



# ADVOCATING FOR CLIMATE JUSTICE



THE  
LUTHERAN  
WORLD  
FEDERATION

A Communion  
of Churches

Best practices on the path  
to carbon neutrality



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# Foreword

The Lutheran World Federation (LWF) has consistently upheld its commitment to climate justice, grounded in our theological understanding of God's call to care for creation.

This commitment was reaffirmed through the LWF Climate Emergency Resolution, adopted at our 2023 Assembly. The resolution reinforces the LWF's pledge to reduce carbon emissions and put in place a viable comprehensive plan of action, with the aim of achieving carbon neutrality.

The LWF member churches and World Service country programs have developed significant expertise in addressing climate change through diverse, context-specific actions. These initiatives include implementing renewable energy systems, promoting climate-resilient agricultural practices, supporting farmers' adaptation strategies, establishing tree planting projects, managing watersheds, providing environmental education, and deepening our theological understanding of eco-theology and our responsibility for creation care.

This second edition in our series highlighting climate justice in action brings together inspiring stories of hope and transformation through climate mitigation from across the LWF communion. It showcases eleven diverse initiatives from Argentina, Brazil, Ethiopia, Germany, Kenya, Nicaragua, Tanzania, and Uganda. Each initiative tells a story of commitment and creativity of communities working to reduce greenhouse gas emissions, restore ecosystems, and strengthen their resilience in the face of a changing climate. These good practices remind us that meaningful climate action is already happening, and it starts at the local level.

As the world approaches ten years since the adoption of the Paris Agreement, and as nations prepare to revise their Nationally Determined Contributions (NDCs), this report comes at a crucial time. It is our hope that the practices and insights shared here will inspire broader engagement, inform policy and programmatic strategies, and encourage deeper collaboration between churches, communities, partners, and governments.

As we confront the growing realities of the climate emergency, the LWF embraces its role as a catalyst for positive transformation, supporting vulnerable communities, inspiring faith-based advocacy, and fostering partnerships that bring about hopeful vision of a just and sustainable future for all.

This publication reflects these commitments and shares the experiences, lessons, and innovative practices that demonstrate how faith, hope, and action come together in the collective pursuit of climate justice.

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# Introduction

Climate change continues to exacerbate humanitarian crises and poverty, disproportionately affecting vulnerable populations in developing countries. As a faith-based actor with strong humanitarian and development programs, the Lutheran World Federation (LWF) recognizes the urgency of climate action and the responsibility to integrate mitigation and adaptation strategies across its programming. This document, *Eleven Impactful Examples of Lutheran Churches Around the World on the Road to Carbon Neutrality*, seeks to capture and disseminate examples of effective mitigation practices already being implemented in Lutheran communities at various scales across eight countries. It is both a learning resource and an advocacy tool to inform future programming and policy engagement.

The objectives of this document are threefold:

1. To identify and document existing good practices in climate change mitigation within LWF-supported interventions
2. To assess the impact of these practices on reducing GHG emissions and strengthening local climate resilience
3. To draw out lessons and recommendations for mainstreaming climate mitigation more systematically across our faith community

The initiative focuses on examples from Argentina, Brazil (2), Ethiopia (2), Germany (2), Kenya, Nicaragua, Uganda, and one common partnership initiative of Lutheran churches in Tanzania and Germany. These good practices were selected for their diverse socio-ecological contexts and programmatic innovations. In each context, LWF staff and local communities are addressing climate change through context-sensitive strategies that align with national and international climate policies.

The concept of “climate mitigation” in this document refers to efforts to limit or reduce GHG emissions and enhance carbon sinks, as defined by the Intergovernmental Panel on Climate Change (IPCC). Practices include shifts toward renewable energy, sustainable agriculture, forest and land use management, and low-emission livelihood alternatives. The scope also includes indirect mitigation strategies that help communities avoid high-emission development trajectories, such as youth skills development and climate education.

LWF’s approach is grounded in human rights, faith-based values, and a strong commitment to gender equality and social inclusion. The case studies illustrate how these values underpin community engagement, capacity building, and the co-creation of solutions. Moreover, many of the interventions offer co-benefits beyond mitigation – such as improved health, food security, economic empowerment, and ecosystem restoration.

An important feature of the document is the emphasis on measuring and communicating the impact of these practices. While challenges remain in quantifying GHG emission reductions, the case studies include indicative assessments of mitigation outcomes using available data and established estimation tools. This is a step toward improving evidence-based planning and positioning LWF's contributions within broader climate frameworks.

The climate crisis cannot be solved at the national or even local level alone – it requires well-coordinated global action. This is the purpose of the United Nations Framework Convention on Climate Change (UNFCCC), whose Conference of the Parties (COP) meets for the thirtieth time in 2025, and, above all, the Paris Agreement, which celebrates its tenth anniversary in 2025.

But now, just at a time when the implementation of the decisions taken in Paris for GHG neutrality, climate resilience, and sustainable climate financing should be entering the decisive implementation phase, globally coordinated climate action is dramatically deteriorating.

Especially when the challenges are greatest, faith communities are called to face them with particular determination: LWF is guided by the deep conviction that faith-based organizations (FBOs) play a pivotal role in shaping a just and sustainable world. Our work is grounded in faith, driven by our theological commitment to caring for God's creation, and expressed through acts of justice, solidarity, and compassion.



Photo: Instituto Línea Cuchilla



## ARGENTINA: Photovoltaic power generation initiated by students

**Project name:** Design and Installation of a Photovoltaic System at the Instituto Línea Cuchilla

**Implementing organization:** Instituto Línea Cuchilla

**Project location:** Ruiz de Montoya, Misiones, Argentina

**Project duration:** Ongoing since 2021

**Funding:** Individuals and Fundación Hora de Obrar, Argentina

## A story of transformation

The photovoltaic generation project at Instituto Línea Cuchilla stands as a testament to the power of renewable energy and community-driven innovation. By integrating sustainability into technical education, the initiative not only reduces environmental impact but also equips students with valuable skills for the future. As interest in solar energy grows, this project serves as a replicable model for other institutions and communities seeking to harness clean energy for long-term benefits.

### Project overview: Electromechanical students bring solar power to their school

The Swiss Evangelical Church, affiliated with the Evangelical Church of the River Plate, operates Instituto Línea Cuchilla, an institution dedicated to training young people aged 13 to 19 as technicians in agricultural production, equipment, and electromechanical installations. Environmental consciousness is integrated into the curriculum, emphasizing sustainable practices. Given both the institution's focus on environmental stewardship and its energy demand, the concept of a solar energy project emerged.

The project was initiated by two electromechanical students as part of their technological project requirements. Their vision aligned with that of an engineering student conducting his professional practice at the institute. Together, they worked on analyzing and designing a photovoltaic panel installation to maximize energy generation.

### Context: Abundant solar potential in northern Argentina could supply 100% renewable energy

Renewable energy sources are rapidly transforming the way communities generate and consume electricity. In northern Argentina, where solar radiation is abundant, harnessing photovoltaic technology presents a promising solution to energy challenges.

The design and implementation of a photovoltaic generation system at Instituto Línea Cuchilla in the province of Misiones, led by students and educators, showcases a commitment to environmental sustainability, technical education, and community development.

The project, apart from utilizing solar energy to generate electricity and thereby reduce the energy bill of the institute, provides students with practical knowledge of photovoltaic electricity generation and hands-on experience in the installation and maintenance of a rooftop solar system. Moreover, it promotes environmental and climate change awareness within the student body.

## From strategy to action

The project has been implemented in phases, dependent on the availability of financial resources. Its success largely relied on a collaborative approach involving various stakeholders: The institute's managers secured financial resources and administered the purchases. The students conducted research, planned, designed and installed the system. Teachers guided and supported the students while facilitating coordination between families, administrators, suppliers, and the broader educational community. Generous donors such as the Hora de Obrar Foundation and individuals have provided financial support.

The project entailed the installation of a 30 KW DC-to-AC inverter along with 20 photovoltaic panels of 500W each. These were installed on the roof of a classroom pavilion to maximize solar exposure. Cutting-edge technologies, including an automatic electronic inverter and atmospheric discharge protectors, were utilized to enhance efficiency and safety.

To raise awareness and involve the community, students actively promoted the initiative at school events and to visiting groups at the institute. These engagements highlighted the significance of solar energy and its potential benefits.

The project encountered challenges such as limited experience in photovoltaic system installation. This was mitigated through collaboration with the supplier company, student and teacher research, and hands-on learning. Regulatory hurdles also posed concerns, as electricity generation regulations for grid-connected consumers are still evolving in Argentina. Despite these uncertainties, the project remains within the permissible limits set by the electricity supply agency.

## Results and impact

Since its activation on 31 October 2023, the system has generated approximately 18,000 kWh of electricity as of 22 January 2024. Energy generation fluctuates seasonally, with peak sunshine months producing 1,500 kWh per month and lower sunshine months yielding 800 kWh per month. According to the sunshine application software, the system has contributed to a reduction of 17,585 kg of CO<sub>2</sub> emissions. Beyond environmental benefits, the project has led to a reduction in electricity costs for the institution.

Although the direct project participants were male, broader training and awareness initiatives included diverse groups within the educational community. Youth engagement played a crucial role, fostering collaboration and knowledge-sharing among peers.

## Lessons learned and replicability

A key lesson learned is the importance of close collaboration and active participation of all stakeholders: This project became possible thanks to the active participation by the institutional community, including students, teachers, and administrators. The supplier company also contributed by providing technical training sessions. Apart from that, the support of donors was also crucial, since the institute itself would not have been able to make the relatively high initial investments without financial support.

Whether or not such a system is financially viable depends largely on energy prices, the extent to which they are subsidized, the feed-in regulations for small energy producers such as the Instituto Línea Cuchilla, what percentage of energy demand can be met by a rooftop system, and other factors. Therefore, it is always important to first check the local conditions and their suitability before setting up one's own power supply system. However, a rooftop solar system with or without battery storage is usually a good deal if the size of the PV system and, if applicable, the battery storage is chosen correctly.

The project initiators at the Instituto Línea Cuchilla have also proved something else: the effectiveness of technical training in combination with practical applications in promoting sustainable development.

The success of this initiative has encouraged further expansion within the institution: Two students have expressed interest in replicating the initiative in other parts of the institute, demonstrating its potential for scalability. The hands-on experience gained by students is expected to have further multiplier effects, as they carry their knowledge into future endeavors and other communities.



Photo: Evangelical Lutheran Community of São Lucas, Brazil



## BRAZIL: Pioneering solar energy generation and its use in the community

**Project name:** Solar Energy Production in the Evangelical Lutheran Community of São Lucas

**Implementing organization:** Evangelical Lutheran Community of São Lucas

**Project location:** Community of São Lucas in Pelotas, Rio Grande do Sul, Brazil

**Project duration:** 2021–2056

**Funding:** Contributions of community members

## A story of transformation

The São Lucas solar energy initiative serves as a model for other communities, particularly in regions with high solar radiation. This initiative demonstrates how faith-based communities can drive sustainability efforts through collective action. By integrating environmental responsibility into religious and community values, the project fosters a culture of long-term ecological stewardship. It also provides an example of how similar initiatives could be implemented in low-income areas where energy costs are a significant financial burden. Inspired by this project, numerous local households and businesses have installed their own solar panels, benefiting from discounts provided by the installation company. This ripple effect underscores the project's potential for broad societal impact, encouraging more individuals and organizations to explore solar energy solutions.

## Project overview: A pioneering solar community initiative, financed from its own resources

The Evangelical Lutheran Community of São Lucas in Pelotas, Rio Grande do Sul, Brazil, has undertaken a pioneering project to generate solar energy for community use. Launched in 2021 and set to run until 2056, this initiative is funded by the contributions of community members. The project aims to promote sustainability, reduce energy costs, and serve as an inspiration for others to adopt similar measures. It also seeks to foster a broader awareness of renewable energy solutions, demonstrating their feasibility even in communities with limited financial resources.

## Context

The primary motivation for this project is the care for God's creation, emphasizing the use of clean, renewable energy with minimal environmental and climate impact. By investing in solar energy, the community seeks to reduce dependence on hydroelectric power, which can harm local ecosystems. Additionally, the initiative aims to foster curiosity and inspire other communities and institutions to undertake similar sustainability efforts. The project also aligns with global movements to combat climate change and reduce carbon footprints, positioning the São Lucas community as a model of environmental stewardship within faith-based organizations.

## From strategy to action

The São Lucas solar energy initiative provides electricity for various community facilities, including the São Lucas community hall, the church and its secretariat, children's worship rooms and youth education spaces, the parsonage and preaching point, and the community cemetery. This extensive coverage is made possible through the community's shared tax identification number (CNPJ), allowing energy produced at one location to offset consumption at others.

The project was driven by a strong sense of community participation. Members contributed financially through a fundraising campaign, ensuring the project's successful implementation. Women played a significant leadership role, forming a group that actively raises funds for community improvements. Their participation highlights the importance of gender inclusivity and demonstrates how grassroots efforts can lead to meaningful change.

Beyond financial savings, the project enhances the quality of life for community members by redirecting funds to other essential services, such as social programs and public infrastructure: The reduced cost of energy also means that the community can allocate more resources to initiatives such as food distribution, educational scholarships, and health-related support services.

## Results and impacts

The financial benefits are substantial, with energy costs expected to decrease by 85%, generating long-term savings estimated at BRL 250,000 over 35 years. Moving forward, the community plans to use its savings to expand other missionary objectives, ensuring long-term sustainability. Additional projects under consideration include installing battery storage systems to maximize energy efficiency and developing educational programs on climate change and renewable energy. By prioritizing clean energy and financial independence, the Evangelical Lutheran Community of São Lucas exemplifies how faith-based organizations can lead impactful environmental and social change.

Moreover, the project contributes to national energy security by decreasing dependence on centralized power grids. In the long term, this initiative could inspire policymakers to further incentivize renewable energy adoption, particularly in underserved communities where cost-saving measures have a significant impact.

Additionally, it reduces the need for further hydroelectric development, preserving natural ecosystems and mitigating climate change. The long-term environmental benefits extend beyond the immediate community, as reduced reliance on large-scale power plants helps curb deforestation and water resource depletion across the country.

## Lessons learned and replicability

The main challenge faced was securing external funding due to bureaucratic hurdles. As a result, all resources came from community members, demonstrating the power of collective action. The project's success highlights key lessons for replication, including the importance of

- reliable information and partnerships with trustworthy companies;
- raising awareness and mobilizing community support;
- establishing financial sustainability mechanisms, such as a maintenance fund for solar panels;
- encouraging youth involvement to foster long-term engagement with sustainability efforts.

Additionally, the process underscored the need for policy advocacy to reduce bureaucratic barriers for small-scale renewable energy projects. By raising awareness among government institutions and potential donors, future initiatives may secure funding more efficiently and accelerate the transition to clean energy.

Through continuous evaluation and adaptation, the São Lucas community can refine its approach and contribute to a broader shift toward sustainable living. The success of this project may encourage more faith-based groups, municipal governments, and private entities to collaborate on renewable energy initiatives, further accelerating Brazil's transition to a greener future.

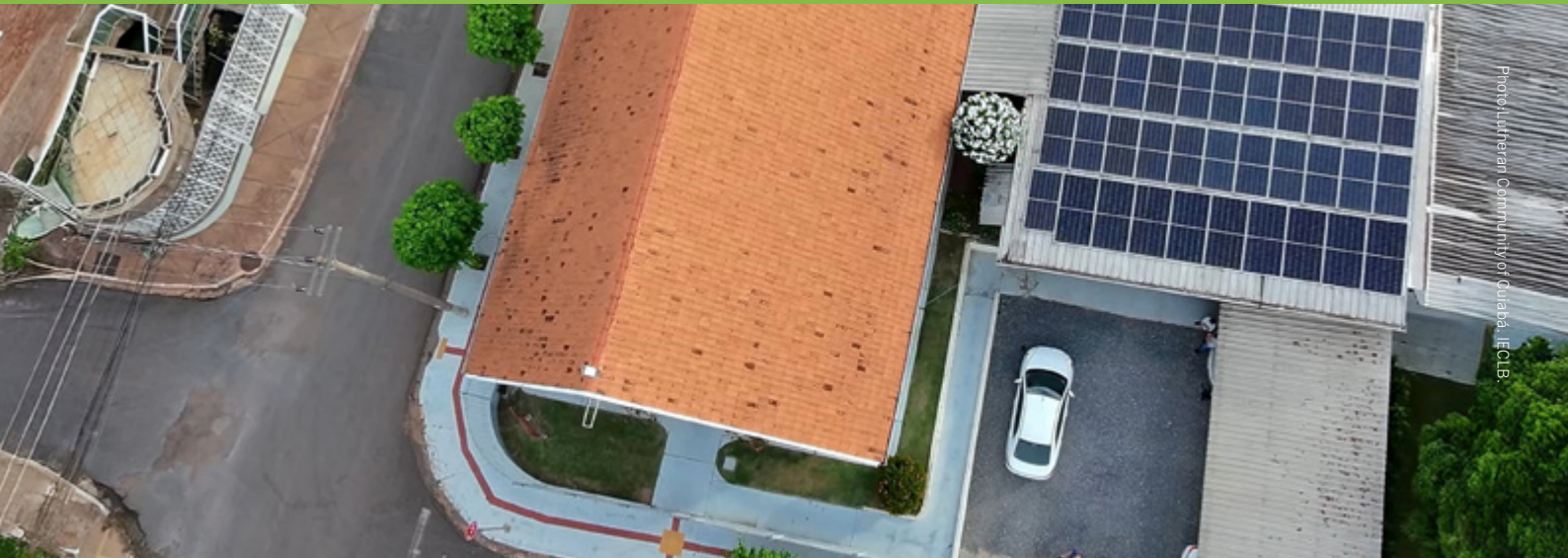


Photo: Lutheran Community of Cuiabá, IECLB.



## BRAZIL: Braving the heat – climate-neutral cooling with photovoltaics

**Project name:** Sustainable Solar Energy

**Implementing organizations:** Lutheran Community of Cuiabá, in partnership with the Mato Grosso Synod of the Evangelical Church of the Lutheran Confession in Brazil (IECLB).

**Project location:** Cuiabá, Mato Grosso, Brazil

**Project duration:** Since 2022

**Funding:** Evangelical Lutheran Church in Bavaria, Germany (70%) and local communities (30%)

## A story of transformation

The Sustainable Solar Energy project was developed to comply with the fourth national goal of the IECLB, which establishes the commitment to be a church that promotes justice, peace, reconciliation, and care for God's creation. This initiative arose as a concrete response to the need to reduce the environmental impact generated by church activities, specifically CO<sub>2</sub> emissions derived from conventional energy consumption, while at the same time seeking to reduce the high economic costs represented by electricity services for the community.

The extreme climatic situation of the region, with temperatures reaching 44°C, made it particularly urgent to find sustainable solutions that would make it possible to maintain decent conditions in community spaces. A central aspect of the project was to improve the conditions of the Cuiabá lodging, a space that receives families who need to stay in the city for long-term medical treatment, as well as participants in various training courses. In this place, the high temperatures made the stay unsustainable without adequate air conditioning systems, generating situations of discomfort and even risk to the health of the people staying there. The implementation of the photovoltaic system made it possible to guarantee the continuous operation of air conditioning equipment and other devices essential for the well-being of the users, radically transforming the quality of the welcome offered by the Lutheran community.

## Project overview: Local to global model – sharing experiences in synodal assemblies

What began as a local response now inspires wider discussions. The synodal assemblies became platforms for sharing not only results, but especially the lessons learned from the process: how to overcome initial resistance, build unexpected alliances, and maintain community enthusiasm. This systematization turned a specific experience into a replicable model that continues to generate new adhesions. In Cuiabá, 2,200 kWh per year are now produced by solar energy, which decreased the electricity bill by 80%, or BRL 2,800.

## Context: Mitigating CO<sub>2</sub> emissions in alignment with the objectives of IECLB and LWF

IECLB's fourth national goal aligns directly with the LWF's Climate Action Commitment, which calls on all member congregations to undertake concrete actions in three key dimensions. First, communities are called to progressively transform their ecological footprint by implementing effective measures to reduce pollutant emissions in their daily activities and institutional projects. Second, the commitment involves developing and disseminating eco-theologies that build bridges between the principles of Christian faith and practices of environmental sustainability, integrating care for creation as an essential part of Lutheran spirituality. Finally, the LWF calls its member churches to take an active role in advocating for public policies that ensure special protection for the most vulnerable groups from the impacts of climate change, recognizing that environmental justice is inseparable from social justice.

## From strategy to action

The installation of solar panels in synodal headquarters and a lodge in Cuiabá marked a “before” and “after” in community life. Beyond the technical infrastructure, the panels became visible symbols of a concrete commitment to transforming sunlight into clean energy that feeds not only electrical circuits, but also the hope for a more sustainable future. In the Cuiabá lodging project, this change made it possible to ensure decent conditions for families in vulnerable situations, demonstrating that the energy transition must be, above all, fair and inclusive.

The training of community members in energy management turned out as a learning process and the community even had to learn to read their consumption, understand environmental impacts, and make conscious decisions.

Thanks to local advocacy that took place to replicate the model in four parishes, the success in Cuiabá did not remain within its geographical limits. Through testimonial meetings and dialogue at the synod level, the experience spread organically to the neighboring communities. Each replica adapted the model to its particular realities, demonstrating that sustainable solutions are scalable when they are based on horizontal dialogue and knowledge sharing rather than technical impositions. The monitoring of CO<sub>2</sub> emission reduction and renewable energy production through an app transformed abstract data into concrete motivation. By visualizing on their mobile phones the tons of CO<sub>2</sub> avoided and energy generated, participants went from being spectators to active protagonists of change. This technological transparency strengthened trust in the project and offered a climate pedagogy accessible to all generations.

## Results and impacts

The photovoltaic system in Cuiabá currently mitigates approximately 32.7 tons of CO<sub>2</sub> per year. This is equivalent to the carbon sequestration of 1,486 mature trees.

More than 200 people are accommodated annually at the lodge. In addition, the lodge serves as a meeting place for 20 youth participants each weekend, 25 women every Wednesday, and 70 worship participants every Sunday.

The maintenance fund is managed by youth and many community people have turned into promoters of renewable energy. Care for creation has become a permanent mandate that transcends any temporary project.

## Lessons learned and replicability

Synodal assemblies can be used as vibrant spaces for collective environmental decision-making. If this approach is followed, the solar project is easily transferable to other communities in the region, because although the investment seems high, it is amortized in a very short time due to the high energy savings. The IECLB Mato Grosso Synod spread the model in the Lutheran networks and local companies installed the panels.



Photo: LWF/Ethiopia



## ETHIOPIA: Halting deforestation and strengthening climate resilience in Oromia

**Project name:** Gololcha Climate Resilience and Livelihoods Project

**Implementing organization:** Lutheran World Federation – World Service Ethiopia

**Project location:** Oromia Region, Gololcha District, Ethiopia

**Project duration:** Ongoing since 2022

**Funding:** Evangelical Lutheran Church in America (ELCA) and the Church of Sweden

## A story of transformation

For years, the Gololcha District in Ethiopia's Oromia region has faced increasing environmental degradation and climate-related challenges. Deforestation, unsustainable land use and reliance on charcoal production have led to soil erosion, declining agricultural productivity, and worsening drought conditions. With many people dependent on rain-fed agriculture, the effects of climate change have made food security more precarious, pushing vulnerable households deeper into poverty.

In response to these challenges, the Gololcha Climate Resilience and Livelihoods Project was launched in 2022. Funded by the Evangelical Lutheran Church in America (ELCA) and the Church of Sweden, the project aimed to improve climate adaptation and mitigation strategies while building local capacity for sustainable land management. The initiative introduced innovative solutions such as organic fertilizer production, improved soil and water conservation techniques, and alternative livelihoods for those previously dependent on deforestation for income.

The first phase of the project ran from 2022 to 2024 and benefited around 11,000 people in five villages. Due to its success, a second phase began in January 2025, focusing on scaling up conservation efforts and expanding alternative income-generating activities. Through a combination of advocacy, community engagement and technical training, the project has already had a profound impact on local livelihoods, reforestation, and environmental sustainability.

## Project overview: Strengthening climate adaptation and mitigation

The Gololcha Climate Resilience and Livelihoods Project is a multi-year initiative that aims to address the root causes of environmental degradation while equipping communities with the tools they need to adapt to climate change. Implemented in the Oromia Region of Ethiopia, specifically in the eastern Bale Zone, the project is a collaboration between local communities, faith-based organizations and regional authorities.

The core objectives of the project are threefold. First, it aims to improve community adaptation to climate change by implementing soil and water conservation structures, distributing drought-tolerant crops and promoting organic farming techniques. Second, it aims to mitigate climate change by reducing deforestation through alternative livelihood strategies and reforestation efforts. Finally, it focuses on building local capacity by integrating national climate change policies into community action.

By the end of the first phase, the project had implemented key activities, including the distribution of drought-resistant crop varieties to 400 households, the establishment of organic compost production units, and large-scale soil conservation efforts. A major success was the introduction of vermicompost, an organic fertilizer that improves soil health and crop yields without the environmental damage caused by chemical fertilizers.

## Context: Challenges in a climate-vulnerable region

The Gololcha district has long struggled with land degradation, erratic rainfall and declining agricultural productivity. A combination of factors – including population growth, unsustainable agricultural practices, and the widespread use of firewood and charcoal for fuel – has contributed to deforestation and soil erosion. These environmental pressures have led to a significant decline in water retention, making agriculture increasingly difficult.

One of the most pressing issues in the region is the expansion of agricultural land into previously forested areas. As populations grow, communities clear forests for agriculture, often without proper land management techniques. This deforestation disrupts local ecosystems, decreases soil fertility, and reduces rainfall, creating a cycle of environmental degradation. In addition, many landless people rely on charcoal production as their main source of income, further accelerating deforestation.

The decline in natural vegetation has led to reduced water availability and lower agricultural yields. At the start of the project, there was almost no crop production in some areas due to poor soil quality and water run-off. These factors have had a direct impact on food security, leaving many families vulnerable to malnutrition and economic hardship.

## From strategy to action

The project's strategy combines environmental conservation with livelihood diversification, ensuring that communities can both restore degraded land and find sustainable income alternatives. To address soil erosion, the project implemented soil and water conservation structures, including soil bunds, stone bunds, and biological stabilization techniques such as planting grasses to reinforce terraces. Reforestation efforts have also played a key role, with thousands of trees planted to improve soil retention and restore local ecosystems.

One of the most innovative aspects of the project has been the introduction of vermicompost production, an organic fertilizer made by using earthworms. Unlike chemical fertilizers, which degrade soil quality over time, vermicompost enhances soil fertility for up to three years per application. The initiative not only improves crop yields but also provides farmers with a long-term, cost-effective alternative to expensive chemical inputs.

To further strengthen resilience, the project has provided drought-tolerant crop varieties to 400 households, ensuring that farmers can produce food even in periods of low rainfall. Additionally, landless individuals who previously relied on charcoal production have been integrated into alternative livelihood programs, including small-scale vegetable farming and petty trading. These efforts have significantly reduced pressure on local forests while providing stable sources of income.

A crucial component of the strategy has been policy advocacy and local governance engagement. The project has worked closely with traditional and religious leaders to promote sustainable land use practices. Through extensive discussions and workshops, the community reached a landmark decision to ban charcoal production in the district. This agreement was formalized into local policy, representing a significant step toward long-term environmental protection.

## Results and impacts

The project has already demonstrated significant positive impacts across environmental, economic, and social dimensions. Farmers in the region have reported increased agricultural yields due to improved soil fertility and water retention. The introduction of organic compost has not only reduced dependence on chemical fertilizers, but in some cases has tripled production.

One of the most remarkable environmental results has been the reappearance of natural springs in areas that had suffered from severe deforestation. Through soil conservation and reforestation efforts, the landscape has begun to recover, restoring critical water sources that had disappeared for years.

At the community level, a ban on charcoal production has removed a major driver of deforestation, protecting local forests and ensuring long-term sustainability. Meanwhile, alternative livelihood programs have provided economic stability to landless people, enabling them to move into sustainable farming and business ventures.

Women's participation has also been a key success. The project has established women-only savings and credit groups, empowering women entrepreneurs to engage in sustainable businesses. These groups provide financial support for small-scale farming, vegetable sales, and other community-led enterprises, promoting gender equality and economic resilience.

## Lessons learned and replicability

One of the key lessons of the project is that community ownership is essential for long-term success. By involving traditional leaders, religious figures, and local authorities from the outset, the project ensured that conservation efforts and policy changes were widely accepted and effectively implemented.

Another key lesson is the importance of integrating alternative livelihoods into conservation efforts. Many conservation initiatives fail when they do not provide viable economic alternatives to unsustainable practices. By providing training, resources, and start-up capital for small businesses, this project successfully transitioned former charcoal production into more sustainable income-generating activities.

Finally, policy advocacy plays a critical role in driving long-term change. The formalization of the charcoal ban into local law demonstrates how grassroots initiatives can influence wider environmental policy.



Photo: LWF/Ethiopia



## ETHIOPIA: Sustaining livelihoods through carbon-neutral gravity-fed irrigation

**Project name:** Lasta-Lalibela Food Security Project Phase II

**Implementing organization:** Lutheran World Federation – World Service Ethiopia

**Project location:** Ethiopia: Amhara National Regional State, North Wollo Zone, Lasta Woreda and Lalibela Town Administration, Tirazfire, Erfa

**Project duration:** 2018–2021

**Funding:** Canadian Food Grains Bank and Canadian Lutheran World Relief

## A story of transformation

For generations, farming communities in Ethiopia's Amhara region have struggled with recurring droughts, unpredictable rainfall, and declining agricultural yields. Dependent on rain-fed agriculture, many families struggle to produce enough food, let alone secure an income from farming. Without irrigation infrastructure, they remain vulnerable to food insecurity and economic instability.

A gravity-fed irrigation project was launched in response to these challenges, initially funded by the Canadian Food Grains Bank and Canadian Lutheran World Relief. The project sought to harness one of the region's perennial rivers, using traditional knowledge and modern engineering to create a sustainable irrigation system. The goal was simple but transformative: to enable smallholder farmers to farm year-round, diversify their crops, and improve their livelihoods. And there is more: using gravity for the irrigation system means that expensive diesel pumps are not needed. This saves money and enables completely emission-free, climate-neutral irrigation.

Although the project was disrupted by conflict in the Amhara region, efforts continued. With additional support from an Australian donor, the irrigation canals were further extended in 2024. Today, the project benefits more than 100 households and covers 40 hectares of farmland. Farmers who once depended solely on the unreliable rainy season are now able to grow cash crops such as onions and peppers, significantly increasing their household income.

## Project overview: A sustainable approach to irrigation

The irrigation project is designed as a gravity-fed system, eliminating the need for expensive and carbon-intensive motorized pumps. By constructing a concrete barrier to divert river water into irrigation canals, the system provides a continuous flow of water to farmland with minimal maintenance costs. Unlike motorized irrigation systems, which require ongoing fossil fuels and technical support, a well-built gravity-fed system can operate for decades with little maintenance.

The project operates in the Amhara region of Ethiopia, specifically in Genete Mariam kebele, Lasta District, an area historically affected by drought and food insecurity. Despite periodic interruptions due to conflict, the project has made significant progress. Farmers are now able to grow crops beyond the traditional rainy season, ensuring a stable food supply and new economic opportunities.

The initiative not only focuses on irrigation but also integrates natural resource management and watershed protection. Soil and water conservation measures, including reforestation and terracing, help restore degraded landscapes, prevent soil erosion, and improve water retention. These efforts contribute to more resilient agriculture, enhanced biodiversity, and increased CO<sub>2</sub> storage in biomass and soils.

## Context: Challenges in a water-stressed region

Ethiopia's Amhara region has long struggled with erratic rainfall and frequent droughts. Farmers in the region traditionally relied on rain-fed agriculture, which often resulted in poor harvests due to unpredictable weather patterns. Water scarcity was exacerbated by environmental degradation, deforestation, and limited investment in irrigation infrastructure.

The lack of irrigation systems forced many communities to rely on traditional earth canals, which were inefficient and prone to water loss. In addition, the lack of properly constructed weirs meant that water flow was difficult to regulate, making irrigation unreliable. Without access to year-round irrigation, farmers could only harvest once a year, leaving them vulnerable to food shortages and economic hardship.

The introduction of a gravity-fed irrigation system addressed these challenges by providing a cost-effective, sustainable, and carbon-neutral water management solution. By utilizing existing perennial rivers, the project ensured a steady supply of water for agriculture, reducing dependence on erratic rainfall.

However, the project faced significant external challenges. Conflict in the region repeatedly disrupted activities, forcing suspensions and relocation of staff. In addition, extreme weather conditions, including seasonal flooding from the Tekeze River, posed risks to the infrastructure and required careful planning and adaptation.

## From strategy to action

The implementation of the irrigation project with particular engagement of women followed a comprehensive strategy that combined technical innovation with community participation. The project team worked closely with local farmers to design an irrigation system that met their needs and traditional practices. This included

- constructing a concrete barrier to efficiently divert river water;
- lining key sections of the irrigation canal with concrete to minimize water loss;
- training farmers in sustainable agricultural practices, including conservation agriculture and water management;
- organizing local irrigation committees to oversee water distribution and maintenance;
- implementing watershed management activities such as reforestation and soil conservation.

A critical component of the project was to ensure that local farmers could manage the irrigation system independently. Training sessions covered topics such as irrigation scheduling, financial management, and cooperative leadership. Farmers learned how to maintain the canals, distribute water fairly, and contribute to a collective maintenance fund for future repairs.

## Results and impacts

The impact of the project has been profound. With access to year-round irrigation, farmers have been able to plant crops beyond the rainy season, increasing both food security and household income. In addition to staple grains, many farmers have begun to grow high-value cash crops such as onions and peppers, which fetch higher prices on local markets. Irrigation has become independent of diesel-powered water pumps and therefore CO<sub>2</sub>-neutral. Importantly, the project played a successful role in promoting gender equality in the district by including women on an equal footing in cash-for-work activities during construction, in training, and in community leadership structures.

One of the most remarkable results has been the regeneration of the local ecosystem. Areas around the irrigation scheme that were once barren and dry are now lush and green. The combination of irrigation and watershed protection has led to the reappearance of natural springs, increased vegetation cover, and the return of wildlife, including pollinators such as bees.

About 110 households benefit directly from the project, or about 550 people. Beyond the direct beneficiaries, the wider community has also benefited from improved environmental conditions and local economic growth.

## Lessons learned and replicability

Several key lessons have emerged from the implementation of this project. First, gravity-fed irrigation systems are the most sustainable option in water-scarce regions. Unlike motorized schemes, which require ongoing fuel and maintenance costs, gravity-fed systems have minimal operational expenses once established.

Second, integrating irrigation with natural resource management maximizes impact. By combining water access with soil conservation, reforestation, and ecosystem restoration, the project not only improves agricultural productivity but also enhances long-term environmental resilience.

Third, community participation is essential for sustainability. Organizing farmers into irrigation cooperatives, training them in governance and financial management, and fostering a sense of ownership have all contributed to the long-term viability of the project.



## GERMANY: Harnessing the wind – a church-led renewable energy initiative

**Project name:** “EKM Stromverbund” – electricity production through wind and solar energy

**Implementing organization:** Evangelical Church in Central Germany (EKM)

**Project location:** Various locations in the states of Saxony-Anhalt and Thuringia, Germany

**Project duration:** Ongoing since 2011

**Funding:** The project is financed by own means and bank loans

## A story of transformation

In 2011, amidst growing concerns about climate change and sustainability, a vision emerged within the Evangelical Church in Central Germany. Recognizing the potential of wind energy, church leaders embarked on a journey to generate their own renewable electricity. With vast land resources at their disposal, they sought to establish wind farms that could power not only their own operations but also contribute to the broader energy grid.

Over a decade later, this vision has become a reality. With eleven wind turbines spread across five locations in the German states of Thuringia and Saxony-Anhalt, the project now has an energy capacity of 34 megawatts. The produced energy exceeds the combined energy consumption of the church and its diaconal institutions, marking a milestone in faith-based environmental stewardship. The initiative not only reduces carbon emissions but also sets an example of how faith-based institutions can actively contribute to the energy transition.

## Project overview: Wind power for a sustainable future

The wind energy project began as part of a broader climate initiative called “Climate Change, Life Change,” launched in 2011. The Evangelical Church in Central Germany recognized that it had both the land and the resources to invest in renewable energy. The primary goal was to cover the church’s own energy consumption through carbon-neutral wind power, with the long-term vision of becoming an independent energy provider.

Currently, the church operates eleven wind turbines in five locations across Thuringia and Saxony-Anhalt, with a total capacity of 34 megawatts. Every fifteen to twenty minutes, the wind turbines prevent the release of approximately one ton of CO<sub>2</sub>, totaling 30,000 tons of CO<sub>2</sub> annually, demonstrating a measurable contribution to climate mitigation. The project’s expansion continues, with plans to double energy production by 2028.

## Context: The challenges of renewable energy expansion

Despite its success, the project has faced challenges typical of renewable energy initiatives. The permitting process for wind energy infrastructure is complex and time-consuming, requiring negotiations with local municipalities, environmental assessments, and regulatory approvals. Additionally, wind farms often face public opposition due to concerns about land use, biodiversity, and visual impact.

The church has worked to address these challenges by fostering dialogue with local communities. A key initiative, the “Energy Dialogue” project, creates opportunities for residents to voice their concerns, ask questions, and better understand the benefits of renewable energy. This proactive approach helps build trust and increases acceptance of wind power in local communities.

The expansion of solar energy is also part of the church’s sustainability strategy. While installing solar panels on church buildings is relatively straightforward, the development of larger ground-mounted solar farms presents additional challenges. These projects must balance energy production with biodiversity conservation, ensuring that solar farms do not disrupt local ecosystems.

## From strategy to action

The church's strategy for implementing wind energy involves several key steps. First, suitable land is identified, often owned by local church communities. The church then leases these areas for wind turbine construction, ensuring that local parishes benefit financially from the project. The next stage involves negotiating with municipal governments and navigating the complex approval process. Once the necessary permits are secured, specialized energy companies are contracted to build and maintain the wind turbines.

Community engagement plays a central role in the project's success. While financial benefits, such as lease payments for church-owned land, provide incentives for local support, the church also prioritizes open communication. Through the "Energy Dialogue" initiative, the church actively engages with residents to address concerns and promote an understanding of the environmental and economic benefits of wind energy.

Another aspect of the strategy is energy storage. As renewable energy production increases, the challenge of storing excess electricity becomes more pressing. The church is currently exploring what could be our contribution to ensure a stable and reliable energy supply.

## Results and impacts

The impact of the project is significant. The wind turbines produce more electricity than the church and its affiliated institutions consume, making the church a net energy contributor. The transition to wind energy has resulted in a substantial reduction in CO<sub>2</sub> emissions, aligning with Germany's broader climate goals.

Local communities also benefit economically. The lease agreements for church-owned land provide a steady income stream for local parishes, supporting various social and community projects. Furthermore, the initiative has strengthened public awareness of renewable energy, demonstrating that faith-based organizations can play a leading role in climate action.

Despite initial skepticism in some areas, the project has gained increasing support. In some cases, landowners who were initially opposed to wind turbines changed their minds after seeing their neighbors benefit from lease payments and stable energy production. This shift highlights the importance of long-term engagement and transparent communication.

## Lessons learned and replicability

One of the most important lessons from this project is the need for patience and persistence. The process of developing wind energy infrastructure is lengthy, often requiring years of negotiations, approvals, and planning. However, by maintaining a clear vision and engaging with local communities, success is achievable.

Another key insight is the value of cooperative energy models. While the church operates its wind farms as a centralized entity, energy cooperatives could offer a similar approach in other regions. By bringing together local stakeholders with diverse expertise, cooperatives can facilitate community-driven renewable energy projects.

The financial sustainability of renewable energy is also an important consideration. Unlike fossil fuels, wind and solar power have low operating costs once the infrastructure is in place. As fossil fuel prices continue to rise, renewable energy will become increasingly attractive from an economic perspective.

The wind energy project led by the Evangelical Church in Central Germany offers valuable insights for other organizations interested in pursuing renewable energy. While the specific model may be most applicable in Germany and other European countries, the principles behind it are widely transferable.

One recommendation for replication is the establishment of local energy cooperatives. By pooling resources and expertise, communities can develop their own renewable energy projects, reducing reliance on external providers. Additionally, organizations looking to transition to renewable energy should engage in open dialogue with stakeholders from the beginning, addressing concerns and fostering local support.



Photo: Evangelical Lutheran Church in Northern Germany



## GERMANY: The journey of the Evangelical Lutheran Church in Northern Germany to carbon neutrality

**Project name:** Zero carbon long-term strategy of the church in northern Germany

**Implementing organization:** Evangelical Lutheran Church in Northern Germany

**Project location:** All institutions of the Evangelical Lutheran Church in Northern Germany in the states of Hamburg, Mecklenburg-Western Pomerania and Schleswig-Holstein, Germany

**Project duration:** Ongoing since 2010

**Funding:** Apart from kick-off funding provided by the federal government, mostly funded by own means; currently, 0.8 per cent of the church's tax income is reserved for this project (staffing, programming, and investments)

## A story of transformation

The Evangelical Lutheran Church in Northern Germany (ELCNG) in the three northern German states of Hamburg, Schleswig-Holstein, and Mecklenburg-Western Pomerania has some 1.8 million members. Here, on the coasts of the North and Baltic Seas, with their port cities that have always been doors to the world and at the same time bear witness to storms and floods, the concern with topics such as care for creation, climate protection, and environmental justice in the church parishes goes back for decades. Nevertheless, the transformative journey that began with a church-wide climate campaign in 2010 resulted in a resolution enshrined in church law to achieve climate neutrality by 2050 at the latest and has since been implemented with all the successes and failures that characterize real life, is extraordinary in many ways. This is the story of how it happened.

### Project overview: A regional church decides on a roadmap to carbon neutrality by 2050 and anchors this decision in church law

In 2009, the then regional bishop took part in the World Climate Summit in Copenhagen with a church delegation and witnessed the failure to reach a global decarbonization agreement. A year later, the ELCNG commissioned a university research institute to develop a roadmap for the regional church to achieve carbon neutrality. A parallel climate campaign promoted this project throughout the church. After the mitigation plan was presented, the first attempt to enshrine the achievement of climate neutrality by 2050 in church law failed due to financial issues. Once this had been resolved, the climate protection law was adopted at the synod of the ELCNG in 2015. Since then, measures have been taken at various levels of the church across all areas to gradually reduce GHG emissions.

### Context: Leading by example – not just demanding climate neutrality from others, but practicing it ourselves

The ELCNG has 2 million members, 80,000 volunteers, thousands of employees, around 5,000 buildings and almost 60,000 ha of land. According to the results of the initial inventory, around 80% of CO<sub>2</sub> emissions are attributable to the building sector and its energy needs (electricity and heat). The transport sector and public procurement are far behind in terms of emissions – but also with regard to emission reduction.

To successfully reduce emissions, the focus of measures must therefore be on these areas, particularly the building sector. To stay on track, emissions reductions of 5–6% per year on average are required, which is a feasible but also very ambitious goal.

To achieve this goal, the Climate Protection Act of the ELCNG provides a range of instruments: It requires the creation of climate protection plans with specific measures and interim targets, the regular monitoring of compliance with these plans, and the updating of the plans at least every six years. It defines the tasks that fall to the regional church, church districts, and parishes when implementing the plans. And it includes a financing instrument, that is, 0.8% of the key allocation

to the ELCNG and its church districts are reserved for investments in the implementation of the climate protection plans. This regulation, initially set for the years 2016–2025, will be evaluated and is likely to be continued.

This relatively low financing rate, given the high investment costs, also shows that a large proportion of the necessary investments must be covered by loans or grants. However, in order to finance these, investments in climate protection must ultimately pay off through savings in other areas, namely, in energy costs. This means that, in order to really catch on, climate protection must make economic sense.

## From strategy to action

One of the most important measures following the adoption of the climate protection law was the introduction of energy controlling and climate protection management in the areas of buildings, mobility, and procurement. This was intended to create the planning basis and internal church structures to reduce emissions in a targeted manner and at the same time to modernize the church infrastructure (buildings, vehicles, computers, etc.) in a way that is not only climate-friendly but also as cost-effective as possible.

In the very decentralized ELCNG, much depends on the willingness and ability of the church districts and parishes to follow and act. That is why climate education for children, young people, and adults, encouraging people to move from confession to action, technical training for caretakers on how to measure and reduce energy consumption, as well as many other services and supports provided by the regional church, continue to play a very important role. A decisive step in this direction was to establish separate offices and positions for climate protection within the regional church administration and in the church districts starting in 2016.

Since then, the climate protection office in cooperation with the church district colleagues has launched numerous initiatives and offered support services that include: regular workshops and lectures for pastors, sextons, administrative staff, and church councils; an annual “climate fast”; the “eco-fair community” initiative; the development of a church-wide procurement portal for eco-fair purchasing; the promotion of construction and renovation measures; programs to promote e-mobility, car-sharing, and bicycle leasing; and a climate-oriented travel expense regulation.

## Results and impacts

In the meantime, the planning for the buildings has been completed, that is, it has been decided which buildings will be re-used, renovated, or sold in the future and how. Energy controlling has been introduced at all levels, and most church districts now employ their own climate protection managers.

Compared to the baseline year of 2010, CO<sub>2</sub> emissions in the building sector have fallen by 45%, largely due to increased energy efficiency and the switch to renewable energies for electricity, as well as to the impact of warmer weather on heating energy consumption. Because the emission

savings in the heating supply have so far fallen well short of the targets set in the first climate protection plan, this has become a particular focus of the second climate protection plan 2022–2027. The switch to climate-friendly heating sources and harnessing the huge energy efficiency potential are in focus in this reduction period.

As a consequence of the energy supply crisis in 2022, activities to save energy have been paid much more attention and a widely noticed campaign was staged in the ELCNG. This has resulted in energy savings of 15% for heating and electricity in 2022 compared to the average in 2019–2021. A good rise of engagement and expertise in church administrations and also in many parishes is to be noticed, explaining the results of preliminary evaluations for 2023 which hint at additional reductions.

Overall, it has been shown that the road to decarbonization is a long one and that there are many difficulties to overcome. Nevertheless, it is worth taking this path: even if those working to protect the climate in the ELCNG would like to see faster progress, they can still be very proud of what has been achieved, because compared to most other regional churches and the German average, GHG reduction is happening faster!

## Lessons learned and replicability

The Paris Agreement requires all states to find concrete ways to achieve GHG neutrality by the middle of the century. The Lutheran World Federation is committed to this goal, and many member churches have adopted it. However, such a goal can only be implemented if concrete roadmaps for implementation are also decided upon and systematically pursued.

The ELCNG is playing an exemplary pioneering role here. Other churches can learn from this: On the one hand, with regard to institutionalization (e.g., the climate protection law), but also, on the other hand, with regard to systematically taking stock, scientific support, financing, and planning measures. Of course, not everything is transferable, but the basic approach provides an example of good practice. We can learn not only from successes, but also from failures. The outstanding importance of climate education, the creation of common ownership within the church community of the path taken, as well as capacity building and, finally, firm belief and long-term engagement, are of utmost importance here. We therefore encourage all those who want to follow the same path to seek out and be inspired by the exchange with those responsible in the ELCNG.



Photo: LWF/Kenya-Somalia



## KENYA: Solar water pumps driving access to water and food in Turkana

**Project Name:** Solar-powered water pumps and climate-smart farming

**Implementing Organization:** Lutheran World Federation (LWF) Kenya-Somalia country program

**Project Location:** Turkana West subcounty, Turkana, Kenya

**Project Duration:** Running since 2013

**Funding:** ACT Alliance, Australian Lutheran World Service, Church of Sweden, DanChurchAid

## A story of transformation

Turkana County in northwestern Kenya is one of the driest regions in the country. Water is a precious resource, and without reliable access, communities are forced to migrate with their livestock, schools remain empty, and women and girls spend hours every day fetching water from distant sources. This daily struggle affects livelihoods, education, and overall well-being.

To address these issues, the LWF Kenya-Somalia program adopted an integrated approach, ensuring reliable water access while also tackling food security, economic development, and environmental sustainability. The introduction of solar-powered water infrastructure has transformed life for many people in Turkana. By utilizing renewable energy to pump water, creating sustainable farming opportunities, and strengthening local governance structures, this initiative has improved living conditions while enhancing the community's resilience to climate change. The shift from diesel-powered pumps to solar technology has not only provided a reliable source of water but also significantly reduced carbon emissions, making the project an important contribution to both local sustainability and global climate action.

## Project overview: Water as the key to a sustainable future

The solar-powered water infrastructure project has been running since 2013 and continues to expand. It is funded by organizations such as DanChurchAid, Australian Lutheran World Service, Church of Sweden, and ACT Alliance. The primary aim of the project is to ensure reliable access to clean water for local communities by transitioning to solar-powered boreholes. In addition to improving water security, the project seeks to reduce dependence on fossil fuels, promote sustainable agriculture as an alternative livelihood for pastoralist communities, and establish strong community-led water management structures to ensure long-term sustainability.

## Context: Challenges in a water-scarce region

Turkana county is a semi-arid region with highly unpredictable rainfall patterns. Most people in the area rely on pastoralism as their primary means of livelihood. However, recurrent droughts have made this lifestyle increasingly difficult to sustain. Without consistent water sources, communities remain vulnerable to extreme poverty, food insecurity, and displacement. This was also the case for Kakuma municipality: Families from the predominantly pastoralist community have often been forced to migrate with livestock, while their women and girls spend countless hours in search for water. These challenges are complex yet interconnected, requiring a holistic solution.

Initially, water was extracted using wind pumps, but these proved unreliable and inefficient. As an alternative, diesel generators were introduced to pump water from boreholes. However, the high cost of fuel and the negative environmental impact of burning fossil fuels made this an unsustainable solution. The transition to solar-powered pumps marked a turning point in ensuring a stable and sustainable water supply for the region. This shift has provided clean energy, reduced operational costs, and significantly lowered GHG emissions.

## From strategy to action

The implementation of this project was based on a comprehensive strategy that focused on improving water access, introducing sustainable agricultural practices, and strengthening local governance structures. Boreholes were drilled in strategic locations to ensure that water was available for both human consumption and livestock. As the project evolved, it became clear that merely providing water was not enough: communities needed a way to use this resource for economic and social development. In response to this, the initiative introduced climate-smart agriculture programs, enabling people to cultivate food crops in areas where farming had previously been impossible due to water scarcity.

To ensure long-term sustainability, local water-user committees were established and trained in borehole maintenance, water governance, and financial management. Some communities adopted digital water payment systems to prevent overuse and wastage, helping to maintain fair and efficient water distribution. The combination of solar technology, sustainable agriculture, and local governance structures created a model that not only provides water but also promotes resilience in the face of climate change.

## Results and impacts

Since its implementation, the project has significantly improved the quality of life for thousands of people. More than 500 households (3,000 individuals), now have access to clean and reliable water. In total, 36 boreholes were drilled but not all are yet solarized. The availability of clean, reliable water has expanded agricultural production, allowing communities to grow food, improve nutrition, and diversify income sources. Many families that once relied solely on livestock now engage in farming.

One of the most profound impacts of the project has been the stabilization of communities. In the past, water scarcity forced people to migrate in search of water for their livestock, disrupting education and social structures. With the installation of solar-powered boreholes, migration patterns have changed, allowing families to remain in one place, send their children to school, and build stronger community ties. The transition to solar energy has greatly enhanced energy efficiency as compared to less efficient old wind-powered pumps.

## Lessons learned and replicability

Several key lessons have emerged from the implementation of this project. A critical factor in the project's success has been the involvement of the local community. The water management committee, trained by LWF, plays a key role in overseeing the operation of solar pumps, collecting contributions to support maintenance, and managing the water system. "We are glad to have a committee in place ensuring the community's interests are prioritized in the daily running of this crucial project. Thanks to our committees' efforts, the project is currently running smoothly, and we are all enjoying the fruits. The solar-powered system has proven to be reliable, affordable, and easy to manage," said Paul Esinyen, a 24-year-old farmer and secretary of the water management committee.

Community involvement has proven to be essential for long-term success. From the early stages, local leaders and community members were engaged in decision-making, which has helped create a strong sense of ownership. Second, the integration of water access with agriculture has maximized the project's impact, allowing water to be used not just for survival but also for economic empowerment. Third, continuous training and capacity building have empowered communities to manage and maintain their water infrastructure, reducing dependency on external organizations.

The model used in Turkana is highly replicable and can be adapted to other arid and semi-arid regions facing similar water challenges. Solar-powered water systems are scalable and can be implemented in many different parts of the world where conventional energy sources are either expensive or unreliable. Collaboration with local governments and private sector actors ensures long-term financial sustainability and offers learning opportunities while the adoption of smart water management technologies, such as digital payment systems, helps optimize water usage.

Looking ahead, LWF's 2025–2031 strategy is dedicated to accelerating the adoption of renewable energy and reducing dependence on fossil fuels. By integrating sustainable practices such as energy-saving initiatives and climate-smart farming, the program is not only empowering communities but also building a future of environmental resilience.



Photo: LWI/Eugenio Albrecht, Nicaraguan Lutheran Church of Faith and Hope (ILFE)



## NICARAGUA: Combating drought and water insecurity with solar power

**Project name:** Photovoltaic System for Water Extraction for Agricultural and Domestic Purposes

**Implementing organization(s):** Nicaraguan Lutheran Church of Faith and Hope (ILFE), Nicaragua

**Project locations:** Nicaragua: municipality of Somoto, communities of Rodeo, San Luis, Carbonera, and Tierra Colorada (northern region); municipality of Somotillo, communities of Rodeito and La Flor (western region)

**Project duration:** Running since 2019

**Funding:** Hermandades en USA, Evangelical Lutheran Church in America (ELCA), Mission One World of the Evangelical Lutheran Church in Bavaria, Helping Kids Round First, Lutheran World Relief

## A story of transformation

The Photovoltaic System for Water Extraction for Agricultural and Domestic Purposes project in Nicaragua exemplifies a successful integration of renewable energy and community collaboration to address critical issues such as water scarcity, food insecurity, and environmental degradation. By leveraging solar power, the initiative provides a reliable and eco-friendly solution to water-access challenges. Moreover, its emphasis on community involvement and gender inclusivity fosters long-term resilience and self-sufficiency among local populations.

With continued support and expansion, such projects can play a transformative role in mitigating the effects of climate change and fostering socioeconomic growth in rural regions. By adopting similar models, other communities can achieve greater sustainability, ensuring a more secure and prosperous future for generations to come.

## Project overview: Using solar energy to combat drought and food insecurity

The project is being implemented in the northern and western regions of Nicaragua, specifically in the municipalities of Somoto and Somotillo. These areas experience prolonged droughts and limited water availability, exacerbating food insecurity and compelling many to migrate in search of better living conditions. Agriculture, a primary source of livelihood for local communities, is especially vulnerable to erratic rainfall patterns. The introduction of photovoltaic systems for controlled water extraction and irrigation seeks to mitigate these issues by reducing dependency on unpredictable weather conditions.

The photovoltaic system utilizes solar-powered pumps to extract groundwater, which is then used for irrigation and household consumption. Unlike conventional fuel-powered pumps, this system reduces reliance on expensive and environmentally harmful fossil fuels. The project is designed to provide a consistent water supply, ensuring that agricultural activities can continue even during dry periods.

## Context: Climate change is exacerbating economic hardship in the dry belt of Central America

Nicaragua faces significant challenges due to its geographical location in the dry corridor of Central America. This region is prone to prolonged droughts that severely impact agriculture and access to clean water, which contributes to food insecurity, economic instability, and forced migration. In response to these challenges, the project "Photovoltaic System for Water Extraction for Agricultural and Domestic Purposes" was initiated by the Nicaraguan Lutheran Church of Faith and Hope (ILFE) in collaboration with multiple donors and organizations. The goal of this initiative is to implement a sustainable and renewable solution to water scarcity, thereby improving food security and enhancing the livelihoods of local communities. By harnessing solar energy to extract and distribute water, the project aims to provide long-term environmental and socioeconomic benefits.

## From strategy to action

The project seeks to achieve three main objectives: to increase the climate resilience of local food production systems; to promote community organization and development; and to ensure social inclusion by involving men, women, and youth in organizational and productive processes.

To achieve these goals, the project employs innovative and sustainable methods, including:

- Solar-powered water extraction and drip irrigation systems: ensuring efficient water use, minimizing waste, and maximizing crop yields
- Reforestation efforts: planting trees to improve the microclimate, enhance rainwater infiltration, and prevent soil degradation
- Soil and water conservation practices: techniques such as terracing and cover cropping to prevent erosion and maintain soil fertility
- Community education on waste and wastewater management: training sessions to equip residents with knowledge on sustainable resource management
- Organic crop care using botanical products: encouraging natural pest control and organic fertilizers to support environmental conservation and healthier food production
- By integrating these strategies, the project enhances water accessibility while preserving natural resources for future generations.

A critical aspect of the project's success is the active involvement of local communities. Residents contribute to infrastructure development, manage the photovoltaic system, and maintain agricultural land. The initiative promotes gender inclusivity and social equity by encouraging equal participation of women and youth in decision-making processes. This approach not only empowers individuals but also fosters stronger, more self-reliant communities.

ILFE provides ongoing technical support and training to ensure that community members possess the necessary skills to sustain the project independently. Additionally, the initiative has gained recognition from local organizations and municipal governments, facilitating collaboration and attracting further support. This interinstitutional alliance model has enabled the project to expand its reach, benefiting more communities facing similar challenges.

## Results and impact

The project has significantly improved the quality of life for participating communities. Key outcomes include enhanced water security, increased agricultural productivity, reduced food scarcity, additional income and employment opportunities.

Moreover, the initiative contributes to climate change mitigation by reducing reliance on fossil fuels and reforestation, thereby lowering carbon emissions and enhancing carbon sequestration. Although precise CO<sub>2</sub>-reduction measurements are not yet available, the transition to renewable energy represents a significant step toward sustainability.

## Lessons learned and replicability

The success of this project highlights the importance of community engagement, technical training, and strategic partnerships in implementing sustainable solutions. Based on these experiences, the model can be replicated in other drought-prone regions with necessary adaptations to local conditions. Key recommendations for organizations planning similar initiatives include:

- Conducting pilot projects – assessing feasibility before full-scale implementation
- Strengthening community organization and awareness – ensuring long-term sustainability and participation
- Securing funding from donors and institutions – encouraging investment in renewable energy and sustainable development projects



Photo: East of Lake Victoria Diocese (ELVD), Tanzania



## TANZANIA & GERMANY: The power of church partnerships in fighting climate change

**Project name:** Church Climate Action Partnership (CCAP)

**Implementing organization:** East of Lake Victoria Diocese (ELVD) and Ecumenical Centre of the Evangelical Lutheran Church in Northern Germany (ELCNG)

**Project location:** 14 Lutheran congregations and 2 Theological Colleges from the East of Lake Victoria Diocese (Tanzania) and the ELCNG (Germany)

**Project duration:** 2023–2026

**Funding:** BINGO Environmental Lottery, Bread for the World, Church Development Service of the ELCNG

## A story of transformation

High emissions in Germany that fuel climate change and growing pressure in Tanzania due to climate-related damage, but also environmental pollution, biodiversity loss and deforestation: the challenges are many and varied, sometimes interrelated, and have roots that in some cases even go back to German-Tanzanian colonial history. Climate activists from the East of Lake Victoria Diocese in Tanzania and the ELCNG agreed: This provides many good reasons to work more closely together, to learn from and with each other and to develop and implement climate action plans together, anchored on principles of climate justice. The resulting Church Action Climate Partnership (CCAP), which connects parishes from both countries, is the latest example of a long partnership between the two Lutheran churches.

## Project overview

So far, eight partnerships between parishes have been established under the CCAP umbrella, aiming at building up common climate knowledge and acting together in terms of emission reduction and climate change adaptation. At the same time, the climate partnerships reflect the aspiration to develop a new model of church partnership based on the principle of climate justice and common, but differentiated, responsibilities and capabilities, one that critically takes into account the common colonial history and its consequences to date.

CCAP is testing three innovative approaches that distinguish it from other typical partnership models between church parishes: it has a climate focus and results in action plans that are implemented by both the Tanzanian and German parishes; financial resources are managed jointly; and the partnership is time-limited.

## Context

In the Tanzanian project region, the climate crisis is severely impacting everyone. Drought, heatwaves, more erratic rainfalls, flash floods, and wildfires are putting people at risk. At the same time, deforestation, driven by the search for firewood, waste disposal, and the increasing pollution of Lake Victoria undermine livelihoods and trigger biodiversity loss.

At the beginning of the project, the fact that GHG emissions cause climate change and that historically they have mainly been produced in the Global North was a very abstract, if not unknown, concept for most members of the Tanzanian communities.

In the German project communities, on the other hand, there was a clear understanding of this, as well as of the need to reduce emissions and ultimately to bring them to zero.

Conversely, the participants in Tanzania had very direct experience of the consequences of climate change, which shape their everyday lives there, while the understanding of the necessity of climate adaptation at the municipal level in Germany was rather more theoretical.

Through the personal exchange within the climate partnership, both sides were able to learn from each other, deepen their mutual understanding of each other's priorities and thus arrive at a joint program of action. In addition, CCAP is an attempt to revive the increasingly less attractive concept of church partnerships and make it attractive again, especially for the youth.

Formally, CCAP goes back to a concept note developed together by the ELCNG and the Diocese of the East of Lake Victoria, seeking new ways to address the climate crisis in locally led ways and, at the same time, in alignment with the global Paris Agreement. Under this common umbrella, and in mutual exchange, each parish involved develops and implements its own climate action plan. In general, parishes in Tanzania focus primarily on climate change adaptation and reforestation, the main focus of German parishes is on climate mitigation, that is, emission reduction. The frameworks for the respective climate action plans are the five-year plan of the ELVD and the climate protection law of the ELCNG.

## From strategy to action

The climate partnership pursues a participatory approach that ensures the involvement and ownership of the communities, thus ensuring sustainability. Participants are trained in seminars to become “change agents” for their various communities, who then carry out awareness-raising campaigns and significantly increase awareness. Each community also appoints an action team of four people (pastor, youth representative, women’s representative, and others) to manage the project.

The action teams are responsible for drawing up the climate action plans for their respective communities and receiving external support if needed. The implementation of the agreed measures then begins for an initial period of three years. In addition, six joint seminars are held to train so-called change agents. These have the task of conducting awareness-raising campaigns in the communities. The seminars cover various areas such as climate protection methods for buildings, mobility and land, but also networking and information about the history of colonialism and the mission. Intercultural learning and engagement are unique aspects of this project. During two encounter trips (one in Germany and one in Tanzania), the participants exchange information about their common goals and challenges, insights and successes.

A Tanzanian and a German project coordinator are responsible for finances and general administration. In order to create fewer hierarchies in an asymmetrical world, funds are managed transparently with joint budgeting.

The measures already implemented in Tanzania include the planting of more than 15,000 trees, the construction of a solar energy system to generate electricity, the installation of rainwater harvesting systems to increase resilience in periods of droughts, and a beekeeping project that can secure people’s livelihoods. In Germany, two solar energy systems have been installed and heating systems have been converted to heat pumps.

## Results and impacts

As the project is still ongoing, it is too early to conclude about the achievements. However, what can be already said is that there is close cooperation between partnering parishes and a greater level of awareness of climate change and its causes, as well as ways to combat it.

The long-term impacts at local levels are expected to be remarkable and lasting. In the case of the German congregations, the participation in CCAP has turned out to be a booster for enhanced emission reduction at community level.

In Tanzania, the engagement of the church on climate and environmental issues has significantly increased: While the ELVD already focused on climate issues before, CCAP has become a strong incubator to bringing climate action down to the parish level and encouraging grassroots participation. For example, the promotion of an improved cookstove model, which requires less firewood, has reduced Nyakato Bible College's wood consumption by 75%. The solar lighting of Nampalahala Parish has not only illuminated the community but also proves the huge potential of solar power. Last but not least, enhanced female leadership in environmental conservation and climate action is a huge success.

## Lessons learned and replicability

The climate action plans of the Tanzanian and German church parishes differ in terms of their priorities, complexity and speed of implementation: In Germany, the plans are more complex and implementation is slower. However, there are also many similarities, and the close cooperation in the CCAP as a common umbrella is inspiring for the participants from the church parishes. The establishment of digital communication channels between the partner municipalities, such as videoconferencing and online chat groups, has proved particularly effective for regular exchanges. A clear shared focus on climate change has turned out to be very fruitful, motivating people to take action in daily life and creating a strong bond between the partners. Despite its relatively short history, CCAP has proven to be a very interesting partnership model with great potential for imitation and expansion.



Photo: LW/Uganda.



## UGANDA: Curbing emissions and sustaining livelihoods with nature-based solutions

**Project Name:** Adjumani Rural Livelihood Enhancement Project (ARULEP)

**Implementing organization:** Lutheran World Federation Uganda

**Project location:** Pakele and Dzaipi sub-counties, Adjumani District, Uganda

**Project duration:** 2024–2027

**Funding:** Bread for the World, Germany

## A story of transformation

In Uganda's Adjumani District, communities have long faced economic hardship, environmental degradation, and the growing pressures of climate change. Home to a significant refugee population, the region has struggled with increasing land fragmentation, land degradation, and unreliable rainfall, which have threatened food security and livelihoods. With 70% of the rural population dependent on subsistence agriculture, climate variability has made agricultural production increasingly precarious.

Recognizing the urgent need for climate resilience and livelihood enhancement, the Adjumani Rural Livelihood Enhancement Project (ARULEP) was launched. Implemented by the Lutheran World Federation Uganda and funded by Bread for the World, the project aims to improve agricultural productivity, promote reforestation and sustainable land use, and empower communities through renewable energy solutions. By integrating climate adaptation measures with economic development, the project aims to transform vulnerable communities into resilient, self-sufficient groups.

Working in the Pakele and Dzaipi sub-counties and within several refugee settlements including Nyumanzi, Ayilo, Baratuku, Boroli, and Elema, ARULEP directly supports both refugees and host communities. With a strong focus on community participation, livelihoods, and environmental restoration, the project is helping to mitigate climate risks while promoting social cohesion and economic stability.

## Project overview: Strengthening livelihoods and climate resilience

ARULEP is a three-year initiative (2024–2027) to address key environmental and socioeconomic challenges in Adjumani District. With Uganda hosting one of the largest refugee populations in Africa, many displaced people, especially women and children, are at high risk of food insecurity and malnutrition. In addition, increasing pressure on land, coupled with deforestation driven by charcoal production and agricultural expansion, has exacerbated environmental degradation.

The main objective of the project is to improve the livelihoods and well-being of smallholder farmers by increasing agricultural productivity, promoting climate-smart farming techniques, and restoring degraded land. Specifically, ARULEP aims to benefit 6,990 people by 2027 through targeted interventions such as reforestation, the introduction of renewable energy, and sustainable agricultural practices.

The project incorporates several innovative approaches, including agroforestry, crop diversification, organic farming, and biomass energy use. Renewable energy technologies, such as energy-efficient stoves, are being introduced to reduce reliance on wood fuel, thereby helping to curb deforestation. ARULEP is also working to improve access to climate finance, enabling communities to implement long-term adaptation measures.

## Context: Challenges in a climate-vulnerable region

Adjumani District faces many environmental and socioeconomic challenges. The influx of refugees from South Sudan has put additional pressure on land and natural resources, leading to increased deforestation, encroachment on wetlands and declining soil fertility. The district has experienced extensive land fragmentation, with many refugee households cultivating plots as small as two hectares. Limited access to quality seeds, agricultural inputs, and market opportunities has further hampered food production.

Environmental degradation remains an urgent concern. Local forest reserves such as Pakele and Adjumani Town have been heavily exploited, with deforestation rates reaching 100% in some areas. The use of firewood and charcoal for cooking remains widespread, accelerating deforestation. The Central Forest Reserve of Zoka has also suffered, with 25% of its forest cover lost. Despite ongoing restoration efforts, the rate of tree planting remains well below the rate of deforestation.

In addition, climate variability has disrupted traditional agricultural cycles. Erratic rainfall patterns, prolonged droughts and flash floods have reduced crop yields, further threatening food security. Many smallholder farmers lack the resources to invest in climate adaptation strategies, making them highly vulnerable to climate-related economic shocks.

## From strategy to action

ARULEP uses a comprehensive strategy that integrates climate adaptation, land restoration and economic empowerment. The project is based on four key pillars: sustainable agriculture, reforestation, renewable energy, and policy advocacy.

To address agricultural challenges, ARULEP promotes agroforestry, which involves integrating trees into farming systems to improve soil fertility and reduce erosion. Farmers are also encouraged to diversify their crops to improve food security and reduce dependence on rain-fed agriculture. Organic farming techniques are being introduced to reduce reliance on chemical fertilizers, thereby improving soil health and biodiversity.

Reforestation plays a crucial role in restoring degraded landscapes. The project supports the establishment of community tree nurseries and woodlots, providing seedlings to farmers for both economic and environmental benefits. By incorporating fast-growing indigenous species, ARULEP helps communities rebuild forest cover while creating sustainable sources of timber and fuelwood.

To reduce dependence on unsustainable energy sources, the project promotes biomass energy solutions and energy-efficient stoves. The introduction of Rocket Lorena stoves has significantly reduced household fuelwood consumption and helped to slow deforestation.

Community empowerment and advocacy are central to ARULEP's approach. The project actively involves local communities in decision-making processes, ensuring that interventions are aligned with their needs and priorities. Awareness campaigns and climate change education programs are also carried out in schools, equipping younger generations with knowledge about sustainable practices.

## Results and impacts

Since its inception, ARULEP has made significant progress in improving environmental sustainability and livelihoods. The project has supported farmers in establishing woodlots and orchards, helping to combat deforestation while improving household nutrition and income. It has also provided beekeeping equipment to support beekeeping, creating new income-generating opportunities for local farmers.

On the environmental front, ARULEP has helped to protect wetlands, watersheds, and tree cover, reversing some of the damage caused by land degradation. Introducing tree nurseries has given communities access to quality seedlings, promoting long-term ecological restoration.

The project has also brought health benefits. The introduction of energy-efficient cookstoves has reduced indoor air pollution, reducing respiratory diseases associated with traditional cooking methods. At the same time, improved access to food and diversified farming techniques have increased food security for both refugees and host communities.

Economically, ARULEP has improved the financial stability of communities by supporting small businesses and sustainable agricultural practices. Training programs in climate-smart agriculture and forestry have given farmers the skills they need to increase productivity while conserving natural resources. The formation of farmer associations and honey producer groups has improved market access and income stability for rural households.

## Lessons learned and replicability

One of the key lessons of ARULEP is that community ownership and participation are essential for sustainability. The project's emphasis on local decision-making and participatory planning has helped to ensure long-term success. By integrating refugees and host community members into farming groups, the initiative has also promoted social cohesion and peaceful coexistence.

Another important lesson is the interconnectedness of environmental and economic goals. By linking conservation efforts with livelihood improvements, ARULEP has demonstrated that environmental sustainability can go hand in hand with economic development.

In addition, the project has highlighted the importance of political advocacy in achieving climate justice. Through the creation of bylaws and regulations, local communities have been able to regulate activities such as deforestation and encroachment on wetlands, ensuring that conservation efforts continue beyond the life of the project.

# Conclusion

The practices documented across the different countries demonstrate that climate mitigation is not only feasible in the Global North and Global South, including in humanitarian and development contexts, but can be transformative when designed with local knowledge and community participation. Whether through energy-efficient stoves in refugee settings, agroforestry in drought-prone regions, or climate-smart agriculture in mountainous terrains, these interventions reduce emissions while strengthening adaptive capacity and enhancing dignity.

## Key Observations

- **Community-driven innovation is central:** The most effective interventions are those rooted in local realities and developed through participatory processes. Communities are not passive recipients but active agents of change.
- **Co-benefits amplify impact:** Climate mitigation initiatives often lead to broader socioeconomic and ecological gains – such as improved food security, forest regeneration, gender empowerment, and livelihoods diversification.
- **Strengthen data and evidence:** There is increasing momentum to strengthen data and evidence through robust monitoring systems that can effectively track emission reductions and climate co-benefits over time
- **Integration remains partial:** Promising practices are emerging, and there is growing potential to further integrate climate mitigation more systematically across all sectors of LWF programming.

In sum, LWF's climate mitigation practices offer a compelling narrative of hope and agency amid the climate crisis. Scaling these efforts, while improving evidence and integration, will position LWF as a key actor in delivering locally rooted, globally relevant climate solutions.







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