

Appropriate Technology

Communicating new practical technologies, policies and ideas
addressing the elimination of poverty and hunger



Wind Empowerment: a global movement for locally-made renewable energy



Framed by the Abidjan skyline, this 500-watt wind turbine undergoes performance testing – an essential step before any unit is deployed to the field. This model was tested in preparation for our workshop in Tanzania.

Credit: Wind Empowerment



Hands on experience – A Burkina-based theoretical wind expert receives one-on-one coaching to build a turbine from scratch – turning deep technical knowledge into practical, hands-on skills.

Credit: Wind Empowerment

In a world increasingly aware of the urgent need for sustainable energy solutions, Wind Empowerment stands out as a beacon of grassroots innovation. Born from the pioneering work of Scottish engineer Hugh Piggott, whose open-source wind turbine designs have

empowered communities across the globe, Wind Empowerment has evolved into a vibrant international network. Its mission? To support the development and dissemination of locally manufactured small wind turbines for rural electrification.

At the heart of Wind Empowerment's ethos lies the belief that energy independence is a cornerstone of community empowerment. By promoting repairable, locally sourced wind turbines, the organisation not only addresses energy poverty but also fosters technical skills, economic resilience, and environmental stewardship.

The Piggott legacy: engineering for empowerment

Hugh Piggott's wind turbine design is the foundation upon which Wind Empowerment was built. His approach emphasised simplicity, affordability, and accessibility – qualities that made it possible for communities with limited resources to build and maintain their own turbines. These designs, often constructed using locally available materials, have been replicated and adapted in diverse environments, from the northern reaches of Scotland to the highlands of Ethiopia, from the Himalayan mountains to the coasts of Haiti, all the way to the savannahs of Argentina and to the French countryside.

Over the past decade, Wind Empowerment has expanded this legacy, developing a multitude of turbine designs tailored to specific geographic and climatic conditions. The community's open-source philosophy encourages experimentation and iteration, resulting in innovations in blade design, control systems, and hybrid energy solutions.

In a sentence, power to the people.

Conferences: the heartbeat of a global network

While Wind Empowerment's technical achievements are impressive, it is the biennial international conferences that truly define the organisation's spirit. These gatherings are more than just meetings – they are incubators of ideas, platforms for collaboration, and celebrations of community-led innovation.

Each conference is structured around two core components: technical

analysis and practical implementation.

The technical sessions, often hosted in partnership with local universities, delve into the science and engineering behind small wind technology and associated research. These sessions explore everything from lab-based testing of turbine performance to field experiences in deploying renewable energy systems in remote regions. There is an environmental, social and economic lens by which we explore energy sovereignty, repairability and community impact. Our most recent conference included researchers on Makerspaces, repair workshops in refugee camps, hybrid energy systems, building off grid energy systems from entirely recycled materials and more.

Simultaneously, the conferences include a hands-on practical project, typically lasting a week, where participants apply their learnings in real-world settings. This dual approach ensures that theory is grounded in practice, and that innovations are tested and refined in collaboration with local communities. We also take the opportunity to build our network with local communities and organisations that share our open-source ethos.

Past conferences

Dakar, Senegal 2011: the founding gathering

The inaugural conference in Senegal laid the groundwork for what would become a global movement. Hosted in collaboration with local partners, the event brought together engineers, educators, and community leaders to share experiences and set the vision for Wind Empowerment. The practical component involved building turbines with local materials, demonstrating the feasibility of Piggott's designs in West African contexts.

Athens, Greece 2014: bridging academia and practice

The second conference, held in Athens, marked a significant step in integrating academic research with grassroots implementation. Hosted by the National Technical University of Athens in partnership with Nea Guinea, the technical sessions focused on improving turbine efficiency, control systems, and measurement techniques. The practical workshops saw participants constructing turbines and engaging in community outreach, reinforcing the importance of local engagement.

Patagonia, Argentina 2016: wind in the wilderness

Set against the dramatic landscapes of Patagonia, this conference emphasised the role of small wind in remote and harsh environments. Technical discussions included environmental assessment, hybrid systems, and maintenance strategies. The practical project involved installing turbines in rural communities, showcasing the adaptability of Wind Empowerment's designs. We also partnered with INTI and APN to bridge multiple organisations as part of our global network during the practical components.

Chennai, India 2018: innovation meets tradition

In Chennai, the conference explored the intersection of traditional knowledge and modern engineering. Hosted in collaboration with local universities, the technical sessions covered microgrid integration, power converters, and we also did market assessments across India and Nepal, exploring the feasibility and appropriateness of small wind turbines across multiple geographies. The practical component focused on training local technicians and students in turbine construction and maintenance, fostering a new generation of renewable energy advocates. It lasted one week, during which the WE community experts shared their innovations and trained a group of 40 technicians and engineers. These sessions led to the construction of a prototype small wind system made of these innovations coming from the WE network (wooden tower, open source charge controller and datalogger and injected molded blades). This Conference was part of a wider event hosted by NIWE and the Government of India, to help build capacity in technicians and engineers from across the world. It involves a lecture series, a public conference, and was a powerful moment of connection.

Online 2020: adapting to a global pandemic

The Covid-19 pandemic forced Wind Empowerment to pivot to a virtual format. Despite the challenges, the online conference maintained its dual



High in the Andean mountains of Peru, the team at WindAid install a turbine for rural electrification as part of their training and community outreach initiatives.

Credit: Wind Empowerment



Women cutting blades (Workshop photo). Women artisans in Dar es Salaam hand-carve turbine blades during our Energy in a Box workshop, gaining practical skills in locally manufacturing clean-energy technology.

focus. Technical presentations were streamed globally, covering topics such as electronics repairability, hydro power, and the role of design in social change. Virtual workshops and hackathons allowed participants to collaborate remotely, proving the resilience and adaptability of the network.

Auvergne-Rhône-Alpes, France 2022: reconnecting and rebuilding

Held in the picturesque Château Pergaud, the 2022 conference was a celebration of reconnection. Technical sessions, hosted by the Ampère Laboratory, at the University of Lyon, revisited core themes such as turbine control and rural electrification. The practical project involved building and testing new turbine prototypes, with a focus on repairability and sustainability, especially as part of the large fleet of turbines spread across France.

Epirus, Greece 2024: scientific rigour and community spirit

The most recent conference took place in Metsovo, Greece, in collaboration once again with the National Technical University of Athens. Technical sessions included field testing of small wind turbines (SWTs) at Tzoumakers, a maker-space in the mountains, environmental impact assessments, and educational strategies for renewable energy. It also

included open-source battery design, new modes of construction, including 3D printing, and more. The practical workshops engaged local communities in turbine construction and maintenance, partnering with Habibi Works, with a focus on supporting the refugee community in Greece, reinforcing the importance of hands-on learning and community ownership as a means to address systemic issues facing society today. We also spent time with members of the High Mountains Cooperative and the Electra Energy Cooperative.

Looking Ahead: Zanzibar, Tanzania 2026

The upcoming Wind Empowerment conference in October 2026 promises to be one of the most impactful yet. Hosted in Tanzania, the technical sessions will be held at the University of Dar es Salaam, focusing on cutting-edge research in small wind technology, hybrid systems, and open-source energy solutions.

We often work with nations who navigate moments of political uncertainty and unrest. Our focus remains steadfast, on the shared aspiration that clean energy can strengthen communities and livelihoods. The upcoming Tanzania Wind Dialogue and Build Conference will showcase small-scale wind innovation, solar and more, and



1.5 kW community turbine – Toungbawiri, Northern Côte d'Ivoire. Children gather around the village's 1.5 kW wind turbine in Toungbawiri, which powers evening lights so that farming families' children can study after dark. The turbine helps bridge learning gaps for those who fall behind during the long farming season, giving them a brighter and more hopeful path forward.

Credit: Wind Empowerment

create open spaces for community collaboration, dialogue, coupled with technical exchange that transcends division. We work with and for communities to deliver opportunities for this and future generations.

Our conference partners will be supporting us throughout the Scientific and Build sections. Firstly, Wind Empowerment's longstanding member TAREA, the Tanzania Renewable Energy Association, a non-profit, member-based NGO founded in 2000 that promotes the sustainable development of renewable energy in Tanzania. It acts as a network for individuals, businesses, and other organisations involved in renewable energy and works to increase the use of clean energy through networking, advocacy, and knowledge sharing. We will also be collaborating with Green Zanzibar, an initiative of the women's group Tufahamiane based in Kizimkazi In Zanzibar, who state that they are dedicated to three key goals: reducing plastic waste, environmental education, and women's empowerment, and that their objectives are crucial for the island's sustainable development.



Women Harnessing the Wind – Yamoussoukro. At the Institut Polytechnique Houphouët-Boigny in Yamoussoukro, participants of the Women Harnessing the Wind workshop fabricate turbine nacelles in the metal workshop, gaining hands-on engineering skills and shaping the next generation of community wind-energy leaders.

Credit: Wind Empowerment

We are also partnering with two organisations renowned for their work in community-led renewable energy. Barefoot College International and Moving Windmills. Moving Windmills is the organisation born out of William Kamkwamba's inventive spirit. He is the "The Boy Who Harnessed The Wind", and his story of building a windmill from spare parts to save his community from a drought continues to inspire millions of people across the globe. Moving Windmills Project has emerged as a leader in ethical, hands-on development in Malawi, with a focus on community-led clean energy and agriculture. It is a great honour to work with Barefoot College International (BCI), and we were particularly inspired by their Solar Mamas program, which trains women from rural villages, who often have little or no formal education, to become solar engineers, educators and entrepreneurs. These women travel to their nearest BCI Regional Training Centre, such as the one in Zanzibar, for a three-month training course where they learn to build, install and maintain solar systems, becoming self-sufficient and bringing sustainable electricity to their communities. Additionally, they also learn a raft of soft skills enabling them to develop their own businesses. The program aims to provide light and



Farm Cooperative installation site. A rural farm cooperative in Msowero near the town of Morogoro, Tanzania, where our community-built wind turbines are installed, providing reliable energy for a rural EV station – an innovation in Tanzania farms.

Credit: Wind Empowerment

power, reduce reliance on fossil fuels, provide better health and education outcomes and empower women. Each Solar Mama serves an average of 400 people. We would love to emulate this with Wind in Zanzibar, and the Barefoot College Campus is the perfect hub for training and learning in this mode.

Participants from across the globe – engineers, educators, activists, and community leaders – will converge to share knowledge, build turbines, and forge new collaborations. The technical/scientific component of the conference will be hybrid, ensuring accessibility for those unable to attend in person. That being said, if individuals or organisations are interested in attending in-person you are warmly encouraged, and we would love to hear from you and explore ways that we might be able to facilitate this.

Wind Empowerment invites new partners, researchers, and practitioners to join this transformative event. Whether you're an academic or enthusiast exploring renewable energy, a community organiser seeking sustainable solutions, or a designer passionate about social change, there's a place for you in this global movement.

Beyond wind: a holistic approach to renewable energy

While small wind turbines remain central, Wind Empowerment's scope has expanded to include other forms of renewable energy. Conferences have featured presentations on hydro power,

solar energy, and open-source battery design, reflecting the network's commitment to holistic sustainability.

Sessions on electronics repairability and open-source technology underscore the importance of resilience and accessibility. The role of design and communication in driving social change is also a recurring theme, with workshops exploring how storytelling, visual media, and community engagement can amplify impact.

A movement rooted in collaboration

Wind Empowerment is more than an organisation – it's a movement. Its conferences serve as crucibles of innovation, where technical rigour meets grassroots action. From the hills of Patagonia to the shores of Zanzibar, the network continues to grow, driven by a shared vision of energy justice and community empowerment.

As the world grapples with climate change and energy inequality, Wind Empowerment offers a model of how local ingenuity, open-source collaboration, and global solidarity can light the way forward.

To learn more or get involved, contact us at partnerships@windempowerment.org. Power to the people – join the movement.

Andrew Bowring FRSA
Chairman of Wind Empowerment Association

WIND EMPOWERMENT INTERNATIONAL CONFERENCE



WE2026TANZANIA
RENEWABLE ENERGY
REPAIRABILITY
COMMUNITY IMPACT

2nd-3rd October 2026
Technical and Scientific Conference
University of Dar es Salaam

4th-12th October 2026
Workshop Practical Action
Barefoot College International, Kinyasini &
Green Zanzibar, Kizimkazi

WANT TO GET INVOLVED?
partnerships@windempowerment.org

Media Partner

Appropriate Technology

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Conference Partners (more to be confirmed)



barefoot college
INTERNATIONAL



**MOVING
WINDMILLS**

MBDGI

For a sustainable Future

TAREA

Tanzania Renewable Energy Association

