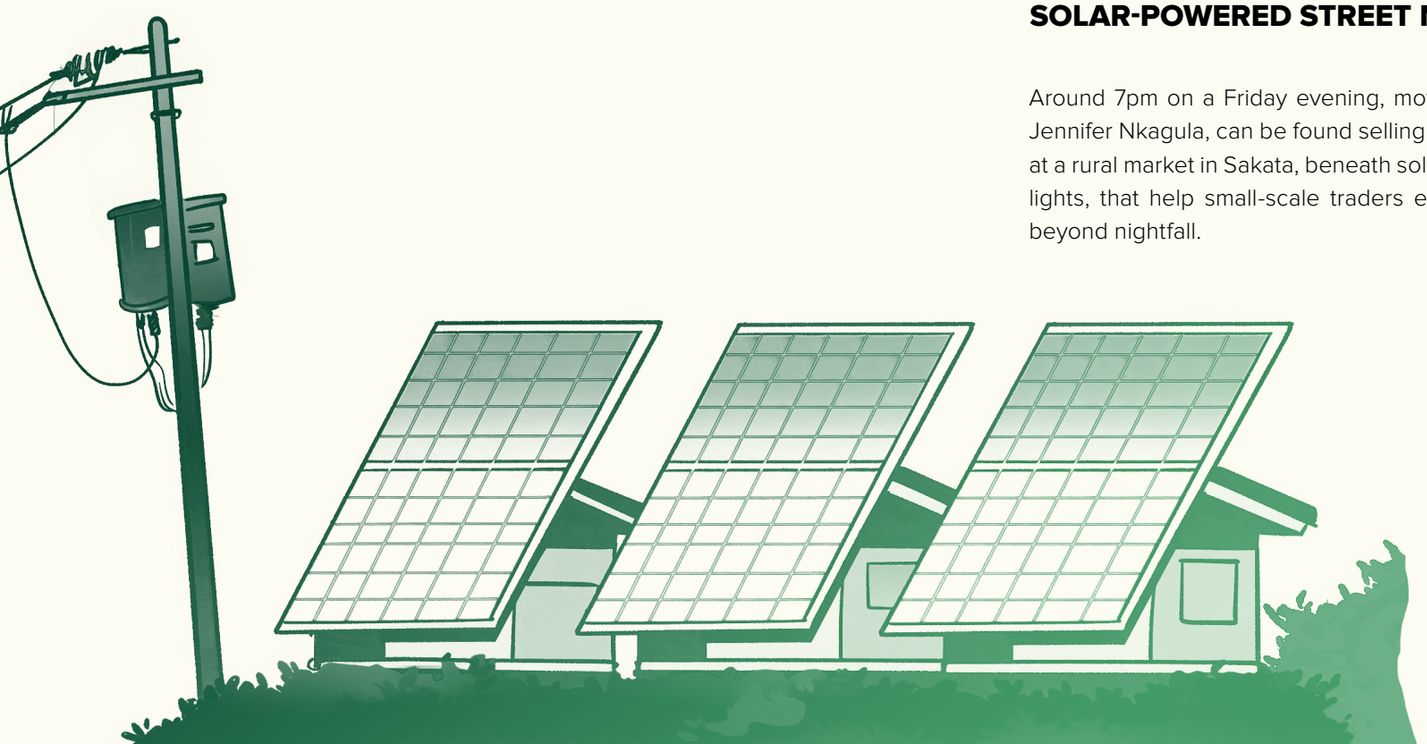
The Ministry of Agriculture, Ministry of Energy Affairs and the Department of Irrigation provided technical expertise for planning, implementation and monitoring.

The Environmental Affairs Department coordinated the project, with Zomba and Nkhotakota District Councils acting as local implementing partners.

“Solar lighting enables the small businesses to continue operating after sunset, without pushing the traders to divert their meagre profit to buying batteries, says Zomba District Environmental Officer Naomi Kachifundu.

“As such, they use the savings to grow their businesses and save a little to better respond to the loss and damage caused by climate shocks, including food insecurity.”

Janet Nkagula selling tomatoes at Sakata Market, one of seven trading centres where Zomba District Council and UNDP provided solar lighting, with funding from Japan. Harrison Mtambo / UNDP Malawi (2024)



SOLAR-POWERED STREET MARKET

Around 7pm on a Friday evening, mother of five, Jennifer Nkagula, can be found selling vegetables at a rural market in Sakata, beneath solar-powered lights, that help small-scale traders earn income beyond nightfall.

As the sun sets, solar lights flicker on at seven markets across Zomba District, that used to see small-scale traders close their shops by dusk. Now, shoppers flock to buy daily necessities while returning home, keeping Nkagula in business beyond daylight hours, thanks to these lighting systems installed by the Zomba District Council, with support from Japan and UNDP.

The extra income this affords is critical, as drought this year wilted her maize crop, leaving her and five million other Malawians in urgent need of food aid.

“With solar lighting, I sell vegetables till late to escape hunger and poverty as rain becomes unpredictable. I use the money to buy daily food and other basic needs for my family,” says Nkagula.

Food security of the future

RESULTS

Locations:
Oshana, Khomas, Kharas, Omusati, Kavango West, Kunene, Otjozondjupa

Budget:
$1,030,039

People who benefitted:
Directly: **97** (**45** men, **52** women)
Indirectly: **872** (**425** men, **447** women)

People trained:
97 (**45** men, **52** women)

Green jobs created: 60
(**17** men, **43** women)

Solar gardens created:
5

GHG emissions reduction per year:
6.21 tonnes CO_2e /year

SDGs:
SDG 2, SDG 7, SDG 8, SDG 9, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

Among the most vulnerable countries to climate change globally, Namibia is particularly prone to drought and desertification, with the oldest desert on earth. While contributing only 0.0003 percent of global emissions, per Namibia's NDC (2023), it has committed strongly to climate action. It aims to reduce its GHG emissions by 7.669 M tonnes CO_2e, while increasing its removals by 4.233 M tonnes CO_2e, for total mitigation potential of 11.902 M tonnes CO_2e, enhancing its BAU carbon sink potential by 13 percent by 2030.

The project supports these mitigation targets in agriculture, energy and transportation by deploying renewable energy solutions across the agri-food system to reduce emissions, including via solar powered water pumps. It also assists multiple adaptation targets, including climate-smart- agriculture and technologies to enhance crop production, strengthening food security against increasing drought and desertification.

Achievements

In response to widespread desertification and drought, five communal solar gardens were developed in peri-urban areas, boosting food security and livelihood resilience, including for women and youth. These will enable sustainable vegetable production for sale and subsistence via green-housing, along with solar-powered irrigation and cold-storage, reducing post-harvest losses.

To further support mitigation and adaptation, 10 solar-powered e-bikes were procured to improve timely transport of produce from the communal gardens to markets. The bikes are able to be charged in the communal garden spaces. Students at the academy are also being trained to produce solar charging stations for the e-bikes, which will be key to widening their use in the country for lower emissions, and to reducing post-harvest losses.

To overcome the skills shortage for using solar PV equipment, the project developed training modules for small businesses and students pursuing renewable energy development in how to assemble and use the equipment. The training was developed with the Namibia Energy Institute (NEI) at Namibia's University of Science and Technology (NUST), International Labour Organization (ILO) and Kafue Gorge Regional Training Centre (KGRTC). 37 trainers (9 women) were taught to train others, with NEI/NUST planning to train 50 people every year with updated RE modules.

This project explored climate-smart production techniques to reduce household food insecurity via geological agriculture (GeoAg) – growing crops in rocks without soil or fertilizer – and established two demonstration sites. This illustrated the potential of Namibian rocks to impart certain minerals to crops and assist in growth without chemical fertilizer, which will be explored further with NEI and the Ministry of Mines and Energy (MME), as well as its nutritional and food security benefits.

Partnerships

UNDP partnered with the Ministry of Agriculture, Water and Land Reform (MAWLR), along with NEI through the NUST Department of Engineering on the Technical and Vocational Education and Training (TVET) programming. This includes the Namibian Training Authority (NTA), as the modules will likely extend to additional TVET sites in future, reinforced by KGRTC via ILO Zambia. Cooperation with NUST's Agricultural School and MME was also essential to the GeoAg initiative, and to potentially expanding it nationwide. UNDP forged new partnerships with the National Youth Council and Ministry of Gender to develop a sustainability model for food systems sites.

Bernadette, in red, in the solar garden shared with her family and community.
Getruinda Haingura / Nkurenkuru Agricultural Development Centre (2024)

CULTIVATING RURAL RESILIENCE

37-year-old farmer, Kateva Bernadette, grows vegetables in West Kavango West to sell at local markets, as well as for her own subsistence and that of her six children. However, she struggles with water shortages and selling her products.

Through this project, she received a solar powered irrigation system, eliminating the need to manually collect water from the Kavango river and a net house, to reduce sun damage, pests and evaporation. Bernadette believes this will lift her production, incomes and food security.

"So far we have received most of the materials, water, shade nets," she says. "This will make us produce more and save our challenges."

Bernadette and her fellow farmers also received solar-powered e-bikes to get produce to and from nearby markets, expanding their sales opportunities, while reducing losses on longer journeys..

Climate action for human security

RESULTS

Locations:
Nalgad Municipality and Barekot Rural Municipality

Budget:
$1,039,280 (including **$999,173** by the Government of Japan; and **$40,107** by UNDP)

People who benefitted:
Directly: 4,300 (**2,245** men / **755** women)
Indirectly: 6,500 (**3,179** men / **3,321** women)

People informed / trained:
500 (**155** men / **345** women)

RE capacity installed:
15kW

Green jobs created: 196 (**109** men / **87** women)

GHG emissions reduction per year: 7,470 tonnes CO_2e/ year

SDGs:
SDG 1, SDG 2, SDG 5, SDG 7, SDG 8, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

With its mountainous topography and dependence on climate-sensitive sectors like agriculture and tourism, as well as its status as a LDC, Nepal is very vulnerable to climate change. Despite emitting just 23 million tonnes CO_2e in 2019 as per its Long-Term Strategy (LTS) for net-zero emissions, or 0.1 percent of the global total as per Climate Watch (CAIT) data, it's updated NDC (2020) is ambitious, in line with the 1.5°C Paris Agreement target. The NDC raises Nepal's emission mitigation target to reach net zero by 2050, noting the severe impact on Nepal if this is not met.

This project furthered these goals through clean energy and climate-smart agriculture, along with DRR and climate policy guidance. It contributes directly to Nepal's NDC energy mitigation targets. These aim for clean energy to generate 15 percent of total power by 2030, as well as for 500,000 improved cooking stoves to be in use by 2025 to support, along with other measures, an 11 percent reduction in cooking emissions. It also enables Nepal's adaptation targets, including strengthening agricultural resilience and food security, as well as preparing climate resilient local adaptation plans, along with multi-hazard monitoring and EWS in every province, by 2030.

Achievements

During implementation in November 2023, a deadly earthquake struck Karnali province, where the project sites (Nalgad and Barekot) are located, killing at least 154 people. The project reprioritized and responded with climate-smart food and energy solutions through early recovery support, while continuing to pursue long-term mitigation and adaptation goals, building human security and resilience through local climate action.

Climate-smart emergency relief was provided to 1,300 earthquake-affected people in five municipalities, including portable hs and rechargeable torch lights. Volunteers and villagers also gained capacities in search and rescue and tent-building, through training by the project**.**

Long-term renewable energy upgrades have benefited 1,700 households. 600 solar home systems were installed, along with 200 sets of mud-brick improved (lower emitting and higher efficiency) cooking stoves, as well as 900 sets of metallic improved cooking stoves.

500 households gained greater climate resilience through agricultural innovations. 40 plastic greenhouses were constructed, along with two nurseries with new misting technology. In a regional first, six polyhouses were built, keeping produce warm to grow faster, along with six water harvesting ponds and four community water harvesting ponds. Farmers received seeds and agricultural equipment for cultivating vegetables, spices and fruit, along with beekeeping. 50 families benefited from hybrid goats, which are easier to breed. 500 farmers (including 345 women), gained climate-smart farming and sales skills via training, including what to grow and how to sell, based on climate and market conditions.

A flood and weather observation for improving the EWS was facilitated. Two hydrological stations have been built, with a third underway, to assess river threshold levels. To improve forecasting, an automated weather station in Nalgad was also constructed.

Frameworks to boost human security through local climate action were developed for Nalgad and Barekot. 83 municipal officials (including 18 women) gained stronger coordination skills, while 70 officials (including 21 women) have enhanced DRR and adaptation capacities, after capacity-building training. Technical guidance on human security was provided to project municipalities for 2024-25 annual planning and budgeting. Barekot Rural Municipality included some of the demonstrated activities into its annual plan and budget, such as polyhouses and beekeeping.

Partnerships

UNDP engaged a range of partners, from community-level organizations to technical agencies, local governments, academia and NGOs, to strengthen human security through local climate actions. This cooperation across local stakeholders deepened appreciation of local human security issues and increased access to technical knowledge and local ownership, making interventions easier to sustain over time. Partners include the Innovative Research and Development Center, Real Time Solutions, the Hilly Region Development Campaign (HRDC) and the Social Awareness Center (SAC) Nepal. According to SAC Executive Director, Tikaram Acharya: "...communities appreciated and acknowledged the benefits of such local level actions that focus on economic livelihood and capacity-building."

The Japanese Embassy in Nepal was engaged and periodically updated. Deputy Chief of Mission, Mr. Takahiro Tamura, praised capacities built during earthquake response, as well as for long-term human security, adding: "I am glad to know that the energy and agriculture support through this project is helping the communities to bounce back for better."

UNDP Nepal (2024)

Deuma Budha in Barekot, growing vegetables in her kitchen garden using her new polyhouse.
Ram Shobha Mandal (2024)

TRANSFORMING FARMING WITH SOLAR POWER

42-year-old farmer, Deuma Budha in Mathi Agar, Barekot Rural Municipality, grows vegetables in her kitchen garden to support her family of five. After receiving a basic polyhouse through the project to enable her to cultivate in a controlled environment, her vegetables have grown in the off-season, with protection against harsh weather.

"Vegetables and flowers used to get affected by heavy rains, frost and hailstones," she recalls. "The polyhouse now protects them, which ensures a good harvest. The risk of pests is also less, which reduces the use of pesticides."

Ending energy poverty and enabling a just transition

RESULTS

Locations:
Belgrade, Šid, Senjski Rudnik, Novi Pazar, Sombor, Valjevska Kamenica, Novi Sad, Indjija

Budget:
$1,000,000

People who benefitted:
Directly: **420** (**214** men, **206** women)
Indirectly: **200,000** (**97,200** men, **102,800** women)

People informed / trained:
847 (**455** men, **392** women)

Green jobs created:
33 (**9** men, **24** women)

RE capacity installed:
324 KW

GHG emissions reduction per year:
15,656 tonnes CO_2e

SDGs:
SDG 1, SDG 5, SDG 7, SDG 8, SDG 9, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

As a landlocked country in southeast Europe, Serbia is highly affected by climate change, with average temperatures already rising above 2°C in the country's east and west from 2008-2017, relative to 1961-1990, its NDC (2022) states. Despite contributing only 0.13 percent of global GHGs, Serbia has increased its GHG mitigation ambitions significantly. Its NDC commits to reducing GHG emissions by 33.3 percent compared to 1990 levels (and 13.2 percent compared to 2010), by 2030. This has triggered a green business transformation in Serbia. With energy one of the largest sectors, and electricity consumption high due to low energy efficiencies, decarbonizing energy is key.

The project directly supports the emphasis on decarbonizing energy production and consumption in Serbia's NDC, towards a sustainable business transformation and green COVID-19 recovery, particularly for vulnerable groups within carbon-intensive businesses and women-led businesses.

Achievements

12 decarbonization business models were co-financed through an 'innovation challenge call' to the public and private sector under the project. Through these, 324 KW of renewable energy systems were installed in Serbia, cutting GHG 15,656 tonnes CO_2 annually, and 313,125 tonnes CO_2e over 20 years. They included solar solutions for textile production, farming, power plants, housing and more. Once 'brown' sites were also greened: Vinca landfill – a Belgrade Waste Management PPP (Serbian – Japanese - French cooperation, Beo Čista Energija ltd.) – was rehabilitated using Flue Gas treatment, reducing CO_2 by an estimated 210,000 tonnes per year – of which support from Japan and UNDP contributed to an estimated 14,000 tonnes CO_2e/year reduction. A visitor centre was also added for hosting students. Meanwhile, Senjski Rudnik Mine was transformed into an eco-museum for green tourism. Construction waste recycling and bio-waste for heating, were enabled in Novi Pazar, while an upcycling innovation approach developed by Toyo Tire Serbia ltd., converted vulcanized tires into urban outdoor furniture) made of recycled materials, supporting the circular economy.

Key steps to promote a just transition were taken, including reducing energy poverty through energy efficiency interventions such as insulation upgrades, benefiting 163 vulnerable people, including from nine poor households, as well as fossil-fuel dependent workers retrained with green economy skills, creating 33 new green jobs. These include managing solar equipment, zero-emission textile production, eco-tourism and women's entrepreneurship, such as sustainable hazelnut oil and butter production via new machines installed by a woman-led company, using over 80 percent of the nuts. These results have lessened environmental pollution and waste, reduced import reliance, along with helping those at risk of being left behind to find new opportunities in the green transition.

Long-term climate policy reforms were assisted, a legal gap assessment report and recommendations were made for a just green transition, establishing rights, responsibilities and procedures across sectors. The Project supported a framework to strengthen monitoring, reporting and updating relevant documents for a just green transition and ending energy poverty, drawing on case studies from developed countries, including Japan.

Partnerships

The Embassy of Japan and Japanese Business Alliance in Serbia (JBAS) strengthened cooperation between Japanese companies and Serbian counterparts, with more than 30 Japanese companies in Serbia attending the first Innovation Challenge Call information day in Belgrade. Two companies founded by Japanese corporations, contributed with knowledge, best practices and GHG emission reduction capacities: Beo cista Energija ltd and Toyo Tire Serbia ltd.

Toyo commented: “We extend our gratitude to UNDP Serbia…to the Municipality of Beočin, and our colleagues at Kuerk d.o.o. Beočin, with whom we’re creating innovative solutions for recycling tires into urban furniture.”

Snežana Dobrosavljević, at Senjski Rudnik mine, which is transforming into an eco-museum, where she will continue to clean and maintain the facilities.
Jelena Mitrovic (2024)

UNDP Serbia (2024)

FROM MINE TO MUSEUM

45-year old mother of two and RESAVICA worker, Snežana Dobrosavljević, cleans coal strips at the Senjski Rudnik mine. After 170 years, it is ending its exploration period and becoming an eco-museum within an area of nature reserves.

In her words: *“Further sustainable financial security is provided with a new green job in the museum, doing what I know best, cleaning and maintaining facilities.”*

“I overcame the harshest life lessons, but now thanks to the Climate Promise and the Just Green Transition project, I have an economically stable future for myself and my children,” she added.

Empowering women and youth for green energy

RESULTS

Locations:
Mpumalanga, Eastern Cape, Western Cape, Limpopo, Gauteng, Northen Cape

Budget:
$1,000,000

People who benefitted:
Directly: **3,615 (1,857** men / **1,758** women)
Indirectly: **1,080 (357** men / **723** women)

People informed
1,522

GHG emissions reduction per year:
27.16 tonnes CO_2e

SDGs:
SDG 5, SDG 7, SDG 8, SDG 13

Contributions to national climate pledges

South Africa is warming at more than twice the global average, according to USAID, with heatwaves and drought made significantly more likely by climate change, restricting water supply in the south-western Cape and West Coast. Heavy dependence on coal also makes South Africa one of the top 15 GHG emitters globally, releasing an estimated 512 tonnes of CO_2 equivalent in 2017, the agency adds. However, its updated NDC (2021) mitigation targets reflect major progression from its first NDC, with the upper end of its 2025 target for maximum annual emissions 17 percent lower, and 32 percent lower for 2030, both contingent on international support. Meeting these goals will require ambitious actions in the energy sector, accounting for 80 percent of the country's emissions. This requires structural economic changes that would impact much of society. To ensure no one is left behind, the transition should be just and inclusive, creating opportunities for everyone.

This project furthers South Africa's updated NDC goal of steeper emission cuts, by supporting renewable energy research, entrepreneurship and training to boost clean energy. It also paved the way for long-term decarbonization by training trainers to educate and equip others, particularly women, with renewable energy know-how.

Achievements

To mitigate emissions and provide new skills, 234 people gained solar energy knowledge and skills through training. Most were vulnerable women from townships and local communities across four provinces (Limpopo, Northern Cape, Northwest and Mpumalanga). TVET students upskilled their existing electrician training to gain solar technician skills (installing and repairing solar equipment), with USAID and GIZ support. Based on successful experiences from the project, GIZ is providing a further $949,000 to expand the project in another three provinces, as well as to train trainers to do so, for another 12 months.

To develop RE capacities, 50 young people gained RE skills through a workshop for women in Gauteng Province with Women Energy Connect, attended by the Embassy of Japan. Another 24 women from Mpumalanga and Western Cape townships gained greater RE advocacy skills, through workshops hosted with the Inspiring African Women organization, a non-profit organization based in South Africa.

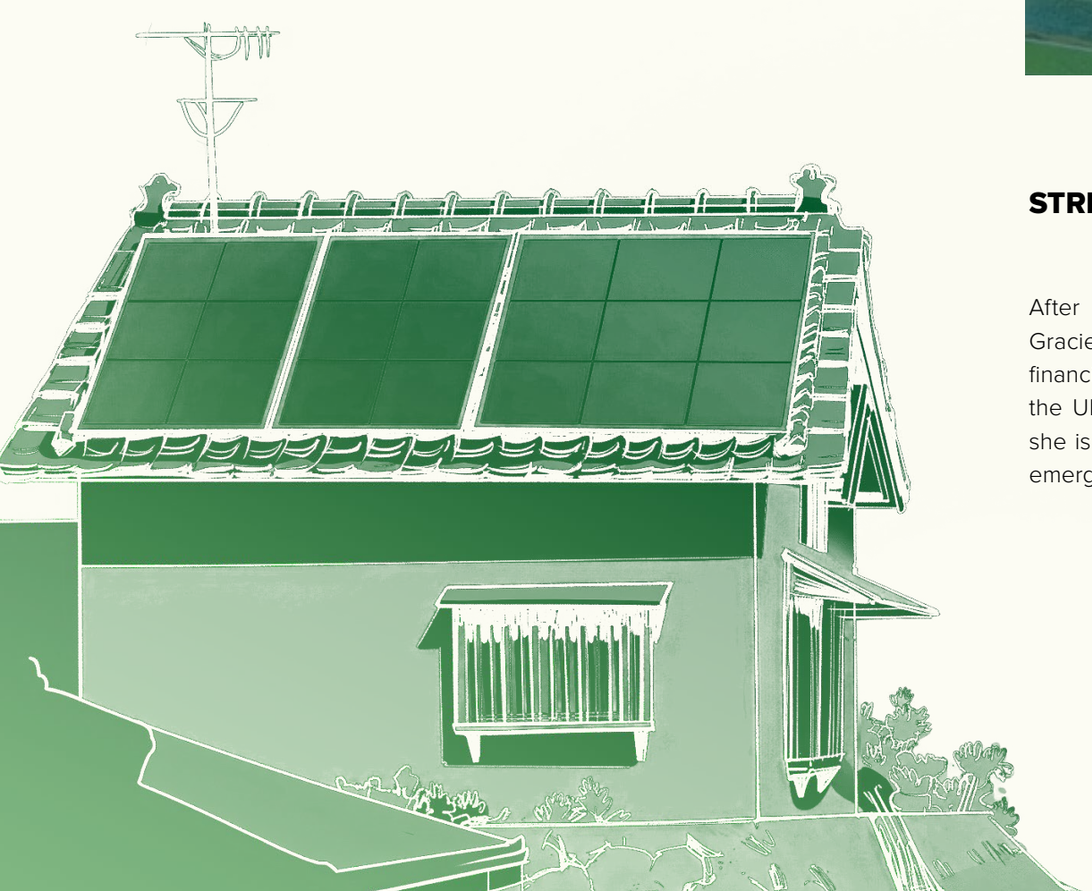
To boost green entrepreneurship for a just transition, four startups focused on renewable energy innovation were assisted by packaging their projects to be investment-ready. Another four startups were supported to strengthen their business plans and marketing, after an 'innovation challenge call' on the future of energy, where the project explored the country's energy entrepreneurship ecosystem.

Research to help rural communities adopt innovative hydrogen energy was undertaken, focused on using hydrogen technology to develop cooking devices, along with a report on enhancing green hydrogen skills training. To further facilitate a just energy transition, two policy briefs were also developed to support hydrogen technology skills, along with pioneering hydrogen innovations.

Partnerships

Through a partnership with Toyota Motors South Africa, 25 officials and policymakers of South Africa strengthened green mobility and green hydrogen capacities via training with the Toyota Wessels Institute for Manufacturing Studies. Green Hydrogen research from Japan was shared through an international exchange with Northwest University, to support research and development efforts in both countries.

Kao Gracience Mautla trains to become a solar technician, in Limpopo.
Clara Mathapole (2024)



STRENGTHENING SOLAR SKILLS

After struggling to find a job, 26-year-old Kao Gracience Mautla in Waterberg, Limpopo faced financial challenges. However, since enrolling in the UNDP-supported solar technician's program, she is confident in her ability to contribute to the emerging green economy.

"Through this experience, I have something unique to contribute to my new company, I will be providing a new skill in the industry."

Under this Just Energy Transition (JET) project, Kao and her trainee group will soon be transferred into an internship scheme. UNDP is also working to connect these trainees with companies for solar jobs in future.

Clean energy for vulnerable farmers

RESULTS

Locations:
Northwestern and Eastern Provinces of Sri Lanka

Budget:
$996,991

People who benefitted:
Directly: **51,562** (**31,968** men, **19,594** women)
Indirectly: **102,784** (**65,782** men, **37,002** women)

People trained/ trained:
103,804 (**66,324** men, **37,482** women)

Green jobs created:
51,562 (**31,968** men, **19,594** women)

GHG emissions reduction per year:
219.6 tonne CO_2e

SDGs:
SDG 1, SDG 2, SDG 5, SDG 7, SDG 8, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

As an island in the Indian Ocean, Sri Lanka is highly vulnerable to climate change, ranking 30th on the latest Global Climate Risk Index (2021). Its key sectors – tourism, fisheries, tea and agriculture – are severely affected by extreme weather, such as increasing floods and drought, including during this project's implementation period. In its updated NDC (2021), Sri Lanka commits to **unconditionally reduce emissions by 4 percent from their BAU scenario, and by 10.5 percent with international support.** It also commits to carbon neutrality by 2050, based on efforts by the power sector to realize carbon neutral electricity generation by 2050, with 70 percent from RE.

The project supported Sri Lanka's NDC targets for the electricity and agriculture sectors by installing RE technologies, as well as building the capacities of 660 farmers to use and maintain these technologies. Raising awareness and building RE capacities among government officials and farmers also facilitates an NDC goal of mainstreaming climate-smart know-how and practices into agriculture. The deployment of lower-cost, solar water pumps and operational training contribute to the NDC target for sustainable land and water management, via efficient farming.

Achievements

Against economic and climate crises, 51,562 smallholder farmers, including women and youth, have greater resilience, food security and sustainability, through the promotion of 10 RE technology applications for agricultural use, along with training on how to use them. These include solar-powered water systems, cold rooms, solar PV systems, milk can coolers, solar-powered moth repellents (manufactured by Japanese company, TOS Lanka Pvt Ltd.), and backpack sprayers. Solar milk can coolers have almost doubled monthly milk collection, up from 11,802 liters, to 18,085 liters after their installation, by allowing collection through the day via cold storage. Farmer incomes from milk have doubled (in some cases tripled), rising from LKR 1,955,191 ($6,663.02) a month, to LKR 3,150,106 ($10,735.13) each month after installation. These solutions make farming more accessible to women and youth, including aspiring exporters, by reducing hard labour with easy-to-use technology. The Ministry of Agriculture is now procuring 200 more milk can coolers, while other donors are also exploring scaling this technology.

Beneficiary farmers are better able to combat unpredictable rain patterns, drought and rising energy costs through the solar-powered water pumps received via the project. This allows more frequent and affordable crop watering – once daily, instead of twice weekly – by replacing expensive fossil fuels (kerosine and diesel). It also helps to overcome low water supply, which caused plants to attract more pests and diseases as they withered. After four months of using the pumps, harvest quality is reported to be increasing, while pesticide use, storage and irrigation costs are decreasing, reducing farmers' operating costs and climatic vulnerability.

To boost their economic viability, farmer organizations gained knowledge to develop value chains, via specialized training. They were linked with markets through networking events, while connections were made between farmer organizations and fruit and vegetable exporters, as well as commercial milk collectors and processors, enabling larger and more lucrative sales.

To help local officials promote green agriculture and RE technologies, the project trained 683 agricultural officers to become trainers (40 percent women) in the Eastern and North-Western Provinces. They organized training for local farmers demonstrating RE technology benefits. By decentralizing learning, this training reached 102,782 farmers, with post-training assessments showing increased awareness of sustainable agricultural practices. The installed RE equipment was also handed over to beneficiaries and relevant provincial councils, ensuring local ownership and responsibility. 188 university students gained RE technology skills and knowledge via training at Wayamba and Eastern Universities of Sri Lanka, along with six key agriculture service providers.

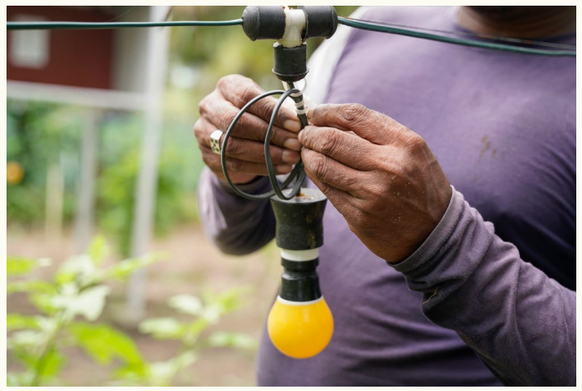
To maximize energy and emission savings, solar solutions piloted feature Measurement, Reporting, and Verification systems tracking performance and environmental impact. The portable solar-powered water pump (5,000 l/day) and pumping system (1,000 m3/day) are digitalized, enabling them to be remotely operated and monitored. Similarly, grid-tied solar cold rooms and milk coolers generate end-user data, to inform investment, policy decisions and the green transition.

Partnerships

The project partnered with Japanese supplier, TOS Lanka Pvt Ltd, to supply and install 10 solar-powered moth repellents for smallholder farmers in the North-Western and Eastern Provinces of Sri Lanka. The solar powered moth repellent piloted through this partnership is helping farmers to reduce pre-harvest losses caused by armyworms, a pest that causes significant damage to Sri Lankan agriculture.

‘’Unlike traditional methods that rely on light, chemicals, or traps to attract and eliminate moths, the anti-moth pest repellent LED bulb powered by solar technology scares away destructive insects and covers a radius of around a quarter acre,” according to TOS Lanka.

UNDP Sri Lanka (2024)



UNDP Sri Lanka (2024)

Manoj examines his effective LED insect repellent lamps in Sri Lanka’s Dry Zone.
UNDP Sri Lanka (2024)

SOLAR-POWERED PEST-CONTROL

41-year-old father of two, Manoj Nilanka, lives and farms on a two-acre plot of land in rugged Puttalam District of North-West Sri Lanka’s Dry Zone, where he tests new fertilizers and techniques. The project provided Manoj with a solar moth repellent worth over $2,000, powered by an off-grid 550W solar panel with 12kWh battery storage. With nine LED lights, it repels nocturnal insects, preventing them from laying eggs on crops, using little energy.

“It’s been four months now since I started using the light system, and the results are amazing,” Manoj says. “I haven’t had to spray pesticides at all. And I haven’t found a single worm in my crops.”

Manoj receives inquiries from other farmers, believing that in future, it will be a popular alternative to pesticides, which have jumped in price since Sri Lanka’s economic crisis. Manoj saves close to 24,000 rupees ($287) every month with the solar repellent, which will support his children’s education and healthcare.

Driving a low-carbon future

RESULTS

Locations:
Thailand nationwide

Budget:
$1,380,998

People who benefitted:
Directly: **1,724** (**1,058** men / **666** women)
Indirectly: **53,117**
(**24,104** men / **29,013** women)

People informed / trained:
1,495 (**889** men, **606** women)

RE capacity installed:
15kW

GHG emissions reduction per year: 923.44 tonnes CO_2e

SDGs:
SDG 3, SDG 7, SDG 9, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

Thailand is extremely vulnerable to the effects of climate change, including rising sea levels, flooding and drought, ranking as the 9th most vulnerable country on the GermanWatch Global (Long Term) Climate Risk Index (2021). To mitigate climate change and its threats, Thailand has pledged to reduce GHG emissions by 30 percent from BAU levels by 2030 in its updated NDC (2022) and by up to 40 percent with international support, including technology transfers, financing and capacity-building. It aims to achieve carbon neutrality by 2050 and net-zero emissions by 2065, with net GHG emissions of 263,223 Gg CO_2e in 2016, less than 1 percent of the global total.

The project targets emission cuts in energy and transportation sectors, the biggest and second-biggest contributors to CO_2 emissions in Thailand. The climate credit program encourages users to shift from internal combustion engine vehicles (ICEVs) to low-emission vehicles (LEVs), which will significantly reduce vehicle emissions, while promoting renewable energy sources in the electricity grid. Additionally, it has encouraged youth to create and use green vehicles, supporting the long-term EV ecosystem. This also eases pollution, improving health and well-being.

Achievements

To accelerate Thailand's low-carbon transition, a prototype Sustainable Development Goals and Electric Vehicles (SDG&EV) Climate Credit Program was developed and launched for testing and boosting LEV adoption and use in transport and energy. The platform helps to assess emissions reductions, while advocating for LEVs across various categories, including passenger cars, motorcycles, buses, trucks, taxis and three-wheelers. Chiang Mai University, the Federation of Thai Industries (FTI) Phuket and various companies have already adopted the platform, which would support the government to adopt it nation-wide. The Office of Transport and Traffic Policy (OTP), along with Chiang Mai University, the Federation of Thai Industries (FTI) Phuket and various companies, have already adopted the platform. This would support the government in expanding it nation-wide, with OTP working to make it mandatory in future.

To broaden the platform's application, by enabling transport emission cuts to be independently tracked and calculated, OTP is exploring a pilot with the Department of Land Transport (DLT), whereby individuals renewing their vehicle tax would be required to provide relevant data to the platform. This would allow OTP to track GHG emission reductions on an individual basis, reflecting the country's commitment to sustainable transport solutions and long-term emission cuts.

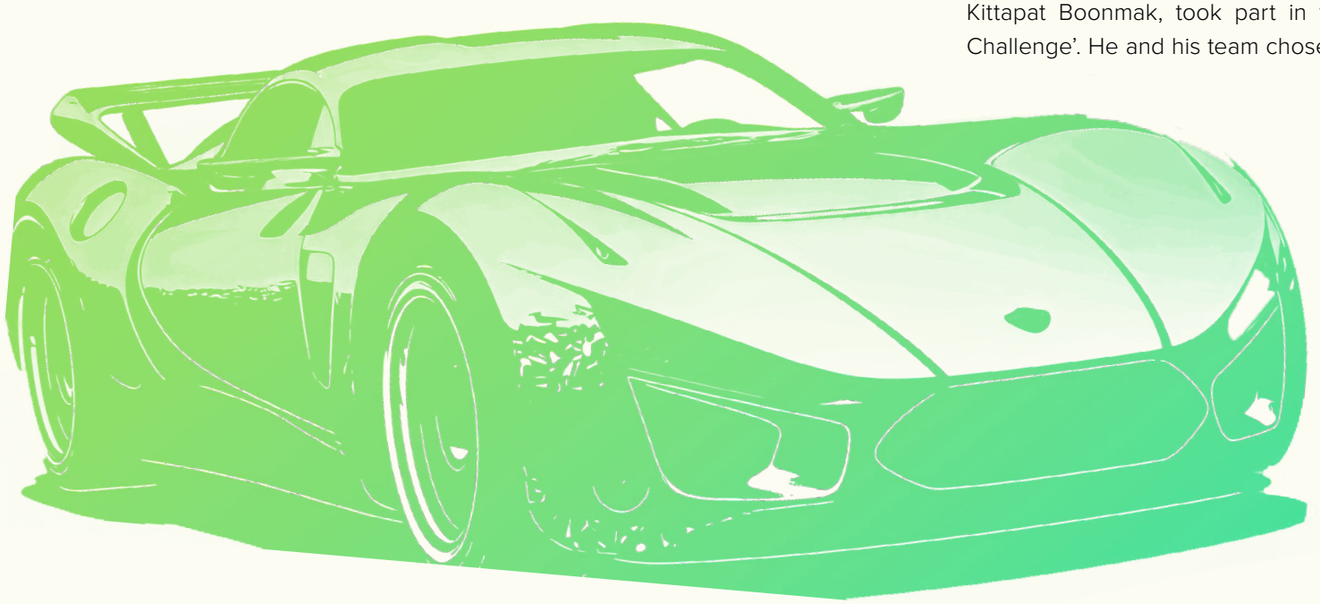
The project raised awareness and built capacities for net-zero emission pathways among students, university staff, and the public, by joining the Thailand Society of Automotive Engineers (TSAE) Student Formula Auto Challenge 2024. Participants played climate-themed games, registered for the SDG&EV Climate Credit Programme, and learned about vehicle life cycles and CO_2 calculations. A record number submitted EV racing cars, demonstrating growing enthusiasm among youth for EV innovations. LEV capacities and awareness of 60 university students were also developed through the project's E-Volution Mobility Bootcamp, to further inspire a new generation to embrace sustainable transport solutions and contribute to emission reductions in future.

Partnerships

The project built a relationship with Toyota Tsusho (Thailand), to exchange experience on how to manage car end-of-life cycles and recycle hybrid batteries. A meeting with Honda was held to discuss net-zero strategies and introduce them to the SDG&EV Climate Credit Program. The project deepened its partnership with the Embassy of Japan, while building relationships with additional Japanese firms such as Isuzu, Mitsubishi, Nissan, Subaru, Suzuki, Yamaha and Kawasaki, representing EVs in motorbikes, cars, trucks and buses. Consultations were held with Japanese organizations, including the Institute for Global Environmental Strategies (IGES), Global Zero Emission Research Center, Asia Pacific Energy Research Centre (APERC), and the Global Environment Centre Foundation (GEC), to gain valued recommendations on the EV Ecosystem and platform.

Thailand's OTP was a key implementing partner. By integrating data collection and reporting, the Deputy Director General of the Office of Transport and Traffic Policy and Planning, Jiraroth Sukolrat, believes: "The SDG&EV Climate Credit Program will help Thailand accurately measure and track reductions in greenhouse gas emissions within the transportation sector." He hopes to expand this further in future.

Kittapat surveys his EV race car at the 2024 Auto Challenge.
UNDP Thailand (2024)



ENGINEERING AN E-RACING REVOLUTION

Chiang Mai University Engineering student, Kittapat Boonmak, took part in the '2024 Auto Challenge'. He and his team chose to enter an EV Formula race car, moving away from the traditional cars they had used in the past. They are confident that their efforts will shape the industry's future, and that EVs represent a rapidly advancing frontier in greener vehicles.

"Our generation will bear the brunt of climate change's effects and believe that urgent, transformative measures are essential, to safeguard the planet and ensure a sustainable future," he said.

Accelerating e-mobility and opportunities

RESULTS

Locations:
Ha Noi, Thua Thien Hue, Phu Yen and Binh Dinh provinces & Ho Chi Minh City

Budget:
$1,128,978

People who benefitted:
Directly: **1,967** (**924** men, **1043** women)
Indirectly: **554,220** (**277,110** men, **277,110** women)

People informed / trained:
260 (**134** men, **126** women)

Green jobs created:
278 (**193** men, **85** women)

RE capacity installed:
50kW

GHG emissions reduction per year:
865.83 tonnes CO_2e

SDGs:
SDG 5, SDG 7, SDG 8, SDG 9, SDG 11, SDG 13, SDG 17

Contributions to national climate pledges

As a nation with extensive coastline, Viet Nam has high exposure to climate risks, such as flooding and typhoons. As part of mitigation efforts, in its updated NDC (2022), Viet Nam commits to reducing total GHG emissions by 15.8 percent by 2030 versus the BAU scenario, and up to 43.5 percent with international support. It also aims to achieve net-zero carbon emissions by 2050, requiring decarbonization of major sectors, including transportation, as reflected in the National Green Growth Strategy (2021-2030).
The project supports Viet Nam's NDC transport targets and Green Growth Strategy, as well as the Action Programme for Transition to Green Energy and Mitigation of Carbon Dioxide and Methane Emissions from Transportation, by expanding e-vehicle access, along with green transport infrastructure and ecosystems.

Achievements

This project helped to decarbonize transportation, incentivizing sales of 371 e-bikes and e-motorcycles purchased instead of gasoline vehicles in Hue, Tuy Hoa and Ho Chi Minh cities, utilizing preferential loans (averaging $750 each) via UNDP's Low Value Grant initiative. These gave vulnerable people opportunities to improve their livelihoods, with over 3,000 drivers expressing interest. Ho Chi Minh City has mobilized additional funds from other sources to continue issuance of the loans. Hanoi is considering similar measures and has asked UNDP to share lessons learned.

The EV ecosystem was enhanced by developing partnerships between individuals, manufacturers, delivery and tourism companies, along with motorcycle taxi firms. Grab, Gojek, Viettel Post, and Viet Nam Post, as well as MotorVina Travel, supported by accessing the loans, or offering drivers guarantees, while manufacturers like Selex Motor, DatBike and VinFast offered drivers additional incentives. Further EV applications were shown through four electric garbage trucks deployed in Quy Nhon city. In a first time for Viet Nam, solar PV charging stations were introduced in Hue for waste collection e-vehicles and e-motorcycles, promoting infrastructure for e-mobility to expand.

EVs and their infrastructure are now standardized and higher quality, after policy and regulatory frameworks for green transport were strengthened, including four technical standards guiding specifications, safety, testing and energy use of Viet Nam's growing e-vehicle fleet. These were submitted to the Ministry of Science and Technology (MOST) for approval and are under final review.

Emission tracking requirements were established to build a Paris Agreement-compliant carbon market, with an e-mobility focus. 105 people gained skills to conduct GHG inventories according to Vietnamese Government requirements and international best practices, after training on Viet Nam's future emissions trading system (ETS) and voluntary carbon market (VCM). The Ministry of Transport joined the training, along with TRANSERCO, Viet Nam Airlines, VIPCO, Petrolimex, VietJet and VinBus. Two technical reports were submitted to the Ministry of Industry and Trade to support a new law on renewable energy, covering potential transport carbon credits.

Partnerships

Key implementing partners included the Ministry of Transport and Departments of Transport at the provincial levels, along with e-motorcycle manufacturer, Selex Motor and the Women's Union of Thua Thien Hue and Phu Yen provinces, in promoting broader societal adoption of green transport solutions.

Phu Yen Provincial Women's Union Vice President, Tran Thi Binh, explained the project's impact:

"The capital source is very suitable for women in difficult circumstances, who need to buy electric bicycles and electric motorbikes. Some people use them to go to work, go to the market, or for their children to go to school."

Cooperation across stakeholders grew through a high-level policy dialogue on accelerating the e-vehicle transition, organized by the project and co-hosted by the Vice Minister of the Ministry of Transport (MOT). 171 people attended, including officials, automakers (Honda, Toyota, Yamaha, VinFast and THACO AUTO) and others.

Young people were also engaged through the Business Start-up Support Centre of Ho Chi Minh Communist Youth Union, inviting their innovations and involvement in Ho Chi Minh City's green transport shift. The Japanese Automobile Association also shared valuable e-mobility experience via workshops.

UNDP (2024)

Logistics driver, Lầu Minh Trí, rides his e-bike in Ho Chi Minh City.
UNDP Viet Nam (2024)

FROM GASOLINE TO ELECTRIC: E-BIKE TRANSFORMATION

Lầu Minh Trí, a driver for Be Logistics in Ho Chi Minh City, used to spend a significant part of his earnings on gasoline. Filling his tank each day would cost around 80,000 VND ($3.25), with noise and emissions from his gasoline-powered motorbike part of his daily routine. Purchasing an e-motorbike changed all this.

"Switching to an electric motorbike has made a big difference," Minh Trí shares.

"Now, I only spend about 32,000 VND ($1.3) per day on electricity. Over a month, that's a huge saving of more than 1.5 million VND ($60.95). The electric bike is much quieter and better for the environment."

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