300 MILLION SOLAR HOMES

SolarCitizens

Rooftop Solar Action Plans

People-centred solutions for a fast, effective and affordable energy transition



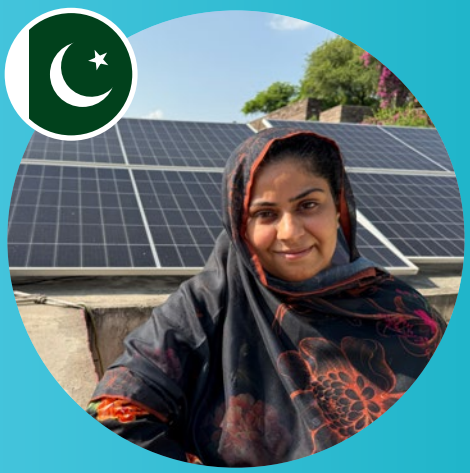












The **Rooftop Solar Alliance** is a growing network of civil society organisations working together to help more people and communities benefit from rooftop and distributed solar and battery storage.

We share evidence, pathways and practical solutions to enable uptake to scale the implementation of rooftop solar backed by storage. At the heart of our work is a simple belief: together we can empower 300 million solar homes to benefit from affordable, renewable energy by 2030. That means making sure the shift to renewable energy reaches people who need lower energy costs most, as well as communities around the world that still lack reliable access to electricity.

By working together across countries and communities, we can put fast, effective and affordable energy into the hands of more people.

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To join the Rooftop Solar Alliance please contact Kate Lee, Global Advocacy Director at Solar Citizens at info@solarcitizens.org.au

In **Pakistan**, people on low incomes need access to affordable and concessional finance so they can participate in the country's rapidly growing solar market. **Page 8**

In **Malaysia**, allowing consumers to redirect existing energy subsidies towards rooftop solar could unlock significant new demand. **Page 14**

And in **Japan**, stronger national support for existing houses and buildings to install rooftops will be critical to making the most of the country's rooftop solar potential. **Page 18**

In **Indonesia**, stable regulatory framework and incentive schemes lasting more than five years would give households and businesses the certainty needed to invest. **Page 22**

In **Brazil**, community and energy cooperatives, already showing how rooftop and distributed solar can deliver benefits in favelas and other excluded communities must be expanded. **Page 28**

In **Vanuatu**, remote and women-led communities need urgent investment in reliable solar electricity. **Page 32**

In **Australia**, renters and apartment residents remain locked out of many of the benefits of rooftop solar and batteries, and governments must act to make renewable, affordable energy accessible regardless of housing type. **Page 36**



Photo: Outside NSW Parliament House in Sydney, Australia.

This report provides a practical blueprint for governments to elevate rooftop solar backed by storage as a global climate and development priority at COP31 and beyond. Many of the solutions outlined here already exist, communities are ready to lead, and successful approaches can be adapted and replicated across countries and jurisdictions. Importantly, rooftop solar is politically salient.

Rooftop solar backed by storage is a proven way to put cheaper, renewable power directly into the hands of people.

It is a winning solution for households, communities and small businesses, for governments and for the planet.

The Rooftop Solar Alliance
November 2026

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Acknowledgement of Country: Solar Citizens acknowledges the Traditional Owners and their custodianship of the lands on which our organisation is located. We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country. We recognise their valuable contributions to Australian and global society.

Executive Summary

The world is at a critical point in the energy transition. With the United Nations Environment Programme warning that current efforts are not enough to keep global warming to 1.5°C, we need solutions that can be deployed quickly to cut emissions and deliver affordable, reliable energy for millions of people.

Rooftop solar and battery storage is already doing exactly that.

For households, they dramatically reduce electricity bills and provide protection from volatile energy prices. Compared with large-scale energy projects, rooftop solar is fast to install, low-cost and is deployed using the rooftops of our built environment. Much of this is driven directly by private investment from households and small businesses that directly gain immediate and long-term financial benefits.

With the right policy settings, millions of rooftop systems backed by battery storage also work together as a major source of renewable electricity for the wider grid.

For the 665 million people globally who still live without access to electricity, small-scale and distributed solar is transformative. In remote and marginalised communities, these systems are bringing reliable electricity to homes for the first time. This enables people to study, work, communicate, run businesses and participate in community life. For people dependent on diesel or biomass, switching to renewable electricity from the sun immediately improves their health.

Democratising electricity production is also changing who holds power in the energy system, increasingly into the hands of people directly and less so with larger generators of fossil fuels.

Around the world, millions of people are becoming *prosumers*. They are not simply consuming electricity, but producing, storing and sharing it. Together, they represent a growing global movement of people who want greater control over their electricity, lower bills and less dependence on expensive and volatile fossil fuels.

This report looks at the growth of household rooftop solar and provides a roadmap to accelerating this growth across seven locations; and sets out practical actions governments can take to support this people-powered transition.

Across very different communities and energy systems, one message is consistent: governments need to recognise the transformational potential of rooftop solar backed by storage. By putting in place the targeted programs, streamlined regulations, supportive market frameworks, strong consumer protections and investment in workforce skills, together we can scale this accessible, empowering renewable energy faster, flexibly and more fairly.

“Democratising electricity production is also changing who holds power in the energy system, increasingly into the hands of people directly and less so with larger generators of fossil fuels.”

Our United Call to Action

Our United Call to Action sets out priority elements for an urgent government pathway to achieve 300 million solar homes by 2030:



Prioritise low income, remote and marginalised communities for first line access to reduce energy costs, provide access to electricity and alleviate poverty.



Introduce compensation, incentive and subsidy schemes for rooftop solar and battery storage to incentivise households and businesses to make the investment.



Set national frameworks for rooftop solar action. Enable provincial and municipal government action to enact policies, programs and support to households and businesses.



Remove administrative barriers, speed up approvals and transparency of government processes for households and business to understand the program support available to them.



Ensure grids can adapt and support the growing rooftop solar capacity, including utilising existing rooftop solar and storage capacity flexibly for network upgrades.



Enable equal access to rooftop solar and battery storage regardless of housing type, and regardless of home ownership or rental status.



Trial and expand models for sharing energy at the local level through Renewables Energy Zones and cooperatives.



Fund skill and training development to install and maintain rooftop solar systems, and prioritise young people, women and indigenous peoples in job creation.



Photo: Participants at the Pre COP meeting in Nadi, Fiji in October 2026, in support of 300 million solar homes by 2030.

About 300 Million Solar Homes

300 Million Solar Homes is driving global action to scale rooftop solar to 300 million systems by 2030, across homes, small businesses and community buildings.

Our mission is to unlock the policies, finance and action needed to bring affordable and reliable electricity to people globally through rooftop and household solar and battery storage.

The initiative aims to mobilise industry, cities, citizens, finance institutions, and governments to help deliver 300 million solar and storage rooftops by 2030, supporting the COP28 global objective to triple renewable energy by 2030.

Rooftop solar, usually paired with battery storage, is one of the fastest-growing parts of the global energy system, expected to deliver 42% of solar growth and 34% of all renewable energy growth by 2030.

The global energy crisis makes the case for solar even clearer.

Solar is the most affordable power in human history. Solar homes are the way we give every person the opportunity to participate in the solar revolution and deliver visible benefits directly to households and communities. They can often be deployed quickly, creates local jobs, reduces pressure on electricity networks and gives people a direct stake in the clean energy transition. Better yet, they are a resilient power system that keeps the lights on even when extreme weather or natural disasters damage energy grids.

Solar homes work for all kinds of communities. A household in rural Kenya, an apartment block in Jakarta, a community in rural Australia. That universality is what makes solar homes a uniquely powerful tool in the global energy transition.

300 MILLION SOLAR HOMES

Get Involved! www.300millionsolarhomes.org

GLOBAL SOLAR COUNCIL

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Climate Parliament

SolarCitizens

The Global Rooftop Solar Declaration

The Global Rooftop Solar Declaration is an initiative of *300 Million Solar Homes*

Governments at all levels, national, provincial and municipal, are called on to join in support of 300 Million Solar Homes and commit to working with the solar industry and civil society to advance people's demand for affordable, reliable, free electricity from the sun.

The Global Rooftop Solar Declaration is a voluntary, non-binding international declaration that brings together governments to accelerate rooftop and household solar deployment worldwide. It aims to help deliver 300 million solar-powered homes by 2030 and make solar homes a central part of the global clean energy transition.

To provide your government's commitment to this Declaration, email the 300 Million Solar Homes Initiative Director, Anna Reynolds on a.reynolds@globalsolarcouncil.org

Global Rooftop Solar Declaration

Bring it home - 300 Million Solar Homes by 2030

This is a voluntary, non-binding declaration

Solar power has moved from promise to mass deployment.

In 2025, global solar PV capacity approached 3 terawatts, with more than 600 GW of new capacity installed worldwide during the year. Solar supplied around 12 per cent of global electricity consumption for the first time, and PV once again accounted for more than 75 per cent of new renewable generation capacity added globally in 2025.

This is an energy revolution. But it is not yet shared equally.

Too many households still face high power bills, unreliable supply and dependence on volatile fuel markets. Too many communities see the clean energy transition happening around them, but not for them. Too many countries have the sunshine, the rooftops and the demand — but not yet the finance, grids, rules or workforce to turn that opportunity into power.

That must change.

Rooftop solar is one of the fastest ways to put the benefits of the clean energy transition directly into people's lives. It can cut household energy costs, strengthen energy security, reduce emissions, ease pressure on grids, create skilled local jobs and build public confidence in climate action.

The world has already proved solar can scale. Now we must prove it can serve people.

Our Political Commitment

We, the Participants in the Global Rooftop Solar Declaration, will work together to enable at least 300 million households worldwide to be powered by rooftop solar by 2030.

This is a promise to make the clean energy transition visible at the kitchen table, on the family budget and in communities.

It is a commitment to move faster than business as usual.

It is a commitment to make rooftop solar a mainstream national energy priority — not a niche program, not an aspirational product, and not an afterthought in electricity planning.

Why This Matters Now

The economics have changed. Renewables are now the most cost-competitive source of new electricity generation in most markets. In 2025, more than 90 per cent of newly commissioned utility-scale renewable capacity produced power more cheaply than the lowest-cost new fossil fuel alternative, while solar PV reached a global weighted average cost of around USD 0.044/kWh. The cost of electric appliances and vehicles has declined dramatically, making it easier for households to switch to technologies that can draw directly from their rooftop power, reducing both emissions and bills.

The deployment curve has changed. The International Energy Agency projects that renewable power capacity will increase by around 4,600 GW between 2025 and 2030, with solar PV accounting for almost 80 per cent of that growth. Distributed solar — including residential, commercial, industrial and off-grid systems — is expected to account for around 42 per cent of total solar PV expansion this decade.

The politics have changed too. Families want cheaper bills. Countries want energy security. Communities want jobs. Governments want visible results. Rooftop solar answers all four.

Global momentum is building around the electrification of transport, industry, and buildings. Access to low-cost rooftop solar can accelerate economy-wide electrification by providing a gateway, to making electric technologies more affordable and attractive than fossil-fuel alternatives, while helping to manage demand on distribution networks.

What We Will Do

To deliver 300 million solar homes by 2030, we will act in six areas.

1. Make rooftop solar easier

We will cut unnecessary red tape and make it faster, simpler and cheaper for households to install rooftop solar.

2. Put households at the centre of energy policy

We will treat rooftop solar as core energy infrastructure.

That means including distributed solar in national energy planning, grid planning, climate strategies and energy affordability policies.

3. Unlock finance for families

We will work with public and private finance institutions to reduce upfront costs and expand access to affordable finance for rooftop solar and household electrification.

This may include low-interest loans, credit guarantees, pay-as-you-save models, concessional finance, aggregation platforms, leasing models, rebates, subsidies and targeted support for households that cannot otherwise afford installation.

4. Modernise grids for distributed power

We will invest in distribution networks, storage, smart inverters, demand flexibility and digital systems so electricity grids can manage high levels of rooftop solar safely and reliably.

Rooftop solar must be backed by modern grid rules, not held back by outdated ones.

5. Make the transition fair

We will design programs that reach low-income households, renters, apartment residents, public housing tenants, those with no electricity access, remote communities and households without suitable rooftops.

Where rooftop ownership is not possible, countries should support practical alternatives such as community solar, shared solar, solar on public buildings and local energy schemes.

6. Build the workforce

We will expand training, certification and safety standards to create skilled local jobs in installation, maintenance, electrical work, storage, energy management and related services.

Distributed solar is labour-intensive, local and visible. Done well, it can build a clean energy workforce in every region.

How We Will Work Together

We will cooperate to move faster by sharing what works.

Participants will support practical collaboration on:

- rooftop solar policy design
- finance models for households
- grid integration and storage
- consumer protection and safety
- training and workforce standards
- data and deployment tracking
- access models for low-income and underserved communities
- city, state and regional delivery partnerships

The Declaration is open to membership from all levels of government – recognising the leadership local councils, cities, state governments and others are playing. This Declaration does not impose a single model. Signatories will act according to their unique circumstances, energy systems and capabilities.

But it does set a shared direction: rooftops must become a major platform for global clean energy deployment.



Photo (top): International delegation visiting the Sultana Foundation, a not-for-profit education and health organisation, in Islamabad, Pakistan, August 2026. **Above (left):** Anum Nasir with her solar panels in Islamabad, Pakistan. **Above (right):** Australian Climate Change and Energy Minister, Chris Bowen following signing of the Global Rooftop Solar Declaration, October 2026. With David McElrea, CEO Smart Energy Council (left) and Heidi Lee Douglas, CEO, Solar Citizens (right).

Bring it home

- By 2030, rooftop solar can help power hundreds of millions of homes.
- It can help families lower their bills – especially when combined with electrification.
- It can help countries cut dependence on imported fossil fuels.
- It can help cities manage rising electricity demand.
- It can help developing and emerging economies expand clean energy access without waiting for every kilometre of new transmission to be built.
- And it can show citizens that climate action is not only about targets and summits — it is about practical benefits in daily life.
- So we call on governments, cities, regions, financial institutions, utilities, industry, workers and civil society to join us.

The world has entered the solar age.
Now we must bring it home.

300 million solar homes by 2030.

Contact the 300 Million Solar Homes Director, Anna Reynolds on a.reynolds@globalsolarcouncil.org



Photo (top): Left to Right: Hirotaka Koike, ED Earth Sherpa, Japan with 300 Million Solar Homes founders: Heidi Lee Douglas, CEO Solar Citizens. Sonia Dunlop CEO Global Solar Council. Anna Reynolds, Campaign Director, 300 Million Solar Homes. Andy Deacon CoMD, Global Covenant of Mayors for Climate & Energy. **Above (left):** Solar Citizens Global Advocacy Director Kate Lee working with Policy Research Institute for Equitable Development (PRIED) Coordinator, Anfal Nadir. **Above (right):** Institute for Essential Services Reform (IESR) Project Coordinator Delima with Solar Citizens CEO Heidi Lee Douglas at COP30 in Brazil, November 2025.

Accelerating Equitable Solarization in Pakistan

PRIED
Policy Research Institute for Equitable Development

About PRIED

Policy Research Institute for Equitable Development (PRIED) is an independent, public-interest think tank.

Vision - Every Pakistani enjoys equal access to renewable, reliable and affordable sources of energy.

Mission - To develop environmentally sustainable, socially equitable, politically pluralistic and economically viable solutions to accelerate Pakistan's transition from fossil fuels, especially coal, and large hydroelectric projects to renewable sources of energy.

PRIED has mapped the financing barriers holding back rooftop solar adoption, modeled least-cost renewable power pathways, and pushed policymakers on net metering reform.



Photo: A bird's-eye view of Pakistan's solar transformation, reflecting the growing potential of distributed solar energy to advance a more affordable, reliable and equitable energy future.

Action Plan

Pakistan is the world's fifth most populous country.[1] Yet its citizens are not equitably provided with resources, land, or security. Inequity runs through nearly every dimension of national life, and energy access is no exception. Millions remain disconnected from reliable electricity,[2] while millions more pay a disproportionate price for the power they do receive. Underlying this imbalance is a deeper, triple crisis: energy insecurity, escalating climate vulnerability, and heavy fossil-fuel dependence, three forces that do not act in isolation, but continuously reinforce one another.

Energy insecurity has only intensified in 2026. The ongoing Middle East war has sent tremors through Pakistan's energy security, disrupting trade with Gulf countries and driving domestic fuel prices sharply upward. Since the beginning of the war, petrol prices have increased by approximately 29 percent, from Rs. 253.17 per litre in January 2026 to Rs. 327.12 per litre by July 2026. Diesel prices have seen an even sharper increase of approximately 45 percent over the same period, rising from Rs. 257.08 per litre to Rs. 375.04 per litre.[3] The consequences are felt directly by ordinary Pakistanis: costlier commuting, hiking food prices, and a growing import bill that threatens the country's foreign exchange reserves and current account balance, further damaging an already fragile economic recovery.

This fragility is intensified by Pakistan's climate reality. Despite contributing minimally to global emissions, with per-capita emissions of just 2.1 tonnes against a global average of 6.7 tonnes,[4] Pakistan ranks among the countries most vulnerable to climate change. As the fifth most populous nation on earth, it bears climate impacts starkly disproportionate to its historical contribution to the crisis.

Nowhere is this contradiction more visible than in the energy sector itself. Although Pakistan has committed, through its Nationally Determined Contribution (NDC), to reducing fossil fuel reliance, the country's power sector tells a different story: nearly all thermal power plants are currently operating at full capacity, and electricity generation remains heavily dependent on imported fossil fuels. Due to the unreliable and unaffordable electricity, the citizens, largely on their own initiative, have driven a solar boom that cut oil and liquified natural gas (LNG) imports by 40 percent between 2022 and 2024.[5] Fully harnessing this citizen-led renewable momentum, rather than working against it, could deliver both greater energy security and stronger access to international climate finance.

The scale of what remains to be done is significant. Pakistan's latest NDC estimates that meeting its climate targets will require US 565.7 billion dollars.[6] The World Bank's 2022 Country Climate and Development Report puts the country's baseline climate-resilient and low-carbon financing needs at 348 billion dollars through 2030, implying an additional requirement of approximately 217.7 billion dollars by 2035.[7] Taken together, these crises define both the urgency and the opportunity at the heart of this plan for Pakistan.



Photo: Leaders of the Sultana Foundation, a NGO in Islamabad, Pakistan with their rooftop solar, allowing their health and education services to save on energy costs and redirect the savings into services provision.

"Due to the unreliable and unaffordable electricity, the citizens, largely on their own initiative, have driven a solar boom that cut oil and liquified natural gas (LNG) imports by 40 percent between 2022 and 2024."

Solar: A Hedge Against Imported Fuel Shocks

Pakistan is dependent on the Gulf states for imports of oil and LNG, and the closure of the Strait of Hormuz dealt a significant blow to the economy.[8] Before the war intensified, Pakistan's inflation was receding and stood at about 5.8 percent in January 2026.[9] By February, it had climbed to around 7 percent as energy prices began reacting to rising geopolitical tensions in the Middle East.[10] This had directly impacted the local fuel prices: on March 6, ahead of the war's escalation, the government raised petrol and diesel prices by around 17–20 percent to reflect higher global oil rates. During April, when the war intensified, petrol prices went up 42.7 percent and diesel 54.9 percent.

A similar crisis took place in 2022, when the post-pandemic economic recovery constricted global energy markets and Russia's invasion of Ukraine interrupted global supplies of oil, natural gas, and coal. The supply shortages combined with subsequent soaring fuel prices affected energy-importing economies including Pakistan. In response to this crisis, the market accelerated renewable energy uptake. Amidst these energy supply issues, households, businesses, and industries across Pakistan started seeking alternatives to expensive grid-supplied electricity and rising electricity tariffs. In 2024, due to the sharp decline in Chinese solar panel prices, Pakistan imported 17 gigawatts (GW) of solar photovoltaic (PV).[11] This widespread solarization has essentially reshaped Pakistan's electricity demand profile. Consequently, in 2026, during the Middle East war, the nation's solar boom shielded the power sector from the worst of the energy market disruptions. Despite concerns over LNG supply disruptions, the country avoided extended fuel shortages and widespread electricity disruptions, largely because consumers used solar to meet daytime energy demand, and relied on grid electricity for nighttime demand.

Even though the share of renewables (utility scale solar and wind) in the current energy mix is less than 5 percent, the real transition is occurring behind-the-meter. Official net-metered capacity reached more than 7.5 GW in 2026. However, research by PRIED and TransitionZero estimates that approximately 33 GW[12] small-scale rooftop solar has been installed by the people across different sectors. The majority being the non-net-metered and off-grid installations. A separate study by Renewables First and HeraldX arrives at a similar finding and estimates the total distributed solar capacity at 38 GW.[13] Over the same period, grid-based demand fell by nearly 11 percent relative to FY2022, while LNG-based generation declined by 4.5 terawatt-hours (TWh) as it lost competitiveness.[14]

The Growing Shift Toward Battery Storage in Pakistan

Solar power has become the leading force reshaping global power systems, meeting a large share of electricity demand growth and displacing fossil fuels, but mostly during daylight hours. As solar penetration rises, particularly in mature markets, flexibility is becoming increasingly important to ensure that electricity can be stored, shifted, or supplied when solar generation falls. With declining costs and accelerating deployment, batteries are positioned as the key flexibility technology, shifting cheap daytime solar into non-sunny hours.

This trend is clearly visible in Pakistan, where battery imports reached a cumulative 5.39 GWh of lithium-ion battery capacity, at a combined import value of roughly US $256.94 million from January 2025 to February 2026. Residential systems still dominate the cumulative total, constituting 4.45 GWh (82.5 percent) of all lithium-ion battery imports since January 2025.[15] Distributed solar power, increasingly paired with battery storage, has been central to this shift, enabling Pakistan to grow electricity demand by an average of 4.5 percent annually between 2022 and 2025 while reducing fossil generation.[16] Since FY2019, lithium-ion battery imports from China have reached over 700 million dollars, including 101.7 million dollars in the last quarter of FY2025 alone.[17]

A recent report on Pakistan's Battery Energy Storage System (BESS) Market found that the market is shifting from smaller residential battery modules towards larger 14–16 kWh systems, reflecting growing consumer confidence, falling battery costs and increasing demand for self-consumption following recent changes in the net-metering regulations.[18]

"With declining costs and accelerating deployment, batteries are positioned as the key flexibility technology, shifting cheap daytime solar into non-sunny hours."

Four Key Commitments for Pakistan at COP31

1. Targeted Subsidies and Concessional Finance for Those Left Behind

Launch a National Solar Affordability and Access Program by 2027, delivering installation rebates of PKR 50,000–150,000 to poor households by 2030, channeled through Benazir Income Support Programme (BISP) infrastructure, with concessional rupee-denominated loans made available to an additional 300,000 small and medium-sized enterprises (SMEs) and commercial users, collectively adding to distributed solar capacity. The program should also prioritize off-grid and underserved communities in Gilgit-Baltistan, Balochistan, and other remote regions, where grid extension is not economically viable, using concessional financing from international institutions to expand access to basic household electricity services.

2. Reform the Regulatory Framework to Reflect Ground Realities

Pakistan commits to a targeted, time-bound reform of the National Electric Power Regulatory Authority's (NEPRA) net-metering regulatory framework by 2027, comprising three actions within NEPRA's existing authority: removing capacity caps on residential and small commercial systems below 25 kW to unlock demand; mandating DISCO approval timelines of no more than 60 days, with automatic approval if breached; and restructuring fixed charges to be progressive and proportionate, protecting low-consumption solar users while ensuring grid cost recovery.

3. Build Solar-Plus-Storage as the National Standard

Pakistan commits to removing customs duties and sales tax on battery storage systems and components by 2027, launching a concessional financing facility through state-owned banks for storage-integrated solar installations, and revising NEPRA's net metering framework to introduce time-of-use tariffs that make battery storage economically viable for consumers. Building on a national base of 7.6 GWh of cumulative battery storage imports as of end-2025, Pakistan targets an additional 15–20 GWh of distributed battery storage capacity by 2030, driven by these policy measures, as a first milestone toward a mature, GWh-scale storage market.

4. Extend Solar Access to Renters and Shared Spaces

I. Pakistan commits to removing regulatory barriers that exclude renters from solar benefits through two parallel tracks: first, introducing Virtual Net Metering regulations through NEPRA by 2026 to allow renter households and SMEs to subscribe to community solar installations and receive direct electricity bill credits; and

II. Second, launching a landlord incentive scheme offering concessional financing for rooftop solar installation in rental properties, conditional on documented energy savings being passed to tenants. Piloted in Karachi, Lahore, and Islamabad, these measures collectively target solar benefit access for 100,000 renter households and SMEs by 2029.

Background:

In 2023, around 23 percent of Pakistan's urban population lived in rented accommodation,[19] yet current net-metering and solar incentive frameworks are exclusively available to property owners. This structurally excludes millions of urban citizens, including a large proportion of low- and middle-income households, from the economic benefits of the solar transition. Virtual net-metering and community solar models, already operating in Bangladesh, India, and the United States, offer a proven pathway to renter inclusion that Pakistan's regulatory framework has not yet accommodated.



Photo: Abdullah Abro is a renter in Islamabad who has been able to negotiate installing solar panels and storage with his landlord, a benefit not available to all renters.

Case study

The transformative nature of affordable electricity

On the face of it, the 110/7-R village along the Multan-Sahiwal Road has little to set it apart from the thousands of others within Punjab's Canal Colonies. Created between 1885 and 1940 by the British Raj, these large agricultural settlements are where villages came to be identified by their position on a grid, along specific water channels, distributaries, or canals.

What sets it apart, though, is that this village has stopped looking to authorities for its needs, taking matters into its own hands as rural communities are driven to better their lot through self-help. At the top of that agenda for change is access to electricity, an issue that has for decades been a source of frustration for Pakistan's citizens and a drag on its development.

Both electricity and the relevant authorities are absent in this village on the periphery of the centres of power, as Sufi Shahzad, a resident of Chak 110/7-R, puts it. The power elite who reside in provincial capitals visit at election time, promising clean water, schools, hospitals, and that most elusive basic necessity, electricity. But these promises are rarely kept. In this village, and others across the district, what's starkly visible instead is what Shahzad calls “an absence of government, a neglect that is visible in the lack of municipal services in the village.”

As anyone, including Google, would tell you, the bugbear that has long haunted the villages of Punjab is the lack of proper sanitation, open sewage drainage, and inadequate solid waste management. Clean drinking water is also scarce.

Without relying on the grid, people in this village have cleaned their streets of sewage water and their groundwater of heavy metals, running their sewerage and water filtration plants on solar energy, and using the surplus to power streetlights and homes that had no electricity. It's easy to see why they're proud of this. Walking through the sun-baked, cemented streets of Chak 110/7-R, past goats and cockerels, and old men and women sitting in the shade of neem trees, the same story emerges house after house, street after street: solar energy has empowered the communities in ways big and small.

In the discourse around Pakistan's solar boom, globally feted as “revolutionary” even as governments and businesses elsewhere continue to agonise over the pace of the energy transition, the voices of such rural communities are often missing. Pakistan's solar boom has in fact been largely leaderless, driven and effectively subsidised by these communities themselves, which makes it all the more ironic that they have no say in how the transition is planned. It is these communities, joining together to find their own solutions, that have single-handedly put Pakistan on the map as a solar champion.

Far from the cities, where development planning and decision-making is centred, it is rural Pakistan's marginalised communities that, having had little access to the national grid, have turned to the sun for their energy needs. In Sahiwal district, the village of Chak 110/7-R is an inspiring example of this: communities that have not just freed themselves from dependence on the grid, but woven solar into daily life, in a place where grid electricity has long been more of a burden than a benefit.

“Pakistan's solar boom has in fact been largely leaderless, driven and effectively subsidised by these communities themselves, which makes it all the more ironic that they have no say in how the transition is planned.”



Photo: Razia Bano works with reclaimed yarn in Chak 110/7-R, Sahiwal, where rooftop solar has helped sustain her family's livelihood, expand their home-based business, and create income opportunities for other women in the village.

For many rural households, the national grid was never reliable, but the bills it incurred were punishing all the same. In Chak 110/7-R, Razia Bano knew this problem personally. For years, she and her family - her husband, sons, and daughters - ran a small business reclaiming yarn from second-hand sweaters, taking orders from outside the village and processing them by hand at home.

Her husband would buy thrifted sweaters. Razia would untie them, winding the restored thread onto a small hand-cranked wheel-and-spindle device at home. The reclaimed yarn served several purposes: the family wove charpais (traditional wooden beds) from some of it and sold the rest in bulk.

But the business faced one persistent obstacle: electricity. The machines the family relied on at home consumed a lot of power, driving their monthly bills to unsustainable levels. Something had to change.

Across the village, household incomes could not keep pace with soaring electricity bills. Razia's family was far from alone in that struggle. So, people found money however they could: taking out loans, selling livestock, selling harvests, and in some cases even family gold. All of it went toward one goal: installing solar panels on their rooftops.

Like others, Razia's family pooled their savings to install panels on their rooftop, relying on solar to solve a problem the grid never could. The investment paid off. Freed from unaffordable electricity bills, Razia's family did not just sustain their business; they expanded it, paying other women in the village Rs. 400 a day to unravel sweaters and wind yarn onto spindles. It turned a household enterprise into a small source of income for the wider community, particularly for housewives who had few earning opportunities of their own.

What started as one family's survival strategy became a shared economic plan for the village.

The change went beyond finances. Before installing solar, power outages hit hardest in Razia's courtyard, where she does most of her work: it would become unbearably hot and stifling. Now a solar-powered fan runs uninterrupted, and she and her family work comfortably outdoors, free from both the power cuts and the weight of expensive bills.

What started as an act of necessity in villages that the grid had forgotten became something larger, offering proof that marginalised households, acting without waiting for policy or infrastructure, could alter their own energy future. In Chak 110/7-R, solar power has gone beyond merely lighting up homes: it has powered livelihoods, created new income streams for marginalised women, and offered a small but durable escape from a national grid that has never quite reached them.

Swapping individual's subsidies towards solar energy in Malaysia

BRIGHT SPOTS

About Bright Spots Energy

Bright Spots Energy is a Malaysian social enterprise accelerating distributed renewable energy (DRE) adoption by removing the friction points in financing, policy and physical access that keep rooftop and community solar from reaching the people who need it most. Co-founded by Hakim Albasrawy and Yeap Mei Yi, the organisation runs programmes spanning subsidy-reform advocacy and financing innovation for household solar, working across Peninsular Malaysia and increasingly the Philippines.

Our premise - That Malaysia's stalled distributed renewable energy (DRE) growth is not a technology problem: it is a governance and access problem, with different, specific fixes required at each friction point from the petrol pump to the strata-title deed.



Photo: Families will benefit enormously from an expansion of rooftop solar.



Above (left): Rooftop solar installation in Malaysia. **Above (right):** Empty rooftop space provides opportunities for expansion of affordable solar energy.

Action Plan

Malaysia's domestic electricity consumers pay markedly less per kWh than regional counterparts, and that gap is doing more to hold back rooftop solar than any technical barrier. Households using up to 1,000 kWh a month, roughly 85% of domestic customers, pay around US$0.11/kWh under the current tariff structure. Australia's residential rate runs at the equivalent of roughly US$0.17–0.32/kWh depending on state, and the Philippines sits at roughly US$0.24/kWh. For the large majority of Malaysian households, in other words, the electricity bill simply doesn't hurt enough yet to make solar installation a hugely urgent undertaking.

The result shows up directly in uptake: after a decade of net energy metering (NEM) and related schemes, Malaysia has around 96,000 cumulative rooftop solar installations nationally, a small fraction of the millions of eligible properties. As at 2026, retail solar penetration sits at less than 2%, against Australia's 12.5%.[20]

A further barrier compounds the economics problem: access schemes assume you own a roof. NEM and the newer ATAP (Solar Accelerated Transition Action Programme) are both built around landed, single-title homeowners. Malaysia's housing stock is roughly 69% landed[21] and 31% strata (condominiums and apartments), and strata residents face a structural block: no individual owns the roof, and body-corporate approval processes stop most applications before they start. Renters face the same structural barrier with no capital case for improving a roof they don't own.

The economics problem described above isn't evenly distributed and neither should the response be. Within Malaysia's ~4 million landed households, an estimated 15% (~600,000) already use enough electricity that solar's payback (under 5 years) case works under today's tariffs; they simply haven't converted, which points to a friction problem, not an incentive problem, for this group. A further ~270,000 households (an estimated 15% of Malaysia's ~1.8 million strata units) represent a second, structurally different opportunity, one blocked by ownership and approval barriers rather than economics.

"Bright Spots' Swapsidy campaign proposes a voluntary mechanism letting households redirect their BUDI95 fuel subsidy entitlement towardEV financing, rooftop solar instalments, home charging infrastructure, or EV charging credits, money the government is already spending, just not on the transition."

We propose three interventions, each aimed at a different part of this gap:

1. **Fossil fuel subsidy redirection (policy intervention)**

   Bright Spots' Swapsidy campaign[22] proposes a voluntary mechanism letting households redirect their BUDI95 fuel subsidy entitlement toward EV financing, rooftop solar instalments, home charging infrastructure, or EV charging credits, money the government is already spending, just not on the transition. We are putting this to the government through a pre-budget submission to the Dewan Rakyat's Special Select Committee on Finance and Economy ahead of Budget 2027. This is the broadest-reach intervention: it shifts the underlying economics for households below today's solar-payback threshold, not just the already-incentivized segment.

2. **Friction reduction (go-to-market intervention)**

   For the ~600,000 landed households where the cost case already works, the blocker is financing access, installer trust, and process friction rather than economics. This calls for go-to-market innovation, standardised assessment and lead-qualification models, simplified financing pathways concentrated specifically on this already-incentivized segment, rather than broad awareness campaigns aimed at households who don't yet have a financial reason to act.

3. **Balcony and plug-in solar, plus extended NEM/ATAP eligibility (policy and product intervention)**

   For the ~270,000 strata/rental households structurally excluded from rooftop schemes, the fix has to be a different product category, not better marketing: plug-in and balcony solar that doesn't require roof ownership or body-corporate sign-off, paired with a standardised, time-bound approval process for body-corporate solar sign-off where rooftop access is possible, and landlord-tenant financing structures that don't require the occupant to own the asset.

Case study

Subsidy design that moved the needle on SolaRIS and SuRIA Home

Malaysia's two most recent residential solar rebate schemes offer a natural before/after comparison. SolaRIS (Solar for Rakyat Incentive Scheme, 2024–2025) offered rebates of up to RM4,000 per household and was paired with a NEM quota expansion from 250MW to 350MW. SuRIA Home (2026) followed with a RM150 million allocation targeting 45,000–50,000 households and approximately 250MW of cumulative residential capacity. Read together, these two schemes show a government subsidy mechanism that visibly moved participation numbers when the rebate was large enough and paired with quota headroom evidence that subsidy design, not just subsidy existence, determines uptake.





Photo: Investigating feasibility of installing rooftop solar.

Providing nationally coordinated rooftop solar support in Japan

EARTH SHERPA
持続社会連携推進機構

About Earth Sherpa

Earth Sherpa is a Japanese non-profit policy-consulting group, based in Tokyo.

It supports leaders and constituencies for Japan's renewable energy transition, connecting farmers, local communities and civil society to national energy discussion so that renewables are both politically viable and locally beneficial.

It brings together the people affected by energy and climate policy and supports them in working with legislators and local governments, generates evidence that presents renewables as a locally owned opportunity, and links Japanese initiatives with international platforms.

With homeowners, rental-apartment owners and their tenants, Earth Sherpa is building a network of solar owners to advance rooftop solar.



Photo: Yamanaka Terrace, a café by Lake Yamanaka inside Fuji-Hakone-Izu National Park. Solar's impact on the landscape is a major public concern in Japan, and local landscape rules often ask that rooftop panels be kept inconspicuous. The café's roof is Monochrome's Roof-1, which builds solar cells into metal roofing so that it looks like an ordinary roof. Its power, topped up with purchased renewable electricity, also runs an outdoor cinema on the site. *(Photo courtesy of Monochrome).*



Photos: Rooftop solar in Japan.

Action Plan

Rooftop solar in Japan totalled 31.6 GW by fiscal year 2021, of which 16.6 GW was on homes. Of the 2.7 million homes with solar, 2.45 million are owner-occupied detached houses: 9.0 per cent of that category and 4.9 per cent of all homes.[23] Rental housing accounts for very few, and the installation rate on existing homes is one-eighth that on new homes. The Renewable Energy Institute estimates that 159 GW of rooftop solar is achievable by 2035, five times the FY2021 level.[24]

The currently available policy package is aimed at new homes. In August 2021, the land, industry and environment ministries set a goal of solar on 60 per cent of new detached houses by 2030,[25] reflected in the "Housing Top Runner" standards.[26]

Local governments have gone further with mandates. Since April 2025, Tokyo has required builders that supply at least 20,000 square metres of floor area a year in the city to meet a solar installation standard across the buildings under 2,000 square metres they build, and to explain each building's environmental performance to buyers.[27] The obligation falls on large builders rather than on households. Kawasaki introduced its own requirement in the same month, and the two rules cover about half of new units in their areas. Sendai and Nagano Prefecture will follow in April 2027 and FY2028.[28]

Challenges

Japan has no standing national support for solar on existing homes. Renovation subsidies exclude solar, and zero-energy house support covers only new construction. National funds reach retrofits only through grants to participating municipalities, so access depends on where a household lives. The Seventh Strategic Energy Plan[29] sets targets for new detached houses, public buildings and perovskite capacity, but none for existing private housing and no milestone towards 2050.

Three ministries divide the field, covering building performance, industrial energy efficiency and municipal grants, yet solar on existing private housing falls to none of them. No parliamentary group covers it either.

Once their feed-in tariff ends, households sell surplus power for about 8.5 yen per kilowatt-hour,[30] so a rooftop system's value shifts from export to storage and self-consumption. Yet national battery support comes from a capped annual budget, and the FY2025 allocation ran out about three months into the financial year.[31]

"Establishing a year-round national program that pays households at installation is needed. The program should cover roof repair undertaken with the installation, since repair costs for aging roofs often determine project feasibility."

Policy Proposals

The Government of Japan should consider the following set of policy options in order to address barriers to expanding rooftop solar and capture the benefits of solar:

1. A standing national program to support retrofit installations

At present, national funds reach existing homes only through optional municipal grants, which depend on annual budgets that can be exhausted mid-year and on application windows that rarely match construction schedules. Establishing a year-round national program that pays households at installation is needed. The program should cover roof repair undertaken with the installation, since repair costs for aging roofs often determine project feasibility, and include a fixed per-installation payment so that small roofs with high fixed costs are not left behind. The rules that change at 10 kilowatts, which currently encourage undersized solar systems, should also be simplified, allowing maximisation of the roof.

2. Nationally uniform support for home batteries

Once their feed-in tariff ends, households earn little from exporting power, making batteries central to the value of a rooftop system through self-consumption. Yet national battery support depends on a capped annual budget that has been exhausted early in the fiscal year. Battery support should be expanded, giving households investment certainty.

3. A responsible ministry and an interim target for the existing private housing stock

Solar on existing private homes falls between three ministries responsible for building performance, industrial energy efficiency and municipal grants. A lead ministry should be designated to integrate housing renovation, energy and municipal grant programs, so that households can finance roof inspection, waterproofing, seismic retrofitting, solar and batteries as a single renovation project. A 2035 milestone for existing homes, disaggregated into detached houses, condominiums and rental housing, would bridge the 2030 goal for new homes and 2050. Building-level rooftop potential data and low-cost independent assessments would support owners' decisions and reduce reliance on vendor quotes.

4. Extension of municipal requirements and incentives to existing, rental and multi-unit buildings

Rather than a mandate to install, owners of existing rental buildings should be required to commission a professional solar feasibility assessment at major roof repair or sale, followed by either an installation plan or a stated reason for not installing. To address the split incentive in rental housing, where owners bear the cost and roof risk while tenants receive the bill savings, standard benefit-sharing models should be published, such as reduced common-area charges, discounted power sales to tenants or roof leases to third-party providers, together with tenant protections. Roof-use rights under 20-year third-party contracts should also be registrable, so that contracts survive sale or inheritance. Finally, financing programs should allow hundreds or thousands of small buildings to be aggregated into a single portfolio, since stand-alone development costs too much relative to output.

5. Practical support for condominium owners' associations

Rooftop solar on a condominium requires a resolution by the owners' association, whose board members are typically residents serving on rotation and often change before a decision is reached. Associations need standard resolution procedures, model bylaw amendments and resident briefing materials, as well as architectural, legal and electrical experts dispatched to advise them. Rooftop solar should also become a standard item in long-term repair plans, so that panels are installed alongside roof waterproofing, and associations should have access to long-term low-interest loans and credit guarantees, which are currently scarce.

Case Study

Zero-upfront rooftop solar, funded by citizens

In Ueda, Nagano Prefecture, the non-profit Ueda Shimin Energy has run Ainori-kun ("ride-along") since November 2011. The scheme pairs roof owners with "panel owners": citizens who put up money, from 100,000 yen per share, for solar panels on other people's roofs and receive the income from selling the power. Roof owners get renewable electricity with no upfront cost, and when the contract ends the system is handed over to them free of charge. Citizens can join from anywhere in Japan, while the panels go on roofs within about 90 minutes' drive of Ueda, the organisation's home base. As of October 2026, Ainori-kun power plants stand at 86 sites totalling about 1 MW. Sixty-nine are homes; the rest include a sake brewery, businesses, a university campus, a public junior high school and a solar-sharing farm. Together they are backed by just over 200 million yen of citizen funding.

Prefectures including Kyoto and Kanagawa now promote similar "zero-yen solar" offers to residents.

Generally, in zero-upfront schemes the panels belong to investors or a provider rather than the homeowner, so these arrangements must spell out what happens if the house changes hands. Saitama's Tokorozawa City, for example, requires registered providers of zero-upfront solar to explain this to homeowners before signing. Registrable roof-use rights (Proposal 4) would give arrangements of this kind a firmer legal footing and help third-party and community finance reach more homes.)

Photo: Roof owners and panel owners together in front of Ainori-kun No. 1, the first shared rooftop solar plant of the NPO Ueda Shimin Energy, which began generating in March 2012.



Accelerating Rooftop Solar in Indonesia

IESR
Institute for Essential Services Reform

About IESR

The Institute for Essential Services Reform (IESR) is homegrown Indonesian energy think tank working to accelerate a clean, equitable, and resilient energy transition. Combining rigorous research, energy system modeling, and strategic policy advocacy, IESR translates evidence into practical solutions that inform public policy, guide investment, and advance pathways to zero emissions by 2050.

IESR convenes government, business, and civil society to strengthen institutional capacity, address barriers to clean energy deployment, and shape effective transition strategies. Headquartered in Jakarta, with offices in Semarang and Denpasar, the institute connects national policy expertise with local engagement. Through its think tank network, IESR is expanding its work across Southeast Asia, deepening regional collaboration and knowledge exchange to accelerate the region's energy transition.

Vision - To be a leading energy transition think tank in Indonesia and Southeast Asia transforming people's livelihoods toward a just and resilient future.

Mission - Preserve the earth and ensure social justice by transitioning away from a fossil fuel-based economic system.



Photo: IESR visited Intaran Market (*Pasar Intaran*) in Sanur, Bali, during *Jelajah Energi Bali*, as part of the Indonesia Solar Summit 2026. This traditional market uses 5.5 kW of solar panels for water pumps and market lighting, reducing electricity costs by around 30-35%.



Above (left): Local farmers group managing solar water pump in Central Java, visited during *Central Java Energy Exploration 2022*. **Above (right):** Rooftop solar powering a wood-carving SMEs in Central Java. The installation was a part of the local government's green economic recovery package during the COVID19 pandemic.

Action Plan

The Institute for Essential Services Reform (IESR) has found the technical potential for residential rooftop solar power plants ranges from 194 GWp to 655 GWp[32] but the total installed rooftop solar power in Indonesia is only around 0.9 - 1 GWp[33] by August 2026 (including residential, government buildings, military facilities, and industrial buildings) with the majority connected to the grid in Java.

Rooftop solar installation increases rapidly when all rules around generating, selling and receiving consumption at the utility end of business are stable, are fair to customers, and also meet utility's needs. This is not yet the case in Indonesia.

Why rooftop solar matters for Indonesia

The majority of Indonesia's power comes from coal, and the country has a poor track record of meeting its renewable energy targets. The goal for 23% of power to come from renewables by 2025 was not met. Solar energy, the most abundant form of energy in the country, has grown the slowest of all the renewable energy types. The total installed solar energy capacity in the country was only 1.5 GW by end-2025, against the vast technical potential of 3,294 GWp of solar energy outlined by the country's Ministry of Energy and Mineral Resources (MEMR).

Rooftop solar power systems can be installed in days or weeks depending on the capacity, whereas a large utility-scale power plant may take years to develop. For rooftop solar power, the biggest constraint is not the technology, but the facilitation by the government or PLN in terms of approval processes. But above all, rooftop solar power allows households, companies and local governments to develop solar power systems by themselves through their own investment decisions.

Indicator	Value
Residential rooftop technical potential	194–655 GWp[34]
The National Strategic Project target for rooftop solar (2022)	3.6 GW by 2025
Rooftop quota approved for 11 PLN systems, 2024–2028	5,746 MW
Rooftop capacity, June 2026 (official)	937 MWp[35]
Rooftop capacity, end-2025 (satellite estimate)	~479 MWac / ~600 MWp
Share of existing rooftop capacity located in Java	87%

The pipeline for utility-scale solar has not been delivered. The RUPTL 2025-2034[36] for new electricity supply by PLN for 2025 foresaw the commissioning of 777 MW of new solar plants. In reality, the biggest ones to be connected to the grid in 2025 were a 50 MW plant in the new capital of Nusantara and a 25 MW plant in East Bali. A total of 546 MW of new solar capacity was connected in 2025, mostly by consumers generating electricity on their own roofs, in the commercial and industrial segment.[37]

In an effort to boost deployment of solar power, Indonesian President Prabowo Subianto in July 2025 announced a massive 100 GW solar power program, comprising 80 GW distributed and 20 GW centralized power systems that would require some IDR 1,772 trillion of investment by 2030.[38] The program was relaunched in August 2026, with an estimated solar rooftop target of 9.35 GW to be installed in three years. Distributed power systems will need to rely on private and community funds, and therefore rooftop solar power is the only area where sufficient volumes of funds can be mobilized in the short term. Some hundreds of MWs a year of new installations on rooftops are therefore required to translate the distributed 9.35 GW target into reality.

How the market has developed

A report by TransitionZero in 2026 estimated the total installed rooftop solar capacity in Indonesia would reach 479 MWac by the end of 2025. This installed capacity is less than half of the target set by the Ministry of Energy and Mineral Resources (MEMR) of 1,000 MWp by the end of 2025, as recorded in June 2025. About 87% of installed capacity of rooftop solar power in the country is located in Java and can be classified as commercial. Other islands in Indonesia have very minimal rooftop solar installations.

Under the current regulation, new rooftop PV customers receive no credit for surplus electricity exported to the grid. This particularly weakens the economics for residential customers, whose electricity demand typically peaks in the evening, after solar generation has declined. Without batteries or export compensation, households therefore have limited ability to monetize daytime surplus generation.

Commercial and industrial (C&I) customers are unaffected by the end of net metering as their maximum power output typically exceeds their peak power consumption during the day. They will continue to benefit from the removal of parallel operation charges including capacity charges and emergency service charges that were previously imposed by the utility on such customers. So by 2025, rooftop solar has increasingly become the domain of commercial and industrial customers.

There are several classes of consumers, beginning with public buildings and consisting of social facilities such as mosques, schools and health clinics. For these clients the numbers generally do not work, unless financed through grants or other community finance structures. For example, a detailed financial analysis was conducted for a mosque in Purworejo and indicated that all configurations would result in negative net present value under the current rate of return for rooftop solar power systems.[39]

To date, no program for financing household solar capacity has been developed. Contracts with customers are very small, with very expensive credit checks relative to contract value. Without the ability to earn export credit on behalf of customers, the margin between retail PLN electricity rates and the cost of solar electricity is too narrow for sharing with financiers of household systems.

What holds rooftop solar back

There are several deep-seated problems with rooftop solar power for PLN, the main integrated utility. For many years PLN in Java-Bali has been operating with a large reserve margin (over generation capacity). Because the contracts that PLN buys power from generators are long-term take-or-pay contracts, the revenue that PLN loses from each kilowatt-hour of power that is generated by a household's solar PV and used in that household is much greater than the reduced cost of not having to transmit and distribute that power. Thus from a financial perspective, there is every reason for PLN to resist rooftop solar power.

Additionally, concerns of the distribution utility (PLN) in managing the 'intermittent' nature of solar power have also recently emerged and become one of the drivers of a quota-based system for rooftop solar pushed by PLN after 2022. Intermittency issues have pushed back rooftop solar interconnection with PLN. PLN's concern is valid but many countries are already successfully managing solar power, installed at over 10% capacity, while continually reducing the cost of energy storage.

All of these current challenges are exacerbated by the frequent change of the compensation structure for rooftop solar power. According to the trends and development trajectories, three main problems are frequently faced by prospective customers and financiers of rooftop solar power, i.e. (1) frequently-changing solar power generation compensations; (2) financing difficulties; and (3) weak local solar power equipment supply chains. In addition to these problems, the currently implemented quota system also poses several challenges, mainly in terms of the transparency of remaining capacities.[40] There is a large coordination problem between the stipulated national renewable energy generation targets and PLN's plans to increase its coal-fired generation capacity.[41]

Additional hurdles at the microeconomic level, in particular with regard to households, include low household tariffs, including those that are subsidized, which result in low savings from electricity generated from solar. Financing a few thousand USD for upfront costs for small systems for individual houses is difficult for most households, also since there is a lack of specialized consumer credit for solar power systems. Moreover, since 2024, there is no longer any compensation for exported electricity.

Recommendations

In the case of Indonesia, predictability is more important than generous incentives. Even a marginal incentive, valid for a period of 5 years, is more effective than generous offers that are subsequently renegotiated within 2 years. Such offers are hardly conducive to meaningful projects.

Rooftop solar needs Utility Buy-in. The previous success with promoting rooftop solar has been endangered by the loss that PLN incurs from these projects, given they are mostly connected to the utility's distribution network under contracted fixed tariffs and thus lead to PLN's loss of sales. To reinvigorate rooftop solar promotion, distributed generation needs to be counted in PLN's Renewable Energy Target, and its revenue impact must be captured in PLN's tariffs and in its government-subsidized income.

The current legislation already supports the large daytime user such as the factory, but households, small businesses and public buildings still are not. The main incentive for households is compensation for exported electricity. Research has found that some sort of payment is needed to make installation of solar power for electricity generation viable.[42] [43] MSMEs would also benefit from the means of aggregation and simple finance.

Fourth, there is a lot of potential in the provinces. They can create and generate demand and momentum for solar power under the right national framework, budget and technical capacity.

Recommendation	Lead actors	Timeframe
Commit to a rooftop framework that holds for at least five years, with any change announced well in advance, including option to cease quota system or increase quota mechanism aligned with 100 GW Solar Program.	MEMR	2026–2027
Publish quotas down to the PLN UP3 cluster level, with remaining capacity shown in real time	PLN, DG Electricity	2026-2027
Restore fair compensation for exports, for example a feed-in tariff with limited quotas or net billing at avoided cost	MEMR, PLN	By 2027
Let distributed solar count towards PLN's renewable targets and reflect its revenue impact in tariff and subsidy setting	Ministry of Finance, MEMR, PLN	2027–2029
Low-interest solar credit and aggregation platforms for households and MSMEs, building on OJK's revised bank business plan rules (OJK is the financial authority of Indonesia)	OJK, state and regional banks	2026–2028
Provincial rooftop mandates for public buildings, backed by budget lines in regional energy plans	Provincial governments, Ministry of Home Affairs	2027-2028
Phase TKDN (local content) requirements in line with the domestic PV supply chain roadmap	Ministry of Industry	2026–2030

Indonesia's rooftop solar ambition has yet to be translated into real output. Despite a 3.6 GW target only 937 MWp of rooftop solar power has been installed by June 2026 (reported in August 2026 by news source). The current 5.7 GW quota for solar power is not yet fully maximized by developers and it remains to be seen how much of this target will actually be achieved. Now with the 100 GW Solar Program, rooftop solar will play a significant role in meeting the target in 2029.

There are reasons to be cautiously optimistic about the progress of C&I solar power in Indonesia. There are concrete developments in terms of cost reductions in solar power installations. More importantly, the 100 GW program has put solar power at the center of Indonesia's energy map for the first time. As outlined in IESR's study on Indonesia Solar Energy Outlook 2025, Indonesia will need to install 9-15 GW of solar power every year until 2030 to be consistent with the country's commitment to the Paris Agreement on climate change.

"For Indonesia, predictability matters more than generous incentives. A modest incentive guaranteed for five years offers greater investment certainty than a generous package renegotiated after two.

To unlock meaningful projects, policymakers must commit to a stable regulatory framework for at least five years and honour those commitments."



Photo: A visit to 1-MW solar plant in Kubu, Bali during *Bali Energy Exploration 2025*.

Case Study

Successes in Central Java, Bali and at Danone-AQUA

Central Java: leadership as an anchor market

Central Java was declared as Indonesia's first Solar Province on September 17, 2019 by the provincial energy office in collaboration with IESR. The declaration of Solar Province in Central Java was supported by the circular of the Governor of Central Java that encourages the use of rooftop solar on buildings of public facilities and service institutions. The provincial energy office even installed 30 kWp of rooftop solar on the roof of its office. Seventeen other provincial institutions also installed rooftop solar of a total 17 kWp in 2020.[44] Annual solar day events were also held by the provincial government to promote use of solar power. The provincial energy office also works with PLN's regional office to facilitate the connection process and to get approval for connection faster. The energy office of the province also lobbies for low interest rates for solar home systems through the regional bank of Central Java, Bank Jateng. A circular from the Governor of Central Java was one of the factors that increased use of rooftop solar power in buildings of public and private institutions in the province.

There was no need for additional laws to be introduced by the national parliament. All the successes depended on leaders with real power to champion solar energy, using 'anchor demand' – such as the Governor of Central Java who encouraged solar energy on government buildings.

Danone-AQUA in Klaten: corporate targets doing the work

The largest solar power installation in the province so far is a 2.9 MWp rooftop solar power plant installed by the leading bottled water manufacturer in the country, Danone-AQUA at its Klaten factory in October 2020. The installation comprises 8,340 modules spread over four rooftops totaling 16,550 square meters of roof space.[45]

Corporate climate change commitments can lead to the big ticket items of distributed energy. This has helped to make distributed solar power the leading form of distributed energy for commercial and industrial customers across Indonesia.

Bali: a strong mandate that still needs support

Bali which issued Governor Regulation 45/2019 on Bali Clean Energy in November 2019 requires installation of rooftop solar panels in public and private buildings of certain sizes. In circular 5/2022 later, the Bali Governor extended the call to several sectors including hotels, restaurants, markets, banks, shopping centers, and customary villages institutions.[46] The total technical potential of rooftop solar in Bali is estimated at 26.4 GWp.[47]

A critical moment came for the campaign to develop renewable energy in May 2025, when for 12 hours the entire island was in a blackout. Following that 'blackout day', the Governor again reiterated his commitment to develop renewable energy including to have energy-independent Bali through rooftop solar power and stated that all public facilities including hotels have to install the solar panels in their rooftops. Bali has targets including to achieve net zero emissions by 2045, with rooftop solar as key strategy with a target of 500 MW installation by 2030.

The implementation of the policies for strengthening the development of the use of renewable energy at the provincial level faced challenges. The budget constraints, the lack of technical personnel, the uncertainty of the rules and the coordination between institutions such as the Provincial Government, the Regency/City Government and related agencies, still hampers the implementations of these policies. A provincial decree on renewable energy is not enough to change the national compensations and financing schemes for the use of renewable energy.

All of these success stories have one thing in common: a champion, whether a governor or a CEO of a company. All of them relied on anchor demand (such as government buildings or one large corporate customer), and where the model failed to scale (as it is not yet in all districts of Bali) the problem has been the lack of money and a national framework, not willingness at local level.

Collective Solar Ownership in Brazil for Energy Abundance in Favela Households

About Revolusolar

Revolusolar is a Brazilian nonprofit based in Rio de Janeiro, working on community led solar energy as a tool to tackle energy poverty, foster regional development, and promote a just and inclusive energy transition.

Founded in 2015, the organisation operates across six Brazilian states, including Rio de Janeiro, São Paulo, Espírito Santo, Tocantins, Amazonas and Pará. Its core methodology, Ciclo Solar, integrates three programmes: photovoltaic installation, professional training of local residents as certified solar technicians, and community education on cooperative governance.

Revolusolar positions itself as a think and do tank, combining grassroots implementation with policy research and advocacy, and has contributed to Brazil's federal distributed generation legislation and to the national regulator's low income community energy sandbox.



Photo: Installers trained through Revolusolar's professional training program installing solar panels in the Babilônia favela in Rio de Janeiro.



Photo: Aerial photo of the favela installation.

Action Plan

Brazil has some of the highest solar irradiation levels in the world, yet rooftop solar remains largely inaccessible to the households who would benefit most from it. This is not a technology problem. It is a problem of who is allowed to own a rooftop system in the first place. Most low income Brazilians live in rental housing, informal settlements, or homes without individual roof titles, all of which exclude them from conventional rooftop solar schemes designed around individual ownership. Furthermore, these residents are also typically unable to afford the initial investment required for a solar photovoltaic system

Revolusolar's action plan centres on scaling shared ownership models, including solar cooperatives, as a vehicle through which eligible low income households can exercise their right to affordable energy collectively. Eligibility should not be defined by whether a household has joined a cooperative, so that cooperative governance expands access rather than becoming a new barrier to it. Instead, it should be based on criteria such as electricity consumption and Brazil's existing social tariff.

"Revolusolar's action plan centres on scaling shared ownership models, including solar cooperatives, as a vehicle through which eligible low income households can exercise their right to affordable energy collectively."

We call on Brazilian federal and state governments to:

1. Convert the national regulator's current sandbox for low income community generation from a time-limited pilot into permanent, nationwide policy, with a funded pathway for cooperatives to scale beyond the pilot phase.
2. Guarantee that community and cooperative-owned systems receive the same compensation treatment as individually owned rooftop systems under the distributed generation law's low income tariff provisions, rather than facing additional barriers because ownership is collective.
3. Simplify documentation and connection requirements for households in informal settlements, so that lack of formal land title does not become a barrier to grid connection or to participation in community energy schemes.
4. Direct a defined share of public climate finance and development bank funding to community-owned generation specifically, rather than channelling incentives almost entirely toward individual homeowner subsidy schemes that low income households cannot access.

Brazil's experience points to a broader lesson for the Global South. A more durable path to scale is not a subsidy model built for individual homeowners, but a governance model in which residents collectively own and manage the asset. To date, Revolusolar has supported the installation of 475 kWp of solar capacity and trained 113 residents as certified technicians.

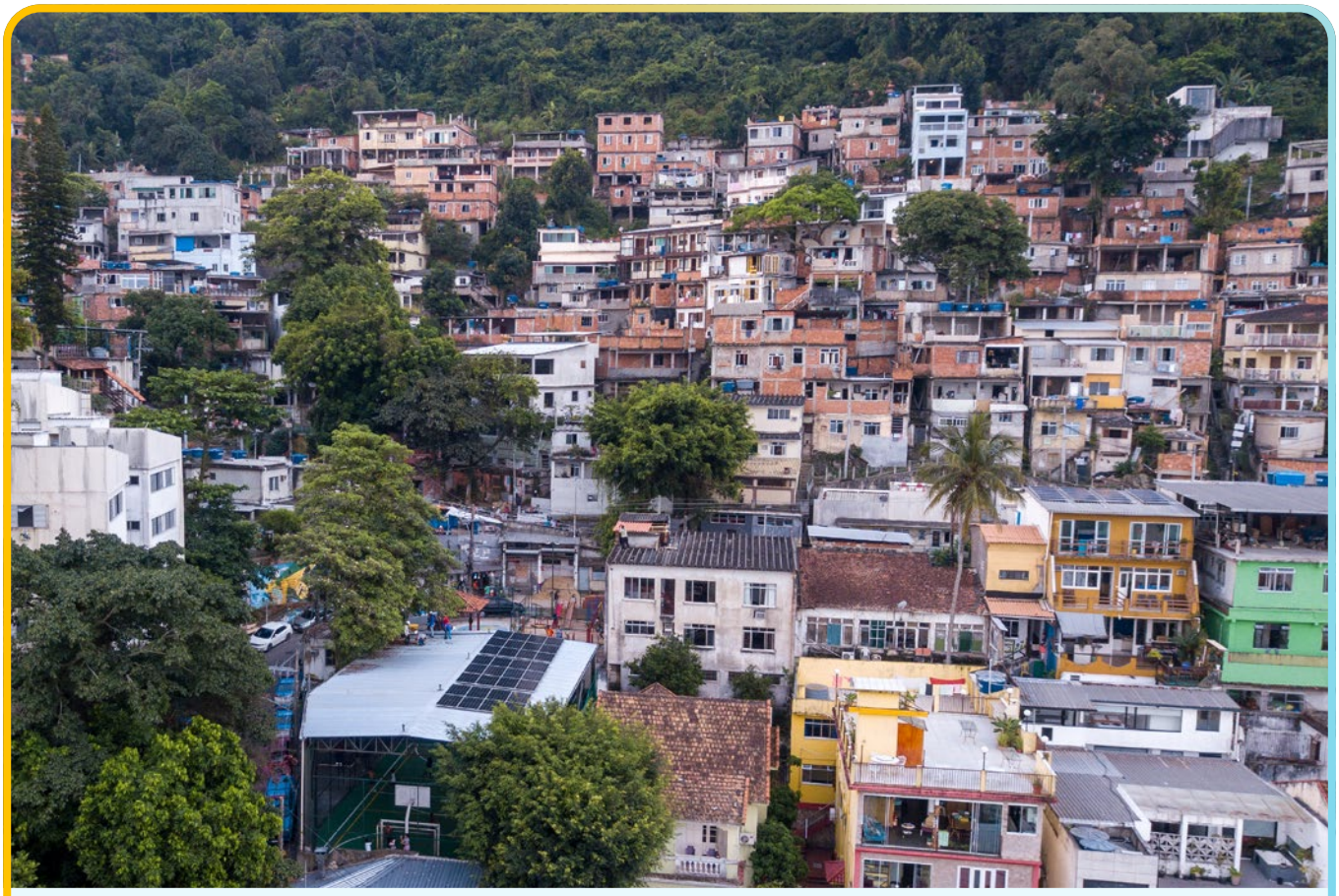


Photo: The Babilônia favela, where Brazil's first solar energy cooperative in a favela was established.

Case study

Cooperativa Percília e Lúcio

In 2015, Revolusolar began working in Babilônia and Chapéu Mangueira, two favelas in Rio de Janeiro's South Zone, ten kilometres from the city centre, where households were paying a disproportionate share of their income for an unreliable electricity supply. The process started not with installation, but with community engagement, mapping households and building trust with local leadership before any technical work began.

Residents were then recruited and trained as certified solar technicians, with the programme deliberately prioritising women, who remain underrepresented in Brazil's technical energy workforce. This process resulted in the creation of Cooperativa Percília e Lúcio, the first solar energy cooperative established inside a favela in Brazil, where member households collectively own and govern the solar system rather than each owning an individual asset.

The model has since informed Revolusolar's expansion into Indigenous territories and into communities across the Amazon and the Northeast, adapted to different land tenure and social organisation contexts. It has also fed directly into national policy, contributing to Brazil's distributed generation legislation and to the regulatory sandbox now guiding low income community energy schemes. The core lesson is that a model built for people with no formal ownership over their rooftops can be the structural answer to solar access, rather than an exception to a policy designed around homeowners.



“Brazil's experience points to a broader lesson for the Global South. A more durable path to scale is .... a governance model in which residents collectively own and manage the asset .... Revolusolar has supported the installation of 475 kWp of solar capacity and trained 113 residents as certified technicians.”

Powering equality through women-led solar renewable energy in Vanuatu

About ActionAid Vanuatu and the Women I Tok Tok Tugeta (WITTT) Network

ActionAid Vanuatu (AAV) is a women-led humanitarian NGO that was established following Category 5 Cyclone Pam in 2015.

- Its work centres on empowering women to be strong community leaders through women-led protection, climate change adaptation and resilience, disaster preparedness and response, and women's economic empowerment.

AAV has supported the establishment of the Women I Tok Tok Tugeta (WITTT) network to advance Ni-Vanuatu women's rights, safety, and resilience in a context of increasing climate impacts and disasters.

- Today the WITTT network brings together over 10,000 women from five islands of Vanuatu, preparing them for disasters, strengthening their understanding of their rights, and supporting their engagement with provincial and national stakeholders to ensure that their needs are being heard and reflected in decision-making.



Photo: Women in the village of Lawital have been trained to install and maintain off-grid solar systems in homes and public spaces in the community.

Action Plan

Vanuatu's geographical remoteness, together with the high costs associated with securing safe and dependable energy, means that electricity is inaccessible to most households. Nearly 34% of households still live without electricity[48] and energy access remains lower in rural communities, which is home to approximately 78% of Vanuatu's population.[49] In the context of the escalating climate crisis, and for a nation already among the most exposed in the world to cyclones, sea-level rise, and volcanic and seismic risk, its combination of energy poverty and imported fuel dependence is a significant resilience risk.

Vanuatu has strong energy ambitions to address this vulnerability. The National Energy Road Map 2016–2030 commits the country to universal electricity access and 100 per cent renewable electricity generation by 2030. The revised and enhanced Nationally Determined Contribution (NDC) submitted in 2022 carries that same electricity-sector target, alongside commitments on gender and on people with disabilities.

The National Green Energy Fund, established in 2018 exists to channel public and private finance into renewable energy and meeting commitments. The National Electrification Master Plan, completed in 2024, provides the least-cost pathway: mini-grids for 52 per cent of unelectrified customers, standalone solar for 33 per cent, and grid extension for the remaining 15 per cent.

Additional investments include technical capacity being built through the Department of Energy's Barrier Removal to Achieve National Energy Road Map Targets for Vanuatu (BRANTV) program, which has trained local solar operators to Certificate II and delivered train-the-trainer certification through the Vanuatu Institute of Technology and provincial Rural Training Centres. Solar panels, inverters, solar lights, and energy-saving bulbs also enter the country free of import duty.

"Nearly 34% of households still live without electricity and energy access remains lower in rural communities, which is home to approximately 78% of Vanuatu's population."

The challenges

Where these strategies break down is in how the commitments translate for people in rural and remote communities, and particularly women, who are often furthest from what the strategies promise but have the most at stake in their delivery.

Low access to reliable, affordable electricity has negatively impacted the livelihoods of households, particularly those in rural and remote communities, contributing to low living standards and income generation options. Additionally, most of the electricity they do have comes from firewood, diesel, kerosene, and other dirty fuels, which are expensive, hazardous to health, environmentally damaging and import-dependent.

The burden of energy poverty is not shared evenly. For Ni-Vanuatu women and people with disabilities, the lack of access to electricity impacts their lives disproportionately, affecting their health, safety in poorly lit areas, capacity to use technology, and ability to build economic security. Women are also excluded from policy discussions and spaces where energy investment decisions are made. There is an opportunity for the global rooftop solar declaration to correct that exclusion and scale women-led solar energy.



Photo: Rooftop solar has provided reliable electricity for lighting in Lawital, Vanuatu.

The path forward

To address the compounding impacts of energy poverty and gender and disability inequality, the Government of Vanuatu needs to make targeted investments into women-led community solar programming. This includes the following commitments:

1. **Set a distributed solar target alongside the generation target**

   Vanuatu's next NDC and the National Electrification Master Plan implementation should carry a specific, costed target for solar home systems and community-scale systems in off-grid communities, disaggregated from the grid-connected generation pathway, with annual milestones to 2030. That target must be matched by finance. A defined share of the National Green Energy Fund's capital, and of the climate and infrastructure finance Vanuatu secures from bilateral and multilateral partners, should be committed to household and community-scale solar, so that off-grid communities are funded as a priority.

2. **Prioritise the hardest-to-reach islands rather than the cheapest connections first**

   Vanuatu must sequence Master Plan delivery so that the standalone solar segment and the outer islands with remote communities are funded in parallel with mini-grid and grid-extension work, not after it. Capitalise the National Green Energy Fund at a level that allows it to finance this segment at scale.

3. **Set gender and disability targets within the existing accredited training pathway**

   Vanuatu needs to commit to women comprising at least half of new Certificate II and Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) trainees, deliver training through provincial Rural Training Centres or other means rather than only in Port Vila, extend places to women with disabilities, and recognise community solar technicians trained through NGO and private-sector programs within the Vanuatu Qualifications Authority framework so their qualifications are portable. Women currently make up approximately 16% of trainees and remain disadvantaged through this exclusion from an education pathway.

4. **Facilitate women and women with disabilities' participation in energy decision-making**

   The Vanuatu government should mandate women's representation on provincial energy committees and in Master Plan implementation governance. Sex and disability-disaggregated energy access data also needs to be collected and published to track targets and inform planning. Local women and women-led organisations with off-grid community reach need to be formally consulted in energy planning, financing, and coordination.

5. **Build the circular economy as a women's employment strategy**

   Vanuatu needs to invest in the local circular economy, supporting e-waste and plastic recycling and refurbishment and assembly capabilities. Building this capability through women-led micro-enterprises, including enterprises led by women with disabilities, lowers system costs, keeps green jobs in Vanuatu, and builds diverse women's economic autonomy and resilience at the same time. Ultimately this will contribute to gender equality, while driving clean energy access.



Photo: In Lawital, Vanuatu, women are leading an off-grid solar energy project which has transformed their community.

"We are very excited about this initiative as it shows the leadership and agency of women taking the lead in this project, which we hope will secure a more meaningful seat at the decision-making table and gain more respect for our women, girls, and people with disabilities in our communities."

— Flora Vano, Country Manager, ActionAid Vanuatu

Case Study

Women-led renewable energy in Lawital, Vanuatu

With catalytic funding through the Australia Infrastructure Financing Facility for the Pacific, ActionAid Australia, ActionAid Vanuatu, and the WITTT Network partnered with Australian social enterprise PowerWells—an organisation that repurposes e-waste to create solar solutions. The pilot set out to demonstrate the feasibility and transformational impacts of a women-led clean energy model in which diverse Ni-Vanuatu women are the technicians, managers, and decision-makers.

Through this initiative, diverse women from the remote Lawital community in North Tanna Vanuatu have been trained to install and maintain rooftop solar systems powered by repurposed lithium-ion batteries, gaining the skills and equipment needed to provide their community with safe, reliable, and renewable energy. These systems replace kerosene, diesel, and candles—improving health, safety, economic opportunities, and resilience.

The initiative has delivered solar lighting and device-charging systems to 119 households, five community centres, and installed solar streetlights across ten public spaces. In addition to the infrastructure and to support long-term sustainability, a monthly pay-as-you-go (PAYGo) model enables households to take ownership of their systems over approximately three years. Payments are reinvested into system maintenance, technician salaries, future renewable technologies, and livelihood improvements for the community.

Transformational Impact

Through these rooftop solar-powered systems, households gained an additional four to five hours of usable light each night. That single change moved several outcomes at once.

1. **Education:** Before solar lighting arrived, no child from Lawital had progressed beyond year 10 of schooling. Since the installations, children have been able to complete homework and study after dark. School completion rates have already begun to rise.
2. **Economic empowerment:** Women use the additional hours for work such as weaving mats and baking for the market. They can also now sell goods under the streetlights at the community Nakamal at night. The trained technicians are also receiving income for system installation and maintenance. Women now hold their own savings and are directing them towards food security, household needs, school costs, and reinvestment in their businesses.
3. **Safety and protection:** Women report a decline in violence in the home, and streetlighting has reduced sexual assault and violence in public spaces, so women can now move around and gather at night.
4. **Leadership:** Community support for women's voice and participation has grown as the results of women-led delivery have become visible. The WITTT solar project coordinator has since been invited to sit on the chief's council – a traditionally male role – following the recognition of her leadership and contribution to the community.

Following the success of the pilot and requests from nearby communities for the same model, AAV and WITTT are scaling and strengthening this model. Phase II will install 1,624 solar home systems across 29 new remote communities, together with solar streetlighting, four solar-powered economic hubs in converted shipping containers equipped with sewing machines, refrigeration, food processing equipment, Wi-Fi, and shared workspace, and an e-waste recycling and collection centre in Port Vila that will move basic assembly and manufacturing closer to the communities being served.

Unlocking Australia's rooftop solar and storage for all

SolarCitizens

About Solar Citizens

Solar Citizens is an independent, community-based non-profit organisation working to protect and grow renewable energy and transport in Australia and internationally.

Vision - A world that prioritises affordable, renewable energy and clean transport, where every home, business and community can participate and benefit.

Mission - To champion people-led energy systems that reduce the cost of living and harmful emissions. We enable global leadership to accelerate a fast, fair and inclusive energy transition.

We create change by:

1. Translating complex reform into everyday impact
2. Organising people into political power
3. Building alliances that unlock scale
4. Sustaining narrative and political pressure
5. Delivering credible, system-level solutions

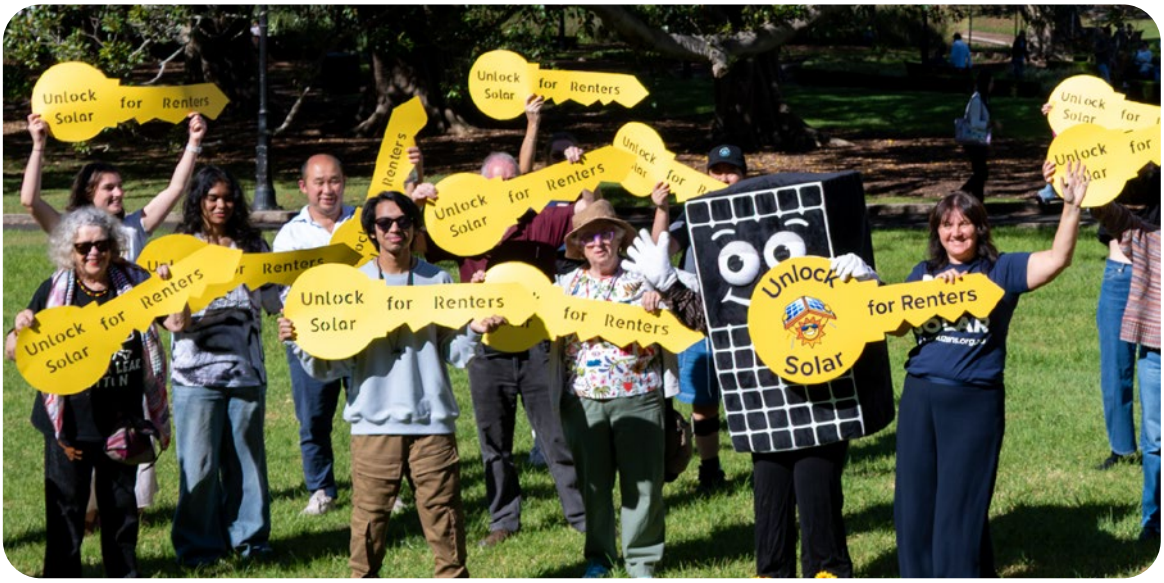


Photo: Renters and their allies gather in Sydney, Australia in 2026, calling on the national government to unlock solar opportunities for all.



Photo: Discussion panel on Unlocking Solar for Renters at a Solar Citizens forum in Western Sydney, NSW, March 2026.

Action Plan

40% of Australian homes and small businesses now have rooftop solar systems[50] (30.6 GW of capacity), generating around one-seventh of the country's electricity. Australia's federal battery rebate program began on 1 July 2025, and in the first 12 months over 460,000 household and small-business batteries were installed, a world-leading achievement.[51]

Rooftop solar is now growing fast enough to offset growth in electricity demand from the grid, while batteries are increasingly storing that abundant daytime solar and supplying it back during the evening peak, reducing reliance on coal and gas.

Small-scale renewable energy (mainly rooftop solar but including solar hot water and heat pumps) supported through Australia's Small-scale Renewable Energy Scheme (SRES) avoided an estimated 25 million tonnes of climate pollution in 2025, while record renewable generation helped cut electricity-sector emissions by another 5.6 million tonnes over the year to March 2026.[52]

The household-cost story is a major part of why uptake is accelerating

Australia's rooftop solar boom is effectively allowing millions of households to generate their own electricity for a fraction of the cost of buying it from the grid. A typical solar household can save around AU$1,000–$1,600 a year,[53] while adding a battery can unlock hundreds of dollars more by storing cheap daytime solar for use at night. New solar-and-battery households can save up to around AU$2,300 a year.

Rooftop solar systems across Australia are replacing coal and gas generation and also reducing the need for billions of dollars' worth of electricity generation from large energy companies. Home batteries take that transformation a step further, allowing households to keep and use more of the cheap electricity they generate themselves.

The economics can improve further for households with EVs, electric hot water, induction cooking and electric heating/cooling, because solar and batteries provide savings in running these appliances and displaces not only grid electricity but also petrol and gas consumption.

For example, according to data from the Electric Vehicle Council, a petrol car driving 12,000 km per year costs roughly AU$2,500 AUD in fuel. Charging an EV for that same distance costs about AU$500 AUD on standard electricity grid rates, but drops to as little as AU$200 a year if charged using household solar panels or overnight off-peak tariffs.[54]

Addressing the energy-access divide

The flipside of Australia's rooftop-solar success story is a significant energy-access divide. While more than 40% of Australian homes have rooftop solar systems installed, access is strongly shaped by whether you own your home, what kind of building you live in and whether you can afford the upfront investment. One-third of Australians rent[55] and so face structural barriers to adopting rooftop solar and batteries. Others including apartment residents and low income households also face barriers in accessing affordable solar energy.

That's why the next phase of Australia's rooftop revolution is increasingly an access question: how do we extend the savings already being captured by millions of solar households to people who can't easily put panels on their own roof and a battery in their garage.

Our Call to Action

Solar Citizens is calling on the Australian Government to double Australia's rooftop solar capacity to 54 GW by 2035, backed by battery storage. To achieve this, there are four key priorities:

1. **Unlocking Solar for Renters** – A nationally coordinated package to unlock cheaper energy for renters through accelerated depreciation for landlord upgrades, minimum energy-performance standards, legal access to plug-in solar and batteries, and a fair right for renters to request energy upgrades.
2. **Unlocking Solar for Big Roofs** – Empowering commercial and industrial buildings to host large rooftop systems that share clean power with surrounding communities.
3. **Activating Urban Renewable Energy Zones (UREZs)** – Creating local clean-energy hubs where households and businesses can generate, store, and share renewable electricity.
4. **Flexibility First** – Before proposing expensive new network capacity, electricity networks should have to properly consider whether customer-owned solar, batteries, hot water systems, electric vehicles and flexible business demand could solve the problem for less, and share the savings with rooftop solar producer-consumers.

This roadmap to double rooftop solar backed by storage will cement Australia's leadership in people-powered energy, delivering lower bills, stronger grid resilience, and emissions reduction opportunities by 2035.

Unlocking Solar for Renters

Every Australian should be able to benefit from cheap, abundant solar energy, whether they own their home or rent it. Millions of households are now generating and storing their own cheap electricity, reducing their energy bills and increasing their energy independence. But millions of renters remain locked out.

The fundamental problem is a split incentive. Landlords generally bear the upfront cost of solar, batteries and energy-efficiency improvements, while tenants receive much of the immediate benefit through lower energy bills.

Solar Citizens proposes a comprehensive national package that combines financial incentives, minimum standards, access to new renewable energy technologies and stronger renter rights.

The package has four complementary reforms. Together, these measures would give both landlords and renters practical pathways to improve rental homes and reduce energy bills.

1. Make it financially attractive for landlords to invest

Solar Citizens proposes accelerated depreciation for solar, batteries and energy-efficient appliances installed in rental properties to address the financial barrier preventing investment in rental properties.

Currently in Australia, residential solar PV systems are treated as depreciating assets over a long life span of twenty years. This reduces the immediate tax incentive for a landlord to invest in an asset whose principal financial benefit flows to their tenant through lower electricity bills.

Instead, accelerating depreciation to five years would bring forward the tax benefit and significantly improve the investment proposition for landlords.

Solar Citizens commissioned independent economic modelling[56] that demonstrated the potential for accelerated depreciation to unlock substantial private investment in rental solar while delivering significant long-term savings to renters. The modelling found that upgrades for 30% of rental homes by 2030 would see AU$27-57 billion in savings nationally for renters on their energy bills over 20 years, depending on the size of the solar system and battery inclusion. Renters would save up to AU$45,000 on electricity bills from solar with battery installations over the 20 year life of the assets and landlords would save over AU$6,000 on solar + battery installations, a 25% saving.

This is an opportunity to use relatively modest national tax incentives to leverage substantially greater private investment in Australia's rental housing stock and in renewable energy resources that reduce reliance on coal and gas power, reduce cost of living for renters and improve the quality of the asset for landlords.

2. Minimum energy-performance standards for rental homes

Financial incentives should be complemented by a nationally coordinated pathway towards minimum energy-performance standards (MEES) for rental properties.

Standards could be progressively strengthened and encompass:

- insulation and draught sealing;
- efficient heating and cooling;
- efficient hot water;
- energy-efficient appliances;
- electrification; and
- appropriate solar-readiness requirements.

Minimum standards are particularly important for renters with the least bargaining power, who may be least able to persuade a landlord to voluntarily undertake improvements. Over time, an inefficient rental home that is unnecessarily expensive to heat and cool should no longer be considered an acceptable minimum standard.

Australia's National Cabinet provides an opportunity to coordinate these standards while allowing states and territories to implement them through their residential tenancy frameworks.

We are advocating for a combination of state based nationally coordinated rollout of MEES, alongside accelerated depreciation for solar, batteries and efficient appliances for rental homes to enable landlords to meet these standards.

3. Enable renters to use plug-in solar and batteries

Plug-in solar and battery systems can allow households to generate and store some of their own electricity using small, portable systems suitable for locations such as balconies and backyards.

Unlike conventional rooftop solar, these systems can be owned by the renter and taken with them when they move.

Australia recognised the value of plug-in solar when the National Energy and Climate Ministers Council announced in September 2026 they would explore pathways for 'safe deployment' of plug-in solar[57]. Australia needs nationally consistent product, electrical and network standards to enable safe use, including appropriate inverter safety requirements, system-size limits, circuit protection and registration requirements.

Once appropriate standards are established, tenancy and strata rules should provide reasonable pathways for renters to use compliant systems. This could give renters something homeowners with rooftop solar already have: the ability to invest their own money in reducing their electricity bills.

Solar Citizens calls for standards for plug-in solar to be operational nationally by 1 July 2027.

4. Give renters a fair right to request energy upgrades

Renters should also have a nationally consistent right to request reasonable energy improvements to their home, including:

- rooftop solar;
- household batteries;
- EV charging;
- energy-efficiency improvements; and
- electrification upgrades.

Landlords should not be able to unreasonably refuse these requests. This does not mean requiring every landlord to immediately install solar or batteries whenever requested. Instead, it establishes a fair process through which renters can ask, landlords must genuinely consider the request, and governments provide financial incentives that make saying yes substantially easier.

The principle is simple: the right to request and, where appropriate, the ability to provide your own energy upgrades.

Unlocking Solar for Big Roofs

Commercial and Industrial (C&I) buildings remain an untapped rooftop solar opportunity. This includes adding rooftop solar backed by storage to manufacturing facilities, warehouses, offices and retail outlets – which typically have larger roof spaces and also consume significantly more energy than residential and small business users.

In August 2026, Australian government expanded the Small-scale Renewable Energy Scheme (SRES) threshold from 100 kW to 1 MW, allowing medium-sized businesses and commercial rooftops to access upfront solar rebates[58]. This is expected to lower the upfront installation costs by around 20 per cent. This was welcomed by businesses and renewable energy advocates as smart energy security policy.

Solar Citizens calls on the Australian government to commit to policies to unlock solar and storage on 40% of commercial & industrial buildings by 2030, and 50% by 2035. Whilst the mechanism has expanded, we need the system design, Urban Renewable Energy Zones and Flexibility First.

Activating Urban Renewable Energy Zones (UREZs)

A UREZ turns cities into engines of the renewable-energy revolution— connecting homes, big roofs, and shared batteries into an ecosystem where solar rooftops, batteries, and smart technologies work together to decarbonise urban areas, strengthen the grid, and return the benefits to communities.

Some building types like high-rise residential apartments and offices can only meet 5% of their energy needs through rooftop solar. But Commercial and Industrial (C&I) buildings such as warehouses and factories have potential to meet 500% - 1000% of their energy needs with rooftop solar.

Incentivising upsizing solar and battery systems on large urban and suburban C&I buildings will help to create more clean energy supply within the local energy network which can then be shared with other households including high-rise buildings, where the lack of roof space is a limiting factor.

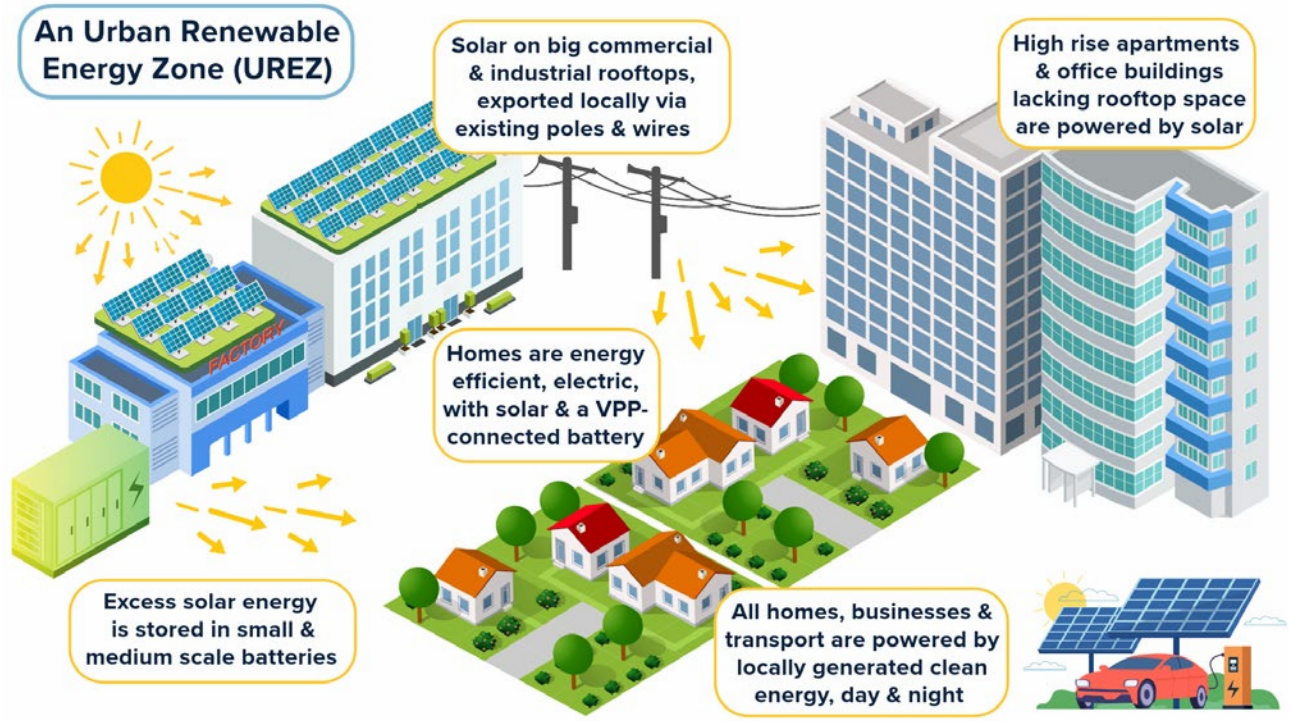
Energy ministers should create a coordinated pilot framework, initially supported through the Australian Energy Regulator's Energy Innovation Toolkit. It should clarify retail licensing, metering and settlement, billing, data and consent, and benefit-sharing while preserving consumer protections. Successful pilots should transition to enduring arrangements that support investment over asset-relevant timeframes.

Implementing Flexibility First

Australia already has millions of rooftop solar systems and more than 800,000 home batteries. Households and businesses have invested more than AU$25 billion (US$17.3 billion) of their own money in this renewable energy infrastructure. Coordinating rooftop solar backed by storage can save expensive network upgrades. What we need are rules that make better use of rooftop systems on homes and commercial properties.

Our Flexibility First principles are:

- **Check the cheaper option first.** Distribution network companies should have to show whether energy resources already sitting in homes and businesses would solve the problem for less — and publish the comparison.
- **Fix the money.** A distribution company's profit shouldn't favour building infrastructure over paying customers to provide a cheaper solution.
- **Give households a fair share of the savings.** If our batteries, solar and flexible appliances can help networks avoid expensive upgrades, households should have opportunities to be paid for providing that value.
- **Protect consumers from unnecessary costs.** The rules should reduce the risk of households paying for network capacity that turns out not to be needed.







Photos: (left) Patricia on her apartment roof in Sydney, Australia and her partner, Sharpa Rinpoche (right).

Case Study

Solar cuts Sydney renter's energy bill in half

Patricia Gianotto, Sydney renter says "I moved into an apartment in northern Sydney in 2020 and was pleasantly surprised, when I got my first electricity bill, it was surprisingly low, about AU$140 - less than half what I had paid in my previous flat in the inner west. "I wondered why we were enjoying such surprisingly low bills".

"When I looked into it I found out that this apartment block had a huge array of solar panels on the roof! "It was such a great relief and an amazing feeling to think that the landlords had made that investment which made the life of their tenants so much better and the savings to us were enormous."

Since then, Patricia and her partner have moved twice to larger apartments in the same suburb, both without solar and their bills increased back to AU$300 a quarter or more at both places.

"We do everything we possibly can to use less electricity and our energy bill will still be around AU$300 a quarter. We will never get down to that low AU$140 a quarter that we enjoyed in the middle of summer when we had solar panels."

Patricia hesitated to inquire about approaching her current landlord about installing rooftop solar, because she felt it was too much to ask - especially as he would need to take it to the Strata Committee.

But when she gathered her courage to talk to him, her landlord asked her to send him a proposal to take to the next strata meeting. Patricia supports Minimum Energy Efficiency Standards and improving tax incentives to landlords to encourage more investment.

She is keen on balcony solar and portable plug-in batteries.

"As a renter I feel like that would be a great way I could get some control over my electricity bills. My electricity bill halved when I lived in a unit with rooftop solar. It was a great relief and feeling - that landlords had made that investment to make the life of their tenants so much better and the savings to us were enormous."

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