



PARTICIPATION OF WOMEN IN RENEWABLE ENERGY

Inclusive Innovation with Floating Photovoltaics in Remote
Island and Coastal Communities

01

NEWSLETTER

2025



Empowering Women Powering Islands

POWERE brings floating photovoltaics to South Sulawesi, placing women at the heart of an inclusive, low-carbon energy future.

Vision

POWERE introduces near-offshore floating photovoltaics (FPV) as an inclusive renewable energy solution in the Global South, starting in South Sulawesi, Indonesia. By integrating FPV with women-led seaweed farming cooperatives, the initiative aims to empower marginalised coastal communities through sustainable energy access and economic opportunities, fostering both environmental and social resilience. This is needed because island and coastal communities as it is especially facing severe climate vulnerabilities due to higher levels of poverty, inequality, and reliance on climate-dependent sectors. It is worsened by rising sea levels, extreme weather, and limited energy access. Many off-grid communities depend on costly and polluting fossil fuels like diesel. POWERE is an innovative initiative with partners in the Global North and South working collaboratively to change this dynamic.



Objectives

- **deploy FPV to replace diesel energy:** transition seaweed-farming self-help groups (SHG) from diesel to FPV
- **enhance Women's:** strengthen SHGs as co-owners of energy infrastructure, improving economic resilience
- **promote sustainable seaweed farming:** facilitate farm-level value-added processing and product innovation
- **foster inclusive energy transitions:** position women at the forefront of building a social infrastructure for equitable energy transitions
- **develop scalable and replicable models:** create multilingual, multimedia toolkits, other resources and knowledge exchange activities that extend POWERE's impact across the Global South

Impacts

- **energy access:** demonstrate how to make FPV into a viable, off-grid, socially-embedded energy solution for marginalised communities
- **gender equality:** strengthen women's leadership in energy transitions, entrepreneurship, and decision-making
- **economic development:** enhance income generation, reducing poverty in remote coastal communities
- **environmental benefits:** reduce carbon emissions while promoting sustainable blue-green economy initiatives
- **climate justice:** empower vulnerable communities to participate in climate change solutions, without being unfairly burdened by climate change impact or transitions to a sustainable, low-carbon economy





The Power Is Dead Here We Live In The Dark

On a sunny yet breezy afternoon, our boat docked at Rannu Village on Tamparang (all names anonymised), a remote island in South Sulawesi during a preliminary trip to potential research sites. We were warmly welcomed with illuminated faces. However, the village head explained that they are currently living in darkness. The community's solar power plant broke three years ago when the battery exploded and no one in Rannu knew how to fix it. Meanwhile, the village's generator (*genset*) has also been broken for a month. "We're left in total darkness here" lamented the village head. About 10% of households in the village have a couple of small solar panels on their roofs, which they use to power a few lights and charge their mobile phones. Most village residents now buy rechargeable battery-powered torch—and rely on neighbours with solar panels to charge them.

The identical conditions are experienced by the residents of the Katingting sub-village. Their hamlet does not have access to the electricity produced by the nearest power plant, which is located in another sub-village on a different island. The plant was also once damaged. However, unlike in Rannu Village, the residents were able to repair it because there was a resident who had previously worked at the State Electricity Company (*PLN*) and was equipped with the necessary skills. But the electricity is in shortage and the plant only serves two of four sub-villages. The other two sub-villages, Katingting and Biawasa, remain in darkness.



The leaders and residents of the villages we visited, Rannu, Katingting, and Biawasa, expressed their hope for managing solar power and confidence in their ability to do so if they were included from the outset in the planning, implementation, and maintenance; and if they were given training on how to maintain and repair the solar power installation. "We have never been involved so far...and even when involvement happens, as was the case in our neighbouring village, it was only the village elites and their families. That PLTS (solar farm) was then claimed as private property because it was built on their land..." said the head of Rannu Village. The power plant in this neighbouring village is also broken, due to battery damage caused by extreme conditions and design factor as the battery was submerged by rising seawater. The village elites and their family are also unable to repair it. They too are living in darkness.



In the coastal villages of the remote Tamparang island, most adult inhabitants work as fisher folks and seaweed farmers. Predominantly of Makassarese ethnicity, they adopt a patrilineal kinship system. As elsewhere, gendered norms intersect with various socio-cultural dimensions such as class, ethnicity, religions, age, and marital status.

Women and Gender Norms

Women's social groupings based on livelihood strategies are as follows:

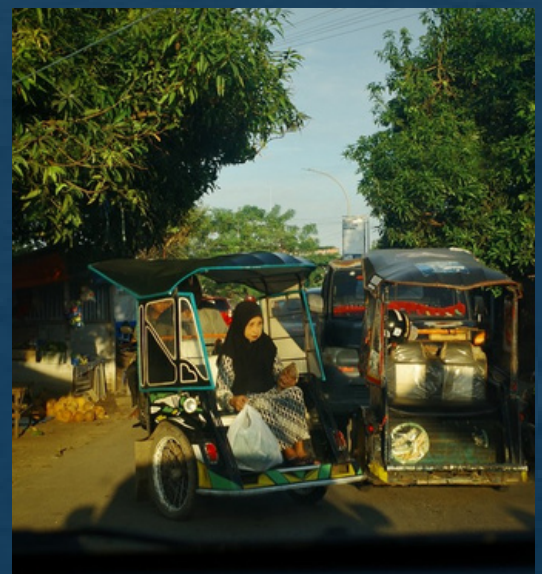
- women owners of seaweed farms who actively work on their farms
- women workers of seaweed farms owned by others
- women workers of mangrove extractive activities
- women fishers who fish daily (many of whom are from lower socio-economic classes)
- women fishers who are heads of households.
- women officers of village government
- women operating home-based micro-businesses (such as managing small food stalls)



Social Groupings Based on Education Level

Many women in the villages, particularly those from lower socio-economic classes, only have primary education. Youth who did not pursue higher education worked with their parents in fishing and seaweed farming. A few young women of certain social groups completed their higher education and earned Bachelor degrees. Many of them returned to the village to work as teachers and officers in village government.

Some women have experience as members of state-led formal groups (such as PKK, Family Welfare Movement) and formal groups set up by NGOs who worked in the village. One of the NGOs is the Makassar-based NGO who set up two groups: (i) a women's group for mangrove conservation, and (ii) women's group for domestic gardening.



Participation in Decision-making

Women of different social groups are involved in decision-making at the household level. However, their decision-making at the community level is limited. They also have limited involvement in formal decision-making in village government and at village-owned enterprises established by the Indonesian government (*BUMDes*). Men have a special position within families, clan, and community as well as at the village level, mostly as decision-makers on family's "big" assets (such as productive lands and coastal plots managed as seaweed farms).



Lessons Learnt

It is clear that we need to be attentive to the limited involvement of women of certain social groups in decision-making at the community and village governance levels. Certain social groups – particularly younger women with higher education, or those of middle-upper social groups – are potentially useful for organising processes including those to do with electricity production and management; but at the same time, we need to be mindful of elite capture where elites end up representing the village.

Some villages and sub-villages have experience in forming women's self-help groups, mostly facilitated by NGOs or development projects. But continuation and sustainability of these self-help groups is uncertain and needs to be adequately provisioned. Finally, we need to explore and pay attention to place-based coastal tenurial systems, fully understanding the potentials and limits of women in patrilineal contexts.



Social Business Models For Village-Run FPVs

Besides the physical infrastructure of the floating photovoltaic installations that the POWERE team will be working with the communities to install and operate, we are also working with them to develop complementary social infrastructure, including a social business model to transform the renewable energy produced into tangible community benefits. The social business model will accomplish three tasks:

- (i) generate a diverse range of social benefits;
- (ii) generate income to sustain those benefits;
- (iii) ensure inclusive access to the benefits generated.



Diverse community benefits can come in the form of cost reductions (e.g. diesel fuel expenses), income generation (e.g. seaweed product innovations), and spillover benefits (e.g. community conflict prevention by installing warning lights on seaweed lines to prevent collisions with boats). For income generation we have had meetings with potential partners including *Pelindo* (*Pelabuhan Indonesia*, the state-owned seaports company) to explore investments in the equipment needed to use the solar energy produced to power electric boat engines. To ensure inclusivity of access to benefits we are working to organize women-led business units to organise distribution within the village-owned enterprises.



Announcements

- Many congratulations to Diah Irawaty and Runavia Mulyasari who successfully defended their **PhD vivas** in 2025 – to add to the PhDs attained by Chu Chun Yu and Agung Iswadi in 2024; Professor Raminder Kaur will be a **Distinguished Fellow** at the Max Weber Centre for Advanced Social and Cultural Studies in Germany in 2026; and Professor Peter Newell attained a **Distinguished Contribution Prize**, awarded by the British International Studies Association.
- The aforementioned postdoctoral researchers are preparing to live in villages on a remote off-grid island with limited options for electricity production in liaison with **CARE Indonesia** and other supporters to provide the groundwork for the environment and sustainable energy consultancy company **Aquatera** to begin their work with Floating Photovoltaics.
- The POWERE team will be presenting their research-in-progress and a keynote by Professor Raminder Kaur on 'The Future of Marine

Society: Science, Prosperity and Sustainability' at the **World Conference on Governance and Social Sciences** in November 2025, hosted by the Faculty of Social and Political Sciences, Hasanuddin University in South Sulawesi, Indonesia.

- Members of the POWERE team will be contributing to the forthcoming **Routledge Handbook for Energy Anthropology** edited by Dr Chima Michael and Dr Katja Mueller.
- Mas Agung Wilis Yudha Baskoro, who provided the photo of women and seaweed for the POWERE poster (see previous page), has received an award at the **World Press Photo 2025** competition. Representing Southeast Asia and Oceania, his winning entry, *The Impact of Nickel Mining on Halmahera Island*, highlights the environmental effects of nickel mining on Halmahera Island. We extend our sincere congratulations to him on this remarkable achievement.

Team Meetings 2025

Makassar

- **Government of Takalar Regency**
Ir. Mohammad Firdaus, MM, Regent
Dr. Achmad Rivai, M.Si, Head of Bappelitbangda Office
- **Marine and Fisheries Office of South Sulawesi Province**
Dr. M. Ilyas, M.Sc, Head of Office
Marhamah M.Si, Acting Head of Marine and Coastal Division
- **Energy and Mineral Resources Office of South Sulawesi Province**
Andi Eka Prasetya, MM, Head of Office
Andi Bayu Arief, M.Si, Head of Renewable Energy Division
- **Brackish Water Aquaculture Fisheries Office**
Nurdiana S. Pi, Khairil Jamal, M.Si
- **PT Jasuda**
Boedi Sarjana Julianto, Managing Director of PT Jasuda,
Irna Aswanti, Director of CV Posko Jasuda
- **Hasanuddin University**
Prof. Dr. Phil. Sukri, M.Si, Dean of Politics and Social Science Faculty
Prof. Dr. Suparman, M.Si, Vice Dean of Politics and Social Science Faculty for Partnerships, Research, Innovation and Alumni Relation
Dr. Safridi, Head of Anthropology Department
Andi Batara Al Isra, MA, Anthropology Lecturer

Java

- **Ministry of Marine Affairs and Fisheries**
Sri Ismaryati M.Si, Head of the Brackish Water Fish Hatchery Group and Team
- **Ministry of Energy and Mineral Resources**
Hertiyo Sembodo, M.T, Head for Programs, Partnerships, and Evaluation and Team
- **National Economic Council**
Jodi Mahardi, Special Staff to the Chair of the National Economic Council for Communication and Institutional Relations
- **United Nations Development Programme**
Sujala Pant Msc, Deputy Resident Representative
Aang Darmawan Msc, Senior Advisor on Energy,
Siprianus Bate Soro MA, Assistant Resident Representative & Head of Democratic Governance Unit
- **British Embassy Jakarta**
Rizka Sari, Bert Ginting
- **ViriyaENB**
Dr Suzanty Sitorus
- **Bandung Institute of Technology**
Dr Yuli Setyo Indartono

Bali

- **Azura Indonesia**
Nadia Nabila, Narendra Dipta and e-boat team

We have also encountered several other people and are deeply grateful to all our interlocutors, participants and advisors for their support of, and feedback on our project.

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