

# RENEWABLE ENERGY & LAND USE

BARRIERS TO JUST TRANSITION IN THE GLOBAL SOUTH

FEBRUARY | 2023



*Mobilise resist transform*

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**FRIENDS OF THE EARTH INTERNATIONAL** IS THE WORLD'S LARGEST GRASSROOTS ENVIRONMENTAL FEDERATION WITH 73 NATIONAL MEMBER GROUPS AND MILLIONS OF MEMBERS AND SUPPORTERS AROUND THE WORLD. OUR VISION IS OF A PEACEFUL AND SUSTAINABLE WORLD BASED ON SOCIETIES LIVING IN HARMONY WITH NATURE. WE ENVISION A SOCIETY OF INTERDEPENDENT PEOPLE LIVING IN DIGNITY, WHOLENESS AND FULFILMENT IN WHICH EQUITY AND HUMAN AND PEOPLES' RIGHTS ARE REALISED. THIS WILL BE A SOCIETY BUILT UPON PEOPLES' SOVEREIGNTY AND PARTICIPATION. IT WILL BE FOUNDED ON SOCIAL, ECONOMIC, GENDER AND ENVIRONMENTAL JUSTICE AND BE FREE FROM ALL FORMS OF DOMINATION AND EXPLOITATION, SUCH AS NEOLIBERALISM, CORPORATE GLOBALISATION, NEO-COLONIALISM AND MILITARISM. WE BELIEVE THAT OUR CHILDREN'S FUTURE WILL BE BETTER BECAUSE OF WHAT WE DO.

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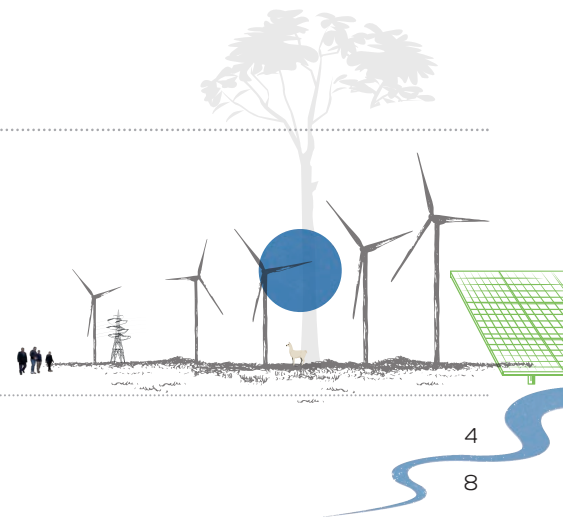
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Above: A focus group on clean energy projects in Ajjah, Palestine.  
© PENGON

Left: The Rewa Ultra Mega Solar project site in Madhya Pradesh, India.  
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# EXECUTIVE SUMMARY

Friends of the Earth International recognises the enormous scale of the climate crisis and the need for a rapid and just transition away from the harmful fossil fuel-based energy system to a renewable energy system based on energy sufficiency for all. For some people in the Global North, and for elites everywhere, this will require a reduction in energy consumption, better distribution of energy, tackling energy poverty, and greater emphasis on energy efficiency and reducing waste. In the Global South, where many households still lack access to a sufficient level of energy, this will mean a bigger focus on access for all, especially regarding power and clean cooking fuels. In the Global South renewable energy scale up will be dependent on receiving the grant-based additional climate finance that is obligatory for Global North to pay Global South countries under the UN Climate Convention.

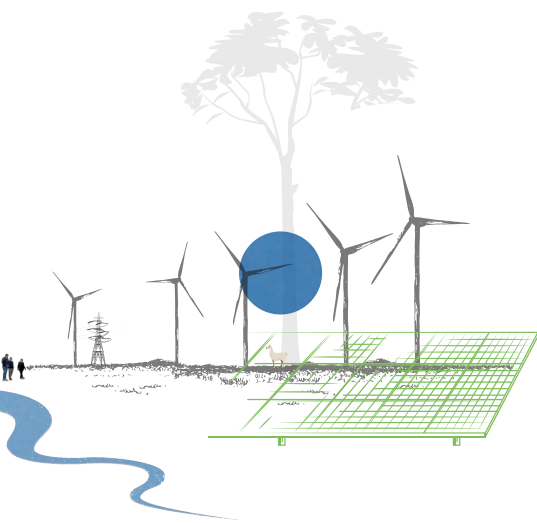
The urgency of an equitable fossil fuel phaseout means a far more rapid, but fair, scale-up of renewable energy is needed everywhere. Friends of the Earth International prioritises small-scale, socially controlled, decentralised renewable energy for the people that contributes to just and feminist societies – within the framework of energy sovereignty (Cadena et al. 2018). However, whilst recognising that a rapid increase of renewables will require larger scale infrastructure, we are aware of the sheer challenges posed by the scale of extractive resources potentially necessary to materialise the global transition to renewables.

To date, many large scale renewables have too often replicated the same patterns of the current extractivist dirty energy system which is built on fossil fuels, but also destructive large scale hydropower, nuclear and industrial biomass. Some parts of the climate movement have prioritised the urgency of tackling climate change and rolling out renewables over the rights of peoples living in the global South, in terms of land, food, water, livelihoods and energy access. This has resulted in renewables projects (including the gathering of raw materials like lithium) that have actively displaced or harmed communities, and which have provided no energy access benefits for these communities. This risks the wholesale rejection of larger scale renewable energy installations in the Global South.

Friends of the Earth International sought to gather evidence of these challenges and barriers by looking at a number of concrete case studies. Our aim is to enable learning and give recommendations on how renewables should be implemented in a way that respects peoples' rights and does not cause grave harm.

This case study report explores energy transitions in the urgency to move away from fossil fuels and scale-up renewables in four countries of the Global South: India, Palestine, Bangladesh and Argentina. It asks to what extent are the impacts and experiences associated with fossil fuel-based systems replicated in the context of renewables? And can land used for renewable energy intersect with feminist energy justice?

Firstly, *“A just transition or just a transition? The case of the Rewa Ultra Mega Solar project,”* examines the impact of a 750 Megawatt installation on land surrounding villages and communities in the Rewa district of the Indian state of Madhya Pradesh. Following this *“Growing renewable energy under occupation: socio-environmental impacts of solar energy in Palestine”* explores opportunities for increasing energy access whilst highlighting gaps in environmental impact assessment and monitoring. Thirdly, *“No space for solar: Overcoming political apathy to harness rooftop solar in Bangladesh”* highlights the need for effective leadership and policy-implementation in scaling-up renewables.







Friends of the Earth Argentina activists holding a banner at the entrance to the 3 Quebradas lithium mine. © Tierra Nativa

## BARRIERS

The case studies in this report provide empirical evidence of lived experiences, highlighting the following barriers to feminist energy transitions on the ground:

### ‘Green grabbing’ and energy colonialism

The Indian Rewa Mega Solar project exploits rural land resources for the generation of renewable energy to supply power to distant urban areas. Instead of widespread socio-economic benefits, host communities are adversely affected through loss of livelihood, inadequate compensation whilst absurdly continuing to live under conditions of severe energy scarcity.

Similarly, lithium mining in Argentina follows in the footsteps of extractivist approaches commonly associated with fossil fuel industries. It does so by replicating the role of Global South countries as energy resource providers, mining minerals for the benefit of energy transitions including a shift to electrified transport in other parts of the world. This can be described as ‘green energy colonialism’.

In both cases, power structures at local, national and regional levels facilitate extractivism of renewable energy resources supported by ‘green grabbing’ of land – the appropriation of land for environmental ends such as fighting climate change through the expansion of renewable energy (Fairhead et al. 2012; Pearce 2012).

### Lacking consideration regarding patterns of land and water use

In Argentina, lithium mining is leading to tensions and conflict regarding the use of land for mineral exploitation versus other socio-economic opportunities such as agriculture or tourism.

In the Rewa Mega Solar project, seasonal land-use patterns were overlooked in what were deemed barren areas. Coupled with unkept promises about employment opportunities, this has severely disrupted agrarian lifestyles. Differences in experiences and land use practices were also not adequately considered, resulting in the displacement of pastoralist families whose way of life has been devastated by the project.

The relationship between land for renewables and water was also highlighted in the Indian and Argentinian cases, with increased stresses on available water sources or reduced access routes.

### Lack of conservation policy, environmental impact assessment and follow-up

In Palestine, Environmental Impact Assessment Policy exists on paper but has not been acted upon in the most recent medium-large scale renewable energy developments.

Finally, Argentina offers an opportunity to explore the impacts of material supply chains needed for renewable transitions, by examining lithium extraction in the Catamarca province of the Andes region in *“Resourcing renewable transitions through ‘energy colonialism’? An exploration of Lithium mining in Fiambalá, Argentina”*. The report concludes with a summary of findings highlighting key barriers to feminist renewable energy transitions and top level recommendations for policy and practice.

The lack of follow-up and monitoring has enabled practices such as bird poisoning to take hold. Furthermore, the end of life of renewable energy infrastructure has not been adequately considered, posing environmental risks due to improper disposal of broken technical components.

In Argentina, long-standing international recognition of the ecological importance of local habitats through the Ramsar convention has not translated into environmental policy to protect wetland areas that are now being exploited. Consequently, unique habitats and water resources in this arid region are under threat.

### **Political oppression and apathy**

In Palestine, Israel's control over land severely limits opportunities for renewable energy developments and improved access to affordable and reliable electricity. Within these constraints Palestinian medium-large scale solar energy projects nonetheless utilise land for the benefit of local people, communities, and socio-economic development.

Land scarcity in Bangladesh is used as a political argument against renewables and in favour of continued and costly fossil fuel dependence, thereby playing into extractivist models and undermining just transition efforts. As such, there is a political barrier to developing more evenly distributed, environmentally-sound, and socially-owned energy systems based on renewables. Techno-centric approaches to energy access favour centralised medium, large or mega scale generation with the consequence of rising energy costs and dependence on energy imports. The implementation of urban policy to promote distributed roof-top solar has thus far been ineffective. This has resulted in a combination of wasted techno-spatial resources that lie fallow and limited participation of residents and/or awareness as to the benefits of solar installations on apartment roofs.

### **Patriarchal structures that exclude women's participation beyond household-level decision making**

In the Palestinian solar energy projects, an absence of women leading medium-large scale solar developments was noted. Their technical participation is limited to temporary engineering roles.

Persistent patriarchal structures in Bangladesh emphasise the systemic exclusion of women participating in energy systems beyond the household level. This includes intersectional differences and barriers, for example the lack of educational opportunities for women in rural areas.

### **Outdated grid infrastructure**

In Bangladesh, grid infrastructure poses a barrier to increasing both medium to large -scale centralised and distributed renewable energy. Similarly, the Israeli-owned grid limits the possibility for Palestine to increase renewable energy capacity. In one example, the licensed solar generating capacity actually slightly exceeds the available capacity of the grid itself, risking damage to the local network.

Finally, communities that host the Rewa Mega Solar project in India struggle with a hazardous distribution network that exacerbates energy scarcity, while transmission networks are able to export locally-generated energy across state boundaries.

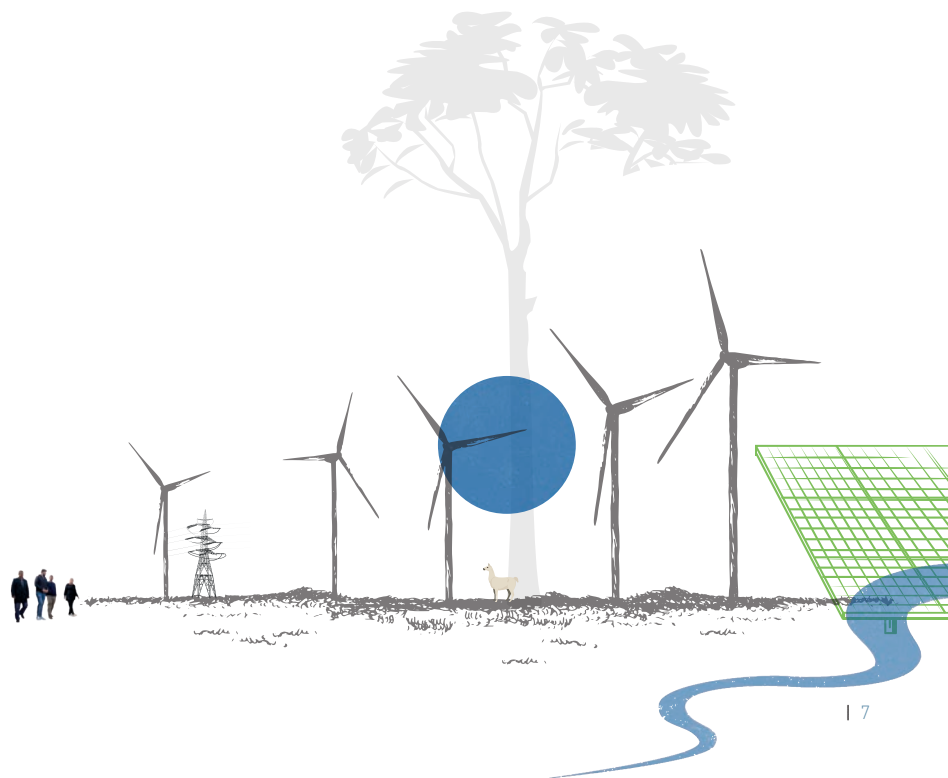


## RECOMMENDATIONS

The report makes the following key recommendations for implementing renewable energy in the Global South in a way that protects the rights of peoples, and moves away from a neo-colonial extractivist energy system:

1. Ensure that communities that host renewable energy projects significantly share in the decision-making processes that affect them as well as the benefits. The latter should include access to sufficient, affordable energy and meaningful socio-economic opportunities that support the wider community instead of creating tensions and divisions.
2. Promote women in technical and decision making roles beyond household level domestic spheres. Targeted and sustained efforts are needed including effective implementation of gender mainstreaming policies, and equitable training and leadership opportunities to ensure just transitions for all, not just 50% of society.
3. Carefully consider seasonal land (and water) use patterns of local communities, including intersectional differences related to gender and socio-cultural norms and practices. Importantly this must include usage of landless groups such as pastoralists.
4. Recognise the environmental and socio-economic costs of political apathy favouring centralised and fossil fuel-based business as usual approaches. Develop effective and contextualised policy implementation for the rapid deployment of renewables such as rooftop solar.
5. Develop national policies to protect ecological habitats recognised for their importance through the Ramsar convention and ensure capacity to independently monitor implementation of environmental impact policies.

**For a just transition to an energy future that is genuinely transformative for communities on the frontlines of renewable infrastructure installations and raw materials extraction, the lessons from these case studies and others like them must be heeded by policy makers and activists alike. Friends of the Earth International has many positive stories of the transformative impacts of renewable energy on the ground in the Global South, but they are not the only stories to be told and this report makes for a sobering reality check. To address the climate crisis with a rollout of renewables that meets the challenges of energy access in the Global South, peoples' rights must not be sacrificed for the 'greater good' and the mistakes of the existing extractive fossil fuel energy system must not be repeated.**



# PEOPLE POWER NOW! DEMANDS

Friends of the Earth International uses the following guiding principles with regard to energy sovereignty:

## WE DEMAND...

### **1. SYSTEM CHANGE! PEOPLE POWER NOW!**

System change means building alternatives to replace the current system, not simply trying to fix it. The way we manage, extract, use and distribute Earth's natural resources under the current dominant economic model has put us on a path towards ecological and social crises. We need system change - a new model of environmental, social, political, economic and gender justice - and we need to build the power of the peoples.

### **2. ENERGY AS A COMMON GOOD.**

Everyone should have the right to energy. It should be a common good and not a commodity. The sun and the wind are shared resources that should not be exploited for corporate gain. Our energy system should not be run for profit but should exist to meet the needs of the peoples.

### **3. ENERGY SUFFICIENCY FOR ALL.**

Everyone must have access to sufficient sustainable, clean, safe, affordable, reliable and appropriate energy to meet their energy requirements for a dignified life. This also means an end to energy waste, through energy efficiency and energy saving, and an end to overconsumption by corporates and elites - those who currently hold the economic, political and social power.

### **4. FINANCE FOR THE ENERGY REVOLUTION.**

Countries must make their contribution to the climate effort in line with their fair share and the principles of equity, justice, and repayment of the climate debt.

### **5. 100% RENEWABLE ENERGY FOR ALL.**

The need for a global transformation to a renewable energy system is urgent, and must go hand-in-hand with a managed but rapid phase-out of fossil fuels and extractive projects, and a total ban on any new dirty energy projects (including fossil fuels, nuclear, mega dams, industrial agrofuels and biomass, and waste-to-energy incineration).

### **6. RENEWABLE TECHNOLOGY THAT IS CLIMATE RESILIENT, LOCALLY- APPROPRIATE AND LOW-IMPACT.**

Renewable energy should be as small scale and decentralised as possible, and all communities should have access to technology, knowledge and skills. Our energy system should protect biodiversity, strengthen the land rights of communities and indigenous peoples and should not lead to exploitation of workers in the production chain.

### **7. ENERGY SOVEREIGNTY AND ENERGY DEMOCRACY.**

Energy production and use should be owned and controlled by the people, for the people. The voices of women and those who are vulnerable or marginalised should particularly be heard. Communities should have free, prior and informed consent, the right to justice and rights of redress.

### **8. A JUST TRANSITION WHICH PROTECTS THE RIGHTS OF ENERGY SECTOR WORKERS, THEIR COMMUNITIES AND THEIR LIVELIHOODS.**

Workers and communities must have control over decisions that affect their lives and livelihoods. This means that workers must have a say in the future of our energy system, and also with regards to our food system, and the management of nature and our territories.

### **9. THAT PEOPLE-CENTRED RENEWABLE ENERGY IS ALLOWED TO FLOURISH, AND THAT OBSTACLES TO PROGRESS ARE REMOVED.**

Under the right political and economic conditions, the people-led energy revolution will flourish. Favourable policies and incentives must be decided by peoples and communities, and should go hand-in-hand with an end to subsidies and incentives for dirty and harmful energy. This also means an end to false solutions, a rejection of geo-engineering and the dismantling of harmful trade agreements which hinder peoples' climate solutions.

### **10. A CLIMATE-JUST WORLD THAT IS FREE FROM PATRIARCHY AND ALL SYSTEMS OF OPPRESSION, DOMINATION AND INEQUALITY.**

There can be no climate justice without social justice. We must work for a future free from unequal power relations, where humans live in harmony with each other as well as with nature. This means a world free from injustice, discrimination, racism, sexism, classism, Islamophobia, militarism, LGBTQ-phobia and all other forms of structural and economic oppression.





PEOPLE.  
POWER.  
NOW.

**WE  
DEMAND...**

1. SYSTEM CHANGE! PEOPLE POWER NOW!
2. ENERGY AS A COMMON GOOD.
3. ENERGY SUFFICIENCY FOR ALL.
4. FINANCE FOR THE ENERGY REVOLUTION.
5. 100% RENEWABLE ENERGY FOR ALL.
6. RENEWABLE TECHNOLOGY THAT IS CLIMATE RESILIENT, LOCALLY-APPROPRIATE & LOW-IMPACT.
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**CLIMATE JUSTICE NOW!  
PEOPLE POWER NOW!**

## INTRODUCTION



The impacts of fossil-fuelled energy systems on communities observed across Friends of the Earth International Federation include: “loss of land, water and livelihoods [as well as] biodiversity loss, [and the] introduction of export-oriented economies” (Fernandes et al. 2021: 7). Those who live close to energy resource extraction and distribution infrastructure often continue to experience energy scarcity – the lack of sufficient access to reliable and affordable energy – whilst bearing the brunt of environmental degradation.

Neoliberalism and neo-colonial structures perpetuate the role of Global South countries as energy resource providers. This ‘energy colonialism’ is to the detriment of local and indigenous people, especially women who experience greater energy and climate injustices in patriarchal contexts (Fernandes et al. 2021; FoEI 2020). Furthermore, energy-related inequities and extractivism also exist within countries (Cadena et al. 2016). This includes extractivism of rural communities to benefit urban elites. Here, lands that are seen as vital for fossil fuel systems play a central role in this exploitation of nature and those people that depend on it.

Similarly, land is used for other forms of extractive energy such as mega dams and industrial biomass, which devastate communities and ecosystems. They also demonstrate that switching fossil fuels for renewable sources does not guarantee just transitions for women, communities, indigenous groups or workers.

Friends of the Earth International is calling for feminist justice approaches to energy transitions (Clifton & Bhatnagar 2013; Fernandes et al. 2021) which is based on people-centred solutions where:

- renewable energy systems are socially owned and controlled (Sanyanga Hungwe et al. 2021);
- sufficient universal energy access is provided to ensure everyone’s right to a dignified life;
- the rights of workers in the energy sector are protected;
- and energy transitions recognise the rights of indigenous people to access and control of ancestral lands, waters, and natural resources (Fernandes et al 2021, Cadena et al. 2016 & 2018).

This case study report explores energy transitions in four countries of the Global South, in the urgency to move away from fossil fuels and scale-up renewables: India, Palestine, Bangladesh and Argentina. It asks to what extent are the impacts and experiences associated with fossil fuel-based systems replicated in the context of renewables? And can land used for renewable energy intersect with feminist energy justice?

Firstly, “A just transition or just a transition? The case of the Rewa Ultra Mega Solar project,” examines the impact of a 750 Megawatt (MW) installation on land surrounding villages and communities in the Rewa district of the Indian state of Madhya Pradesh. Following this “Growing renewable energy under occupation: socio-environmental impacts of solar energy in Palestine” explores opportunities for increasing energy access whilst highlighting gaps in environmental impact assessment and monitoring. Thirdly, “No space for solar: Overcoming political apathy to harness rooftop solar in Bangladesh” highlights the need for effective leadership and policy-implementation in scaling-up renewables. Finally, Argentina offers an opportunity to explore the impacts of material supply chains needed for renewable transition, by examining lithium extraction in the Catamarca province of the Andes region in “Resourcing renewable transitions through ‘energy colonialism’? An exploration of Lithium mining in Fiambalá, Argentina”. The report concludes with a summary of findings highlighting key barriers to feminist renewable energy transitions and top level recommendations for policy and practice.

FIGURE 1 | CASE STUDY LOCATIONS



## REFERENCES

Cadena, L., Schiffer, A. and Shaw, S. (2016) *Energy: Access and Sufficiency - Enough is enough: understanding ‘energy sufficiency’ as an integral part of delivering energy access*, Friends of the Earth International.

Cadena, L, Ali, A., Bhatnagar, D., Shaw, S. (2018) *People. Power. Now. An Energy Manifesto*. Amsterdam: Friends of the Earth International.

Clifton, S.-J. & Bhatnagar, D. (2013) *Good Energy Bad Energy? Transforming our energy system for*

*people and the planet*. Amsterdam: Friends of the Earth International.

Fernandes, M., Allidridge, C., Bhatnagar, D., Geuskens, I. and Walsh, M. (2021) *If it’s not feminist it’s not just*. Amsterdam: Friends of the Earth International.

Friends of the Earth International (2020) *Principles for a just recovery: based on environmental, social, gender and economic justice*. Amsterdam: Friends of the Earth International.

Sanyanga Hungwe, R.A., Cossar Gilbert, S., Shaw, S., Bhatnagar, D., Mendes, E., Adam, F., Dodzi Kpondzo, K., Mariere, U.-J. M., Lemos, L., Yesutanbul, Y. (2021) *A Just Recovery Renewable Energy Plan For Africa*. Pietermaritzburg: Friends of the Earth Africa.



# A JUST TRANSITION OR JUST A TRANSITION? THE CASE OF THE REWA ULTRA MEGA SOLAR PROJECT, INDIA

# 02



Animals now have to take the dangerous road around the mega solar project to reach forested areas. © Friends of the Earth India

## 2.1 MEGA SOLAR FOR MEGA ENERGY NEEDS

With the world's second largest population, India has huge energy needs. While it has significant carbon emissions, at 2.4 tCO<sub>2</sub>e, India's per capita greenhouse gas emissions were far below the world average of 6.3 tCO<sub>2</sub>e in 2020 (UNEP 2022). At the United Nations climate change conference in 2021 (COP 26) the national government made a series of pledges for the goal of achieving 'net-zero' by 2070. Steps leading towards this include the following 2030 sub-goals (Dhyani et al. 2023):

- Increasing India's non-fossil fuel generating capacity to 500 GW;
- 50% of energy is covered by renewables;
- A 1 billion tonne carbon emissions reduction;
- Reduction of carbon intensity by 45% compared with 2005 levels.

These pledges build on a drastic increase in the share of renewables from less than 10 GW in 2010 to over 160 GW and approximately 40% of installed electricity generating capacity today (CII 2022; Invest India 2023). Mega scale solar farms, described here as installations of more than 500 MW, play an increasingly important role in expanding the country's renewable generating capacity. However, these also take up considerable areas of land which in turn has socio-economic, cultural and environmental implications. The following explores these dynamics through closer analysis of the Rewa Ultra Mega Solar project, a 750 MW solar installation located in the Rewa district of the Indian state of Madhya Pradesh.

The Rewa Ultra Mega Solar Project started producing electricity in 2018 and became fully operational in 2020. Today Rewa Ultra Mega Solar Limited (RUMSL)<sup>1</sup> sells power to the Madhya Pradesh Power Management Company Limited and Delhi Metro Rail Corporation in accordance with a 25-year Power Purchase Agreement.

<sup>1</sup> RUMSL was formed in 2015 and is a Joint Venture Company of Madhya Pradesh Urja Vikas Nigam Limited, and Solar Energy Corporation of India. RUMSL has been designated as Solar Power Park Developer by the Ministry of New and Renewable Energy to develop large scale solar power plants in the state of Madhya Pradesh.

As an example of a Public-Private Partnership, it is the first project in India to receive funding from the World Bank's Clean Technology fund and often highlighted for not requiring 'viability gap funding' – that is state grants or subsidies to ensure a project is financially bankable (Makang et al. 2019). However, in addition to finance, securing land is vital for a project this size and the Government of Madhya Pradesh was instrumental in identifying a continuous stretch of land for the project in a timely manner. The area identified had good levels of solar radiation, was located close to a network of state-run transmission utilities and was largely seen as barren and unused including a former Army Shooting Range. Furthermore, approximately 80% of it was state owned, resulting in a relatively small amount to be acquired from private landowners.

## 2.2 MAKING ROOM FOR MEGA SCALE SOLAR

The Rewa Ultra Mega Solar project is located in close proximity to five villages: Badwar, Barsaita, Barsaita Dosh, Ramnagarpahad and Itarpahad, with some entirely surrounded by the solar installation (Fig 2.1).

In June and July 2022, Friends of the Earth India carried out extensive interviews with people in nearby villages including women and women leaders as well as journalists and engineers working on the project site.

### Disrupting agricultural livelihoods

Prior to the mega solar project, the villagers' livelihoods depended on the barren and rocky land which they used for agricultural purposes. It was used to grow wheat, rice, green gram, peanuts and cucumbers. In fact, locals would only migrate to the villages during the hottest months of the summer. The solar project has adversely disrupted this agrarian lifestyle and locals have left the so-called pathrili zameen (stony and rocky land) instead becoming dependent on markets for sustenance. In the words of a villager from Barsaita Dosh:

*“The government and the solar park developers overlooked the land patterns and communities’ connection and dependence on the land while acquiring it. Even when the army firing range existed, the defence personnel would halt their practice and training sessions during the crop and harvest season. All that is gone now.”*

One of the land use patterns that was not considered relates to routes through terrain to access farmland. The distance created by the solar power project has forced villagers to restrict or give up land use practices. Furthermore, an estimated 500 acres of agricultural land have simply been encapsulated by the solar infrastructure (Fig 2.2). A schoolteacher remarked:

*“I do not know where else to go. My land has been trapped, and I have tried all avenues to get a resolution, but none of the officials seem to be empathetic to my plight.”*

FIGURE 2.1 | THE VILLAGE OF BARSAITA IS SURROUNDED BY SOLAR GENERATION



© Google Maps



FIGURE 2.2 | PATCHES OF LAND TRAPPED AS ISLANDS IN THE SOLAR PARK



For some, the lands now taken up by the solar power plant were the only means of survival and without it they have been forced into exploitative conditions. One 80-year-old woman from Badwar recounts:

*“I have lost 8 acres to the project and am now forced to work on other farms to feed myself and my family, but without any monetary benefits in the end. I am given a small portion of the agricultural produce for sustenance.”*

The villagers are also increasingly concerned about access to drinking water. In Badwar, the solar power plant has encroached on a pond which villagers relied on particularly during seasonal water scarcity. This is no longer accessible, increasing water scarcity for domestic consumption and to sustain livestock.

Some landowners refused to give up their lands, but later on agreed to doing so, provided they were adequately compensated. Similarly, members of the Panchayat (local council), including several women, were reluctant but felt under pressure to conform, highlighting power relations between local and state administration:

*“We were personally not ready to give land for this project but had to follow the instructions from the District Collector and other authorities, who also told us to set an example for others to follow. We had not imagined that the project would be so big but have now realised how regretful the decision to part with our land was,” said one local council member.*

### Impacts on landless pastoralists

The region is home to the pastoralist Paal and Yadav communities who, despite having lived here for generations, do not own any land. The approximately 100 families across the five affected villages traditionally depend on the land to care for large numbers of livestock including cows, goats, sheep and buffalo. They spend most of the year on pahari (rocky and hilly terrain) land due to insufficient space in their village houses. However, the solar project has drastically undermined their way of life. As one local pastoralist explains:

*“Now there is neither space left, nor forest ... we had to leave all the livestock in the forest while undergoing displacement ourselves. Now villagers have to give more attention to their farms because many livestock that are roaming free encroach on their farms and destroy the crops. This has become a major issue for farmers now.”*

Prior to the solar project, pastoralists were able to contribute to the local community by producing milk and taking care of the villages’ animals:

*“The Yadav families were taking care of our livestock... All that has changed now, with livestock having either been sold or left [on] their own; the dairy industry in the village has suffered irreversibly; and we are left with no other option but to rely on the market, which is not only an expensive affair, but even time consuming due to distances from these villages.”*

These pastoralist communities have been forced to abandon their way of life, struggling to find employment instead. Some are forced to take out loans to support their daily lives and the financial stress of these families has impacted their children's education.

Indian laws including the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 and the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 recognise the importance of grasslands for pastoral communities. However, the Government of Madhya Pradesh failed to adequately consider the rights and livelihoods of landless pastoralist families who neither received financial compensation, nor were given sufficient time to deal with large numbers of cattle. While they were allocated some alternative land to make space for the solar project, the ownership is disputed by host communities. At the time of writing, they are still waiting for access to alternative land to support their livelihoods.

The upheaval of pastoralists' way of life is also forcing their children, especially girls to drop out of school: "The incidence of dropouts among girl students is quite high" observes a newly appointed village council member. It indicates the far-reaching impacts on pastoralists including future generations.

### From economic hopes to economic displacement and resource scarcity

RUMSL had promised that it would support the development of the affected villages with its Corporate Social Responsibility funds. However, these funds are being diverted for the urban development of Rewa city, instead of giving priority to the affected villages.

Despite assurances from state officials that these villages will receive access to reliable electricity, locals continue to live in energy scarcity often without power for up to 18 hours a day. Moreover, existing infrastructure is inadequate and dangerous. Hazards include live wires (Fig 2.3) and old transformers catching fire.

In 2016 a booklet highlighted the advantages of the solar plant which included promises of 500 permanent and 2000 indirect or contractual jobs. As a man from Badwar explains,

*"We thought the project will give us jobs, but the project is giving jobs to outsiders. And those who are doing the jobs are not even well paid. There was even a week-long protest held earlier in 2022, when workers, and contract labourers protested on the issue of pending wages, and timely payment. At least they started receiving their wages on time, even if for inflation-adjustment, the wages were not hiked."*

FIGURE 2.3 | DANGEROUS LIVE WIRES POSING A RISK TO PEOPLE AND LIVESTOCK





According to the Chief Editor of a leading Hindi-language newspaper in the state, technical roles were promised but even the few men who received training were not guaranteed employment:

*“The promises of employment have been largely overlooked. The technical literacy, though low in the region, was promised to be reversed with people from the villages receiving technical education at the polytechnic. A handful of men were selected and sent to the technical institute in Rewa to upgrade their skills, who upon returning found no employment opportunities.”*

The words of a schoolteacher sum up the experience shared by those that have been let down by the solar plant:

*“The Project has neither given us any power, nor any source of employment. People are forced to migrate elsewhere in search of jobs. The situation is alarming here.”*

This illustrates that expectations and promises of socio-economic development have instead been replaced by loss of livelihood forcing some to migrate and abandon their homes.

## 2.3 CONCLUSION

The insights presented above give voice to people in the communities located closest to the Rewa Mega Solar project. Instead of being primary beneficiaries of the power plant, many have suffered and continue to suffer. Their experiences include irreversible disruption to agricultural livelihoods which depended on distinct and seasonal land-use practices. Furthermore, the ‘timely manner’ in which the project was implemented did not recognise or respond to the needs of pastoralist families who have been left without the foundation for their way of life. It has ramifications for future generations, including pastoralists’ daughters no longer being able to access education. Finally, promises of meaningful economic opportunities and infrastructural development have largely fallen flat. Absurdly, this has led to energy scarcity for people surrounded by one of the largest photovoltaic solar power plants in the world. When reflecting on these lived experiences it becomes clear that the Rewa Mega Ultra Solar project has forgotten its host communities.



Above: A tangle of electricity wires in Madhya Pradesh, India.

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Left: A field of solar panels in the Rewa Ultra Mega Solar project.

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## REFERENCES

- CII (2022). India@2030: A Roadmap for AatmaNirbhar Bharat in Renewable Energy. *Confederation of Indian Industry*, 7 July [Online blog]. Available from: <https://www.ciiblog.in/india2030-a-roadmap-for-aatmanirbhar-bharat-in-renewable-energy/>. [Accessed 8 February 2023].
- Dhyani, S., Santhanam, H., Dasgupta, R., Bhaskar, D., Murthy, I. K., and Singh, K. (2023). Exploring synergies between India's climate change and land degradation targets: Lessons from the Glasgow Climate COP. *Land Degradation & Development*, 34 (1), 196–206. <https://doi.org/10.1002/ldr.4452>

Invest India (2023) *Creating a sustainable world* [Online]. New Delhi: Invest India. Available from: <https://www.investindia.gov.in/sector/renewable-energy> [Accessed 7 February 2023].

Makang, T., Nefer, M. and Dobrotkova, Z. (2019). *The Role of the Public Sector in Mobilizing Commercial Finance for Grid-Connected Solar Projects: Lessons Learned and Case Studies*. Washington: World Bank.

UNEP Environment Programme (2022). Emissions Gap Report 2022: *The Closing Window — Climate crisis calls for rapid transformation of societies*. Nairobi: United Nations Environment Programme. Available from: <https://www.unep.org/emissions-gap-report-2022> [Accessed 8 February 2023].

# GROWING RENEWABLE ENERGY UNDER OCCUPATION: SOCIO-ENVIRONMENTAL IMPACTS OF SOLAR ENERGY IN PALESTINE

# 03



Members of the Ajjah municipality with their clean energy project.  
© PENGON

## 3.1 ELECTRICITY SCARCITY IN PALESTINE

Persistent energy scarcity in the Palestinian territories of Gaza and the West Bank is a result of the wider political context in which Israel confiscates and controls Palestinian land, owns grid infrastructure, and exports electricity to Palestine.

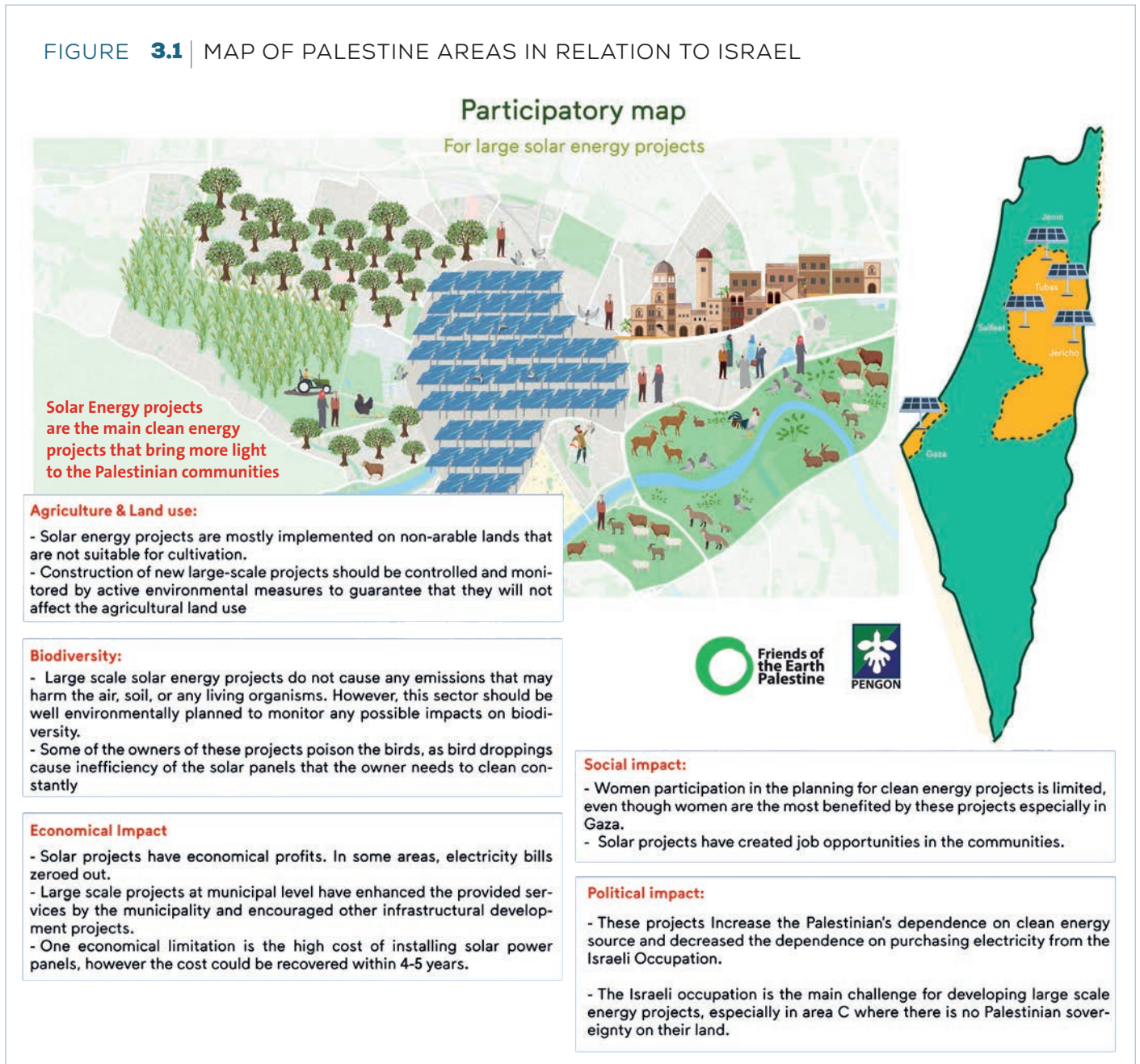
Over 90% of electricity is imported from the Israel Electric Corporation (Khaldi et al. 2022).

In fact, “total energy consumption in the occupied Palestinian territory is the lowest in the region [while] electricity prices remain the highest” (Hughes et al. 2022:11). This costly yet scarce electricity comes at a socio-economic cost.

Fortunately, Palestine also benefits from one of the highest levels of solar radiation in the Middle East and North Africa region, with a daily average of about 5.4 kWh/m<sup>2</sup> (Hamed & Peric 2020). The implementation of solar energy plants therefore offers an opportunity to reduce dependence on costly energy imports and improve reliability of energy access. Friends of the Earth Palestine (PENGON) has worked with communities, especially women, to install small-scale renewable energy which has proved transformative for local households, schools and farms (PENGON 2019). However, currently, solar photovoltaics contribute only 3% to the overall electricity supply in Palestine (Esroy et al. 2022).



FIGURE 3.1 | MAP OF PALESTINE AREAS IN RELATION TO ISRAEL



Potential for medium and large scale renewables, including solar photovoltaics projects, mainly depends on access to land in the West Bank (Khaldi & Sunikka-Blank 2020) which is divided into Areas<sup>2</sup> A, B and C (Fig 3.1). In Areas A and B, where most Palestinians reside, limited land is available for solar projects. At the same time Area C, which has the largest potential to develop solar energy, is restricted through Israeli control (Table 3.1).

Despite the political context, renewable energy projects are encouraged by Palestinian laws and regulations, especially the Decree Law related to renewable energy and energy efficiency issued in 2015. Article 2 states that the objective of the law is to encourage utilisation of renewable energy sources and their applications in increasing the contribution to the total energy balance and achieve secure energy provision (Official Gazette Bureau 2015). More recently, the Palestinian Energy and Natural Resources Authority (PENRA) announced a target of 500 MW renewable generating capacity by 2030 (Khaldi & Sunikka-Blank 2020).

<sup>2</sup> In the 1990s the Oslo Accords divided the West Bank into Areas A, B and C.



TABLE 3.1 | ESTIMATED SOLAR POTENTIAL AND LAND LIMITATIONS IN THE WEST BANK

WEST BANK AREAS	RENEWABLE POTENTIAL	RESTRICTIONS & LIMITATIONS
Area A	103 MW	Limited available land not used by inhabitants
Area B	103 MW	Shared security control between Palestinian Authority and Israel
Area C	3,374 MW	Area under full control of Israeli government

SOURCE: ERSOY ET AL. 2022.

### 3.2 THE RISE OF SOLAR

Since the establishment of the Decree Law mentioned above, there has been rapid increase in the capacity and number of solar energy projects in the West Bank. According to PENRA the operational capacity of solar energy projects is 118,958 MW, with an additional 83,839 MW contracted projects currently under development (Esroy et al. 2022). Increasingly this includes medium (20 kW-1 MW) and large scale (1-499 MW) projects. Commercial roofs (e.g. factory or farm buildings) and non-arable land are typically used for these projects.

The remainder of this case study explores some of the socio-economic, technical and environmental implications that arise from land use for solar energy in the Palestinian West Bank. This is based on a series of randomised interviews carried out by PENGON with individuals living close to medium-large scale solar energy projects in the West Bank as well as stakeholder meetings with representatives from bodies such as the the Energy and Natural Resources Authority, the Environmental Quality Authority, and the Palestinian Electricity Regulatory Council.



Solar panels on previously unused land now supply clean energy to Ajjah, Palestine. © PENGON

#### Reducing energy cost and promoting socio-economic activities

Drastic cost-savings have been reported thanks to solar electricity. Five years after installing solar energy systems, the annual electricity bill for one company in the city of Tubas reduced by 70%. Another business described the cost benefits of solar power:

*“[we] installed [a] solar energy unit [to] help us to reduce expenses and save on the monthly electricity bill... Five years after installing [the] solar energy system, the electricity bill for our company reduced from 30,000 [US\$ 8,600] to 5,000 shekels [US\$ 1,400].”*

Similarly, the municipality of Ajjah, located in the northern West Bank, has three solar projects with a combined generating capacity of 1.5 MW. As a result, electricity costs are reduced to approximately a quarter compared with power imported from Israel. In addition to these substantial cost savings, the village also generates income through the sale of electricity from these projects which it is able to re-invest for the benefit of its residents including for more solar energy.

There are agreements and collaborations between the municipality and private companies to develop additional solar installations, which will be fully municipally owned. With the additional profit the municipality also plans to maintain road and water networks, support the construction of schools, parks, and a medical centre for emergency healthcare provision.

In turn, this is creating direct and indirect employment opportunities including as guards for the solar energy projects as well as jobs in the new kindergarten.

However, the gender dimensions of technical and decision making roles in developing medium to large scale solar energy projects requires more targeted efforts. The research suggests women’s involvement in solar energy projects is relatively low with no women leading medium to large scale developments. Technical opportunities appear to be limited to temporary inputs of women engineers.

FIGURE 3.2 | GRID CONNECTED SOLAR PROJECT IN TUBAS



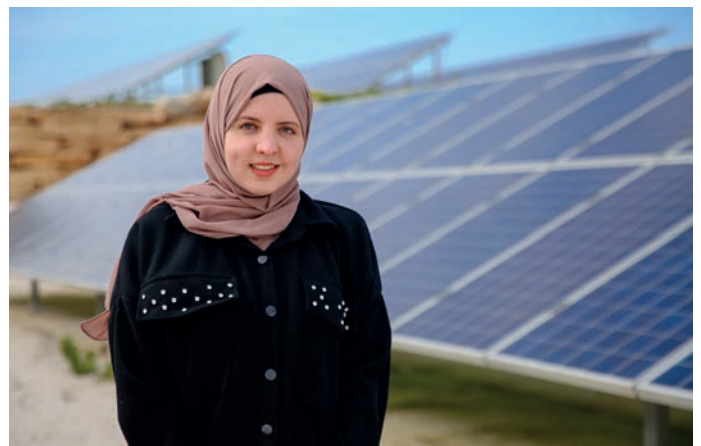
### Limited grid capacity

The town of Tubas is arguably another solar power success able to meet about 50% of its current needs from approximately 20 small (<20 kW) and medium size projects financed by a mixture of public and private investors (Fig 3.2). However, according to the Tubas Electricity Distribution Company: “the capacity of solar systems in Tubas is slightly above the capacity of [the] grid network.” Without a grid upgrade, further expansion of solar installations may damage the network.

This is just one example to demonstrate that Israel’s grid poses a major barrier to developing solar energy in Palestine. Wider constraints are documented by Khalid et al. 2022 who argue that the inherent weakness of the grid as well as lack of accessible information pose technical constraints as well as barriers in terms of planning and attracting investment for solar energy.

The Palestine Economic Policy Research Institute calls for the establishment of a fund to improve the electricity grid, including the construction of transmission lines enabling more renewable projects to be connected (Khaldi et al. 2022).

Community members from Ajjah working with their clean energy project.  
© PENGON



### Urgency to improve access versus environmental impact

The main drivers for solar energy are to improve the socio-economic situation of people in Palestine and reduce costly dependence on electricity purchased from Israel. Nonetheless, impacts on the environment from solar developments should be considered. According to the Palestine Environmental Impact Assessment (EIA) Policy, renewable energy projects are classified as ‘Class B Category

2’ which means they may have a possible medium environmental impact and thus require a preliminary impact assessment during the planning stage (Table 3.2).

However, only two of the main solar projects highlighted in Table 3.3 below have carried out a preliminary environmental assessment. This suggests tensions between the urgency to deliver affordable energy access and ensuring environmental safeguards.

**TABLE 3.2** | INFRASTRUCTURE PROJECT CLASSIFICATION ACCORDING TO THE PALESTINIAN EIA POLICY

CLASS	LEVEL OF IMPACT	REQUIREMENTS
Class (A)	potential limited impact on the environment	Must adhere to technical, health and environmental regulations and requirements that were taken into account during city master planning
Class (B) Category 1	potential medium impact on the environment	Technical, health and environmental regulations and requirements prepared for these activities must be adhered to during implementation and operation
Class (B) Category 2	potential medium impact on the environment	Preparation of a specific environmental impact assessment study (preliminary environmental assessment study) for the project in accordance with environmental impact assessment policies; adherence to the technical and health regulations and requirements prepared for these activities and taking some precautions and environmental considerations during implementation and operation.
Class (C)	significant potential impact on the environment	Prepare a “comprehensive environmental assessment study”; Propose solutions to avoid or mitigate environmental impacts during site selection, design, implementation and operation; Assessment must be prepared by one of the consulting offices approved by the Authority, or one of the nationally accredited research centres or university research centres

SOURCE: EIA POLICY.

**TABLE 3.3** | SUMMARY OF MAIN MEDIUM-LARGE SCALE SOLAR ENERGY PROJECTS IN THE WEST BANK

SIZE	DESCRIPTION	STATUS	PRELIMINARY EIA
1.5 MW (medium)	Dahriyeh – Hebron Municipality	Operational	No
7.5 MW (medium)	Nueimeh – Jericho Municipality	Operational	No
200 MW (large)	total on completion	Estimated 2026	
8 MW (medium)	Nur Tubas – Tubas Municipality	Operational	No
5 MW (medium)	Jaffa Project – Tubas Municipality	Operational	No
3 MW (medium)	Maslamani Project – Tubas Municipality	Operational	No
4 MW (medium)	Farmers Project – Tubas Municipality	Operational	No
250 kW (medium)	Renewable Energy for Life Project – Tubas Municipality	Operational	Yes
2 MW (medium)	Joint Water Service Council Project Tayaseer wastewater treatment plant – Tubas Municipality	Under construction	Yes
1 MW (medium)	Atouf project	Planned	Conducted but not implemented

SOURCE: PENGON 2022.



With a growing number of installations and increase in size, the potential risks to biodiversity associated with medium-large scale solar projects needs to be better understood. As one participant commented, “no one from [the] Environment Quality Authority follows up after the panels are installed,” highlighting a lack of environmental monitoring post implementation of solar projects.

Several residents also reported witnessing intentional poisoning of birds, a practice used to reduce the need for cleaning panels: “We saw big number of dead birds.”

Furthermore, some highlighted waste management as a concern including battery waste where “such substances do not dissolve in soil.” Similarly, one local farmer commented that:

*“it is impossible to recycle them, hence, these batteries and panels become poisonous substances that kill the soil and deteriorate the environment and its natural function of cultivation.”*

Solar panels themselves have an estimated 25 year lifespan, however, “sometimes the solar panels get broken due to bullets from the Israeli Army.”

Here, the EIA has regulatory responsibilities and powers to coordinate monitoring of environmental impacts through planning, implementation and end of life to ensure that solar projects are sustainable and consider the lifecycle of different components.

### 3.3 CONCLUSION

Within the Israel-Palestine context, energy infrastructure including technical constraints are a tool for controlling Palestinian lands through high energy costs and energy scarcity. Mechanisms include land restrictions on renewable energy projects as well as constraints of outdated grid networks. However, as illustrated by examples such as Ajjah municipality, medium-large scale solar energy developments also offer opportunities for community-led socio-economic development. This includes direct employment as well as projects that benefit the wider community improving non-energy infrastructure and services. More targeted support will benefit women to take on leadership roles in these energy developments. With a growing number of medium-large scale solar projects in the West Bank, more research is needed to understand, monitor and address environmental impacts building on the challenges highlighted above.

Solar panels on previously unused land supply clean energy to Ajjah, Palestine.  
© PENGON



## REFERENCES

Esroy, S.R., Terrapon-Pfaff, J. and Brik, I. (2022) *Sustainable Transformation of Palestine's Energy System*. Jerusalem: Friedrich-Ebert Stiftung.

Hamed, T.A. and Peric, K. (2020) The role of renewable energy resources in alleviating energy poverty in Palestine, *Renewable Energy Focus*, 35, 97-107. <https://doi.org/10.1016/j.ref.2020.09.006>.

Hughes, S., Velednitsky, S. and Arden, A. (2022) *Greenwashing in Palestine/Israel: Settler colonialism and environmental injustice in the age of climate catastrophe*, *Environment And Planning E: Nature And Space*, 2514-8486 <https://doi.org/10.1177/25148486211069898>

Khalidi, Y., Hinn, H., and Taweel, R. (2022) *The gradual sustainable energy transition in Palestine: An enabling environment to attract local and international investment*. Ramallah: Palestine Economic

Policy Research Institute. Available from: <https://mas.ps/en/publications/6944.html> [Accessed 22 January 2023].

Khalidi, Y.M., & Sunikka-Blank, M. (2020) Governing renewable energy transition in con-flict contexts: Investigating the institutional context in Palestine. *Energy Transitions*, 4(1), 69–90. <https://doi.org/10.1007/s41825-020-00024-z>

Official Gazette Bureau (2015) *Decree Law No. 14 of 2015 AD 2.6 on renewable energy and energy efficiency*. Available from: <https://www.lab.pna.ps/ar/Category/20/%D8%A7%D9%84%D8%AC%D8%B1%D9%8A%D8%AF%D8%A9-%D8%A7%D9%84%D8%B1%D8%B3%D9%85%D9%8A%D8%A9?page=7#close> [Accessed 2 February 2023].

PENGON (2019) *People Power in Action: Women leading Palestine's energy transformation* [Online video], 26 August. Available from: [https://www.youtube.com/watch?v=fp-v\\_SJSw8I](https://www.youtube.com/watch?v=fp-v_SJSw8I) [Accessed 8 February 2023].

# NO SPACE FOR SOLAR: OVERCOMING POLITICAL APATHY TO HARNESS ROOFTOP SOLAR IN BANGLADESH

# 04



A community-led solar project in Bangladesh.  
© Luka Tomac

## 4.1 IN FAVOUR OF FOSSIL FUEL DEPENDENCE

In March 2022 the Prime Minister of Bangladesh announced that the country had finally achieved 100% electrification with the inauguration of the new 1,320 MW Payra Thermal Coal Fired Power Plant (Zahid ed. 2022). However, in the second half of 2022 load shedding<sup>3</sup> returned to Bangladesh, exacerbated by volatile global fuel prices. A nationwide blackout showcased how grid improvements had been an afterthought to the rapid increase of primarily coal and gas based generating capacity. The subsequent decision to increase energy prices, coupled with controversy surrounding inflated government contracts to import fossil fuel energy have led to the power sector coming under the spotlight (Shih et al, 2022).

Currently, only 3.69% of the country's generating capacity is derived from renewable sources resulting in costly dependence on imported fossil fuels (SREDA 2023). Bangladesh, a nation of 165 million people, is one of the most densely populated countries in the world and subsequently suffers from chronic land scarcity. The limited availability of land is used as a political argument against medium to large scale renewables, instead favouring coal and other fossil fuel developments. The government has gone as far as stating that the energy transition will have to wait until technology is invented to reduce the land pressures of solar power (Islam 2021.) Adapting a techno-centric approach, it acknowledges the need for research into floating solar on the vast water bodies that make up the Bengal delta and explore rooftop solar options, especially in the dense capital of Dhaka (Islam 2021). In fact, Bangladesh has deployed over six million solar home systems over the past several decades, especially in rural areas.

<sup>3</sup> Load shedding refers to rolling blackouts between different parts of a network to alleviate pressure caused by insufficient overall generating capacity.



Furthermore, the Sustainable Renewable Energy Development Authority previously commissioned a roadmap outlining a pathway to achieving 40% of energy (approx. 40 GW) from solar photovoltaics by 2041 (Chowdhury 2020). It warned that a business-as-usual model would only create 8 GW of clean energy capacity (Chowdhury 2020). Yet several years later, the roadmap has neither been finalised nor progressed.

## 4.2 SOCIO-POLITICAL BARRIERS TO SCALING UP RENEWABLES

To better understand the barriers to scaling-up renewables and opportunities for rooftop solar, Bangladesh Environmental Lawyers Association (BELA-Friends of the Earth Bangladesh) undertook 45 semi-structured interviews with a cross-section of rural and urban householders. Supported by observations, these explored ordinary people's perceptions of renewable energy, rooftop solar, and energy access more broadly. The majority of those interviewed either had solar panels on the roofs of their homes and apartment buildings or used modular products such as solar powered lights. With the increasing cost of grid electricity, over half of the respondents said they are interested in investing more on solar panels.

### Solar energy improving access and reliability

Homeowners based in rural areas discussed having installed solar energy before any form of grid electricity arrived. A member of an indigenous group in the Modhupur hills of the Tangail district talked about how he has been using solar in the absence of grid electricity:

*"I got the national grid connection in 2021 but have been using solar energy for 10 years. I believe it reduces my electricity bills too."*

Another interviewee from the southern Barishal division talked about how he had obtained a free solar home system through the local *upazila* (administrative subdivision of the Barishal district). However, as this was not a formalised support scheme, most people were unable to benefit from similar support.

Interviewees also spoke of the benefits of solar energy as backup during power outages and load shedding. One woman commented on how solar energy enabled her to continue studying, while a social worker observed that: *"When the electricity goes off then we are using solar energy for education and other activities."*

Similarly, an indigenous woman suggested that: *"in times of natural disaster there are issues with electricity, but not with solar energy."* Another homeowner was pleased with his decision to integrate solar energy into household usage as it meant he no longer had to use kerosene lamps, which are both expensive and harmful.

Others spoke of substantial cost savings with one respondent commenting: *"Due to use of solar energy [I] save [up to] 20% electricity,"* and another claiming: *"I have accounted [for] 10-15% savings on electricity after the use of solar energy."*

However, all interviewees said that the current share of renewable energy in Bangladesh's total energy supply was too low and should be increased. About half believed that national targets for renewable energy would not be achieved. A lack of trust in government emerged as a theme throughout the interviews and highlighted tensions between rhetoric and government policies and actions:

*"The government is not committed to it [renewable energy] because if they were then all the governmental high storied buildings would have installed solar panels by now," said one research officer.*

Similarly, a student claimed *"the Government of Bangladesh is not trustworthy"*. She said it would be better for companies with the necessary expertise to step in, a sentiment that was supported by others:

*"Development companies will be more careful and sincere with implementation of solar as they have to provide better services and products to avoid reputational loss." - self-employed rural woman.*

Several respondents called for tax exemptions for households to incentivise solar: *"If [the] government will give tax exemption on solar energy for every house owner then we will willingly establish this equipment for further benefit."* Furthermore, a local businessman claimed that *"Due to government-imposed vat and tax on solar equipment, the price has risen up."*

In addition to the lack of financial incentives, limited awareness in the general population was raised as a barrier to scaling-up rooftop solar. One respondent suggested that a perceived *"unwillingness to adopt"* renewable energy was due to the *"government's lack of proper initiative to make it accessible among common people and also due to the lack of awareness"* in the general population.

Surprisingly, technical barriers were only raised by one respondent, a woman working in the energy sector who suggested the current grid is not equipped to handle the scaling-up of renewables and greater investment is needed in energy storage.

## Barriers to scaling up urban roof-top solar

The Dhaka Development Authority (RAJUK)<sup>4</sup> has mandated that all new buildings should have solar panels. Subsequently, these have become a ubiquitous sight on high-rise apartment buildings in the city and provide lighting and security for common areas.

While the vast majority of householders interviewed were in favour of this urban rooftop policy, less than half agreed that its implementation had been successful. One respondent commented that *“RAJUK policy is appreciated but quality implementation is yet to be ensured.”*

Another participant claimed that because RAJUK did not provide any financial support for its implementation the policy lacked public buy-in. Others spoke of the bureaucratic barriers to having rooftop solar connected to the grid and difficulties in obtaining relevant information from utility companies:

*“After the construction of the new building in the city corporation area, it’s not possible to get access to PDB’s [Power Development Board] electricity connection without setting up a solar panel.” - local business man*

Observations suggest many roof-top solar installations are in fact not even connected to the grid, ticking the RAJUK policy box but actually forming a wasted opportunity for renewable energy generation. Furthermore, interviewees in urban apartment buildings could often not provide any information about the utilisation of solar panels on the apartment buildings where they live:

*“I’m not really sure what the solar panels on my building are used for – although I assume it is for lighting the common areas and roof,” said one Dhaka resident.*

Another resident suggested that the RAJUK policy requires a public awareness campaign, commenting:

*“It will be successful only if general people are aware of the proper utilisation, usages, usefulness, advantages, necessities of the policy. Otherwise, it won’t be successful.”*

The responses highlight that more work is needed to ensure that the policy to promote urban rooftop solar effectively translates into increased solar energy generation and benefits to urban residents.

## Women’s participation in household energy decision making

According to the constitution (1972) of Bangladesh ‘women shall have equal rights with men in all spheres of the State and of public life’. However, gender inequality in Bangladesh is still very prominent with implications for women’s participation in decision making regarding renewable energy.

A man interviewed observed that: “Women use much more energy and have more control over household usage as they spend more time in the home, handle cooking, etc.” This speaks to traditional gender norms in patriarchal systems where private spheres are seen to be the responsibility of women. A woman from a rural area suggested that: “in many households which are women-led, due to the men being migrant workers or living in the city, women have much more control over energy usage in the house.”

In turn, loss of energy also affects women: “Often when they’re working on electrical maintenance, they’ll shut off power and water, and women suffer more.” This woman living in Dhaka continued by highlighting that women:

*“have no scope to participate in decision making to inform them on how to do the best without disrupting household life.”*

According to a local development activist: “Women empowerment for using this renewable energy and equality in decision making is also very important for planning.” The statement recognises the importance of women’s participation in renewable energy-related decision making beyond the confines of the household. However, girls, particularly those living in rural areas, continue to have limited opportunities to leave the home, including for schooling, professional training and economic activities (Hossen 2020). One of the biggest barriers to increasing women’s participation in renewable energy decision making outside the home is the gender disparity in education (Hossen 2020). As a university student suggests: “[There is] no gender equity in decision making due to lower education enforc[ing] patriarchy.” It is positive to see that solar power is providing women and girls better access to education, such as by bridging power cuts during load shedding. However, more targeted efforts are required to enable women’s participation in energy systems, especially beyond domestic spheres.

<sup>4</sup> The Dhaka Development Authority is translated from Bangla and locally known as the Rajdhani Unnoyon Kortripakkha or RAJUK for short.

### 4.3 CONCLUSION

In Bangladesh, increasing energy costs associated with dependence on fossil fuels appear to be a consequence of political apathy for renewable energy. There is a lack of effective implementation of policy to scale-up distributed rooftop solar. This means that, at best, solar projects generate some lighting for communal areas. More often, they end up as a wasted techno-spatial resource that lies fallow because of bureaucratic barriers to connecting them to the grid. In addition, the role of women in energy systems and related decision making is largely limited to domestic spheres, in entrenched patriarchal structures.

Rooftop solar on a hut in rural Bangladesh.  
© Luka Tomac



Urban rooftop solar energy in Bangladesh.  
© Ripon Barua



### REFERENCES

- Chowdry, S.A. (2020) National Solar Energy Roadmap 2021-2041 [Draft]. Dhaka: United International University. Available from: <<https://climateportal.cdbbd.org/wp-content/uploads/2021/03/National-Solar-Energy-Roadmap.pdf>> [Accessed 8 February 2023].
- The Constitution of the People's Republic of Bangladesh, Act No. of 1972 [Online]. Available from: <<http://bdlaws.minlaw.gov.bd/act-367/section-24576.html#:~:text=of%20religion%2C%20etc.-,28,State%20and%20of%20public%20life.>> [Accessed 8 February 2023].
- Hossen, M.S. (2020) Patriarchy practice and women's subordination in the society of Bangladesh: An analytical review. *Electronic Research Journal of Social Sciences and Humanities*, 2 (III), 51-60. Available from: <<https://ssrn.com/abstract=3670335>> [Accessed 8 February 2023].
- Islam, S. (2021) Minister highlights lack of land for solar. *PV Magazine* [Online], 20 October. Available from: <<https://www.pv-magazine.com/2021/05/25/minister-highlights-bangladeshs-lack-of-land-for-solar/>> [Accessed 8 February 2023].
- Shih, G., Masih, N. and Anant G. (2022) How Political will often favors a coal billionaire and his dirty fossil fuel. *The Washington Post* [Online], 9 December. Available from: <<https://www.washingtonpost.com/world/2022/12/09/india-coal-gautam-adani-godda/>> [Accessed 8 February 2023].
- SREDA (2023) *National Database of Renewable Energy* [Online]. Dhaka: Sustainable Renewable Energy Development Authority. Available from: <<https://ndre.sreda.gov.bd/index.php?id=7>> [Accessed 8 February 2023].
- Zahid, S.H. (2022) PM Hasina announces 100pc electrification. *The Financial Express* [Online], 21 March. Available from: <<https://thefinancialexpress.com.bd/national/pm-hasina-announces-100pc-electrification-1647848758>> [Accessed 8 February 2023].

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## RESOURCING RENEWABLE TRANSITIONS THROUGH 'ENERGY COLONIALISM'? AN EXPLORATION OF LITHIUM MINING IN FIAMBALÁ, ARGENTINA

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# 05



San Francisco volcano,  
Argentina. © Tierra Nativa

### 5.1 LITHIUM MINING AND ENERGY TRANSITIONS

Argentinean salt flats which formed over millennia<sup>5</sup> contain vast quantities of lithium. These are part of the 'Lithium Triangle' along with deposits in Bolivia and Chile, which together hold 68% of the world's lithium reserves (Fornillo 2019). The mineral is a key component for producing rechargeable batteries used in everything from electric vehicles, household solar installations, to mobile phones.

Lithium therefore plays a vital role in the transition to low carbon energy, including renewable electricity and electromobility. While Argentinean lithium exports are seen to help meet 'surging global demand' (Fastmarkets 2022), they are also important for repaying Argentina's foreign debt (Dorn 2021).

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<sup>5</sup> The special geography of this region is characterised by volcanoes that reach nearly 7,000m high and lower lying basins where the limited water available concentrates. Through evaporation chemical sediments accumulate, leaving behind a mirrored plain or 'salt flats' which contain lithium brine.



Traditionally ecosystems and communities co-exist in this region (Fig 5.1). To better understand the impact of lithium exploitation on these socio-ecological systems, the case study presented here examines one particular mining initiative, the Tres Quebradas (3Q) project located in the south-west of the Argentinian Catamarca province. Through a subsidiary of the Canadian Neo Lithium Corporation, the 3Q project began exploration in 2016 to extract concentrated lithium brine from the high-altitude salt flats (4,100m above sea level) (Fig 5.2).

From there, the material will be moved to an industrial processing plant in the town of Fiambalá (1,500m) where it is converted into lithium carbonate before being exported. To this end, Neo Lithium Corp. finalised the sale of its shares in the project to the Chinese Zijing Mining company in 2022, who have since began construction of an industrial processing plant. This is initially expected to have a production capacity of 20,000 tonnes per year though potentially doubling during the approximate 50-year lifespan of the project (King & Dworzanowski 2021).

## 5.2 SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS OF LITHIUM MINING

With parts of the infrastructure for lithium processing and increased exploitation currently under construction, now is an opportune moment to explore concerns about impact on the local environment, expectations regarding socio-economic development and levels of social buy-in. Insights presented below are based on unstructured and semi-structured interviews with stakeholders in Fiambalá in 2022, supported by surveys, observation and stakeholder workshops.

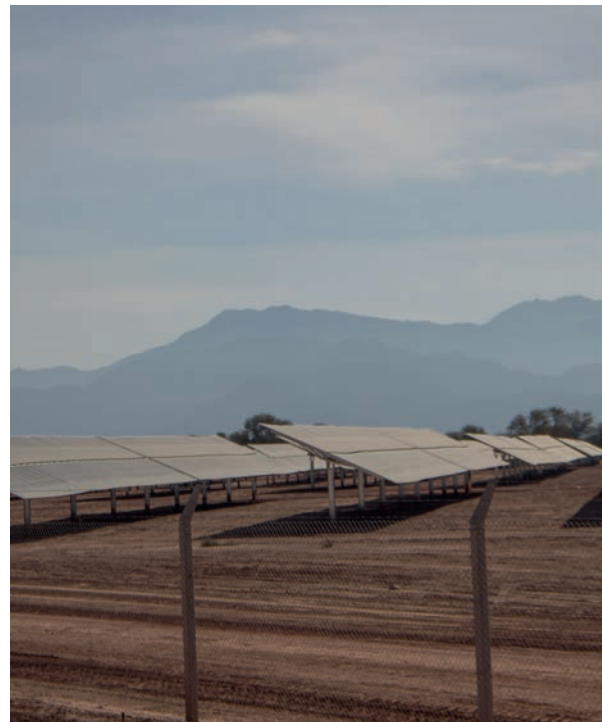
### Extractivism versus conservation

In 2009, the area designated for lithium by the 3Q project received international recognition under Ramsar - the intergovernmental convention for the “conservation and wise use of wetlands and their resources” (Ramsar 2014).

**FIGURE 5.1** | LIVING IN CO-EXISTENCE WITH THE LOCAL ENVIRONMENT



**FIGURE 5.2** | SALT FLATS IN THE CATAMARCA PROVINCE





As part of the so-called “High Andean and Puna Lagoons of Catamarca” Ramsar site, this area’s ecological importance is recognised as a habitat for migratory birds such as the Andean flamingo, as a reservoir of fresh water and for its unique landscape which includes the extinct Mt Pissis volcano and glacier (Fig 5.3).

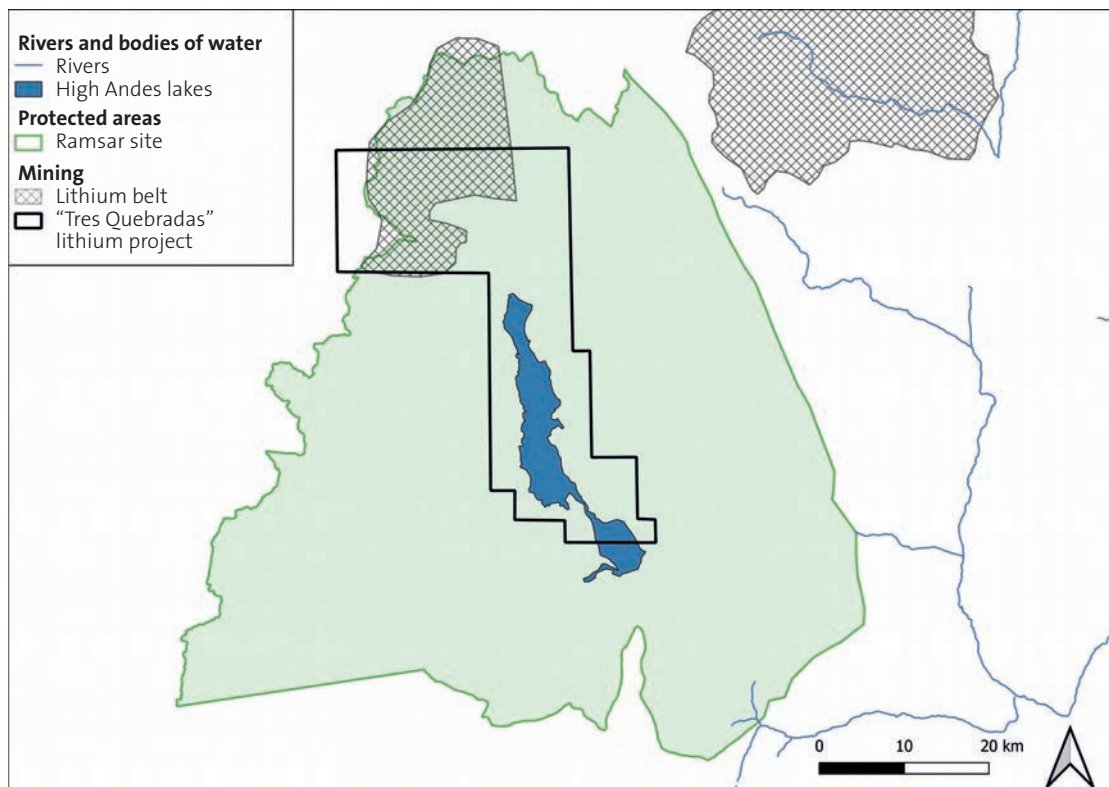
However, Ramsar designation does not translate into environmental protection unless it is enshrined in relevant legislation at local, provincial or national levels, which is not the case in this instance. As the map in Fig 5.4 illustrates, there is significant overlap between the area used for lithium exploitation and the designated Ramsar site.

The type of lithium exploitation practised in Fiambalá requires large amounts of water to saturate the lithium brine and then concentrate it in evaporation ponds. This increases the risk of water scarcity for both wildlife and people living in the area. Several women commented on “certain birds that you find dead in the same lagoons if you go out for a walk” which they linked to the overuse of water in the mining area.

**FIGURE 5.3** VIEW FROM MT PISSIS BALCONY OVERLOOKING THE VOLCANO, SALT FLATS AND LAGOONS



**FIGURE 5.4** MAP SHOWING OVERLAP BETWEEN RAMSAR DESIGNATION AND LITHIUM EXTRACTION



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People in Fiambalá also rely on the melt water from the Andes. Water for the production of crops is derived from the Guanchín River while drinking water comes from an aquifer in the Abaucán River basin. These water sources are replenished by the rivers and springs that flow down the mountains and there is concern over increasing water scarcity in what is already an arid landscape. As a young woman explains:

*“The same problem of water, which we already had, is more noticeable now ... in the town itself there are neighbourhoods where there is not enough water in winter and in summer. In summer, there are times when we are a month, a month and a half without water that can go up to the tank.”*

Similarly, a producer of handmade confectionery highlights the impact of water scarcity on day-to-day life:

*“In the summer we have no pressure, directly we have no water in the tanks. I was forced to buy a jerry can, to fill it up and have water. But it’s difficult... because it’s hot, the temperatures here in the summer are extremely high.”*

The presence of water-intensive industries such as lithium mining are therefore posing a significant threat to water access in the region, putting local people and wildlife at increased risk.



Domestic llamas in the Puna ecoregion.  
© Tierra Nativa

## Socio-economic tensions

Traditionally, villages in the area relied on agriculture and cattle raising as well as the cultivation of vines and sale of grapes and wine production. Simultaneously, the natural beauty, thermal waters, and local culture has led to an increase in tourism to Catamarca. If carefully managed, this has the potential to provide new opportunities for socio-economic development that preserve the natural environment which already attracts visitors from around the world. However, this sector is currently underdeveloped due to the lack of infrastructure, service provision and clear policies to support it. The common perception of those interviewed is that the potential to develop tourism is hindered by the state’s preference for mining activities. One interviewee, a 60+ year-old tourist guide, said:

*“The tourism industry is something that for me is not compatible with mining, given the fact that most of the tourists who come here come to see landscapes, places that we have, the quality of having in this locality, spectacular places, which are not seen in other parts of the planet.”*

However, tourism and lithium exploration currently exist in the same spaces, sharing gravel roads through the Ramsar site. Reflecting on the impact that heavy machinery used for lithium extraction is having on the environment, one interviewee proposed that is better for mining and tourism to exist side by side to, be able to better monitor these corporate activities:

*“They destroy the landscape. What worries me most is the place where they are going to go, where they are going to go exclusively, and no one will be able to see what they are doing. So, I want to continue sharing with them that they make a good road so that they can go up and we can go up. And, at the same time, we can be anonymous or ad-honorem overseers of what they are doing.”*

Lithium exploitation itself also offers new job prospects, especially for the male population in nearby villages who are looking for salaried employment. However, these job opportunities clash with other occupations, such as agriculture and tourism. Increasingly contradicting agendas are leading to social tensions and conflict, including episodes of violence. A local female teacher recalls:

*“On one occasion, during one of the demonstrations we had organised, a person... tried to run us over, insulting us, saying that we were against progress.”*

More research is needed to understand how these socio-economic dynamics play out over time including differences in gendered experiences.

## Securing social buy-in

The research highlighted various mechanisms employed by the companies linked to the mining to obtain a social licence for operating in this area which may feed into the tensions outlined above. A local wine maker who uses irrigation to cultivate his grapes provided the following example:

*“They put on the radio a propaganda that they were helping the Water Consortium... they are collaborating with machinery and other things, but this is not decided by the group of people who irrigate.”*

This suggests a lack of trust and meaningful participation of community stakeholders who will be directly impacted by a reduction of available water.

Similarly, several solar parks were completed in the area in 2022 to supply energy to the national grid with a proportion going to the mining operation. In turn, the use of renewable energy increases the public image of promoting sustainable mining practices (Panorama Minero 2019; Neo Lithium Corp 2019). A former mining technician commented:

*“It has generated solutions in serious moments when there were major power cuts... but the problem that our parks have is that they only generate during the day... so at night if there is a cut you have to stay all night without light.”*

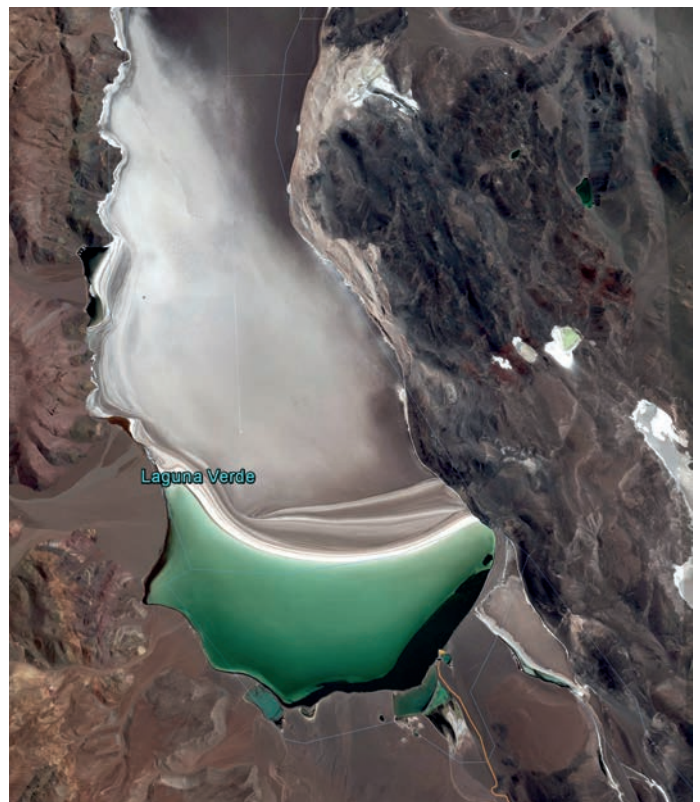
Energy scarcity is compounded by the relatively high cost of electricity, ongoing maintenance challenges and power cuts. When asked about the potential of energy storage to alleviate the situation, the technician continues:

*“Lithium goes abroad and we don’t have lithium here. We had a very modern battery factory in Catamarca. It only worked for a short time and then closed due to lack of supplies.”*

While the area produces lithium for rechargeable batteries that are vital for enabling renewable energy transitions elsewhere, battery powered energy storage is not available to the local population, for example at household level. Instead, local people continue to suffer from energy scarcity and unreliable access to power.

## 5.3 CONCLUSION

Different levels of government are complicit in a political economy that facilitates what can be described as ‘energy colonialism’, whereby Global South countries are seen as material providers feeding energy transitions in countries of the Global North. In the extractivist model highlighted above, nature (recognised for its significance through Ramsar designation), water and energy resources are exploited for the production of lithium batteries to satisfy growing demand in other parts of the world. Meanwhile, local communities are under threat of increasing water scarcity and continue to struggle with a lack of access to electricity while the latter could ironically be alleviated through lithium batteries.



Satellite image of the mining area. © Google Maps

## REFERENCES

- Fastmarkets (2022) Argentina doubles down on lithium to meet surging global demand. London: Fastmarkets. Available from: <<https://www.fastmarkets.com/insights/argentina-doubles-down-on-lithium-to-meet-surging-global-demand>> [Accessed 8 February 2023].
- Fornillo, B., Argento, M., Gamba, M., Kazimierski, M., Puente, F., Romeo, G., Santos, E., Slipak, A., Urrutia, S. and Zicari, J. (2019) Lito en Sudamérica. Geopolítica, energía y territorios. *El Colectivo*. Buenos Aires: Universidad de Buenos Aires.
- Dorn, F.M. (2021) Inequalities in resource-based global production networks: resistance to lithium mining in Argentina (Jujuy) and Portugal (Região Norte). *Journal für Entwicklungspolitik*, XXXVII, 4-2021, 70–91.
- King, M. and Dworzanowski, M (2021) *Feasibility Study 3Q Project*. Toronto: NEO Lithium Corp. Available from: <<https://www.neolithium.ca/pdf/Feasibility-Study-3Q-Project-Nov-25-2021.pdf>> [Accessed 8 February 2023].

- Neo Lithium Corp (2019) *Neo Lithium and the Municipality of Fiambalá Announce the Creation of a Lithium Industrial Park* [Online]. Chicago: Cision PR Newswire. Available from: <<https://www.newswire.ca/news-releases/neo-lithium-and-the-municipality-of-fiambala-announce-the-creation-of-a-lithium-industrial-park-880654228.html>> [Accessed 8 February 2023].
- Panorama Minero (2019) *Neo Lithium y la municipalidad Fiambalá anuncian la creación de un parque industrial de litio* [Online]. Available from: <<https://panorama-minero.com/noticias/neo-lithium-y-la-municipalidad-fiambala-anuncian-la-creacion-de-un-parque-industrial-de-litio/>> [Accessed 8 February 2023].
- Ramsar (2014) *About the Convention on Wetlands* [Online]. Available from: <<https://www.ramsar.org/about-the-convention-on-wetlands-0>> [Accessed 1 February 2023].



# CONCLUSION: BARRIERS TO FEMINIST JUST TRANSITIONS

# 06



A woman carrying firewood from the forest to her home near Rewa, India. As the shorter route has been cut off by the mega solar project, she now has to carry the weight for much longer along the dangerous national highway. © Friends of the Earth India

The case studies in this report provide empirical evidence of lived experiences, highlighting the following barriers to feminist energy transitions on the ground:

## **‘Green grabbing’ and energy colonialism**

The Indian Rewa Mega Solar project exploits rural land resources for the generation of renewable energy to supply power to distant urban areas. Instead of widespread socio-economic benefits, host communities are adversely affected through loss of livelihood, inadequate compensation whilst absurdly continuing to live under conditions of severe energy scarcity.

Similarly, lithium mining in Argentina follows in the footsteps of extractivist approaches commonly associated with fossil fuel industries. It does so by replicating the role of Global South countries as energy resource providers, mining minerals for the benefit of energy transitions including a shift to electrified transport in other parts of the world. This can be described as ‘green energy colonialism’.

In both cases, power structures at local, national and regional levels facilitate extractivism of renewable energy resources supported by ‘green grabbing’ of land – the appropriation of land for environmental ends such as fighting climate change through the expansion of renewable energy (Fairhead et al. 2012; Pearce 2012).

### **Lacking consideration regarding patterns of land and water use**

In Argentina, lithium mining is leading to tensions and conflict regarding the use of land for mineral exploitation versus other socio-economic opportunities such as agriculture or tourism.

In the Rewa Mega Solar project, seasonal land-use patterns were overlooked in what were deemed barren areas. Coupled with unkept promises about employment opportunities, this has severely disrupted agrarian lifestyles. Differences in experiences and land use practices were also not adequately considered, resulting in the displacement of pastoralist families whose way of life has been devastated by the project.

The relationship between land for renewables and water was also highlighted in the Indian and Argentinian cases, with increased stresses on available water sources or reduced access routes.

### **Lack of conservation policy, environmental impact assessment and follow-up**

In Palestine, Environmental Impact Assessment Policy exists on paper but has not been acted upon in most recent medium-large scale renewable energy developments. The lack of follow-up and monitoring has enabled practices such as bird poisoning to take hold. Furthermore, the end of life of renewable energy infrastructure has not been adequately considered, posing environmental risks due to improper disposal of broken technical components.

In Argentina, long-standing international recognition of the ecological importance of local habitats through the Ramsar convention has not translated into environmental policy to protect wetland areas that are now being exploited. Consequently, unique habitats and water resources in this semi-arid region are under threat.

### **Political oppression and apathy**

In Palestine, Israel's control over land severely limits opportunities for renewable energy developments and improved access to affordable and reliable electricity. Within these constraints Palestinian medium-large scale solar energy projects nonetheless utilise land for the benefit of local people, communities, and socio-economic development.

Land scarcity in Bangladesh is used as a political argument against renewables and in favour of continued and costly fossil fuel dependence, thereby playing into extractivist models and undermining just transition efforts. As such, there is a political barrier to developing more evenly distributed, environmentally-sound, and socially-owned energy systems based on renewables. Techno-centric approaches to energy access favour centralised medium, large or mega scale generation with the consequence of rising energy costs and dependence on energy imports. The implementation of urban policy to promote distributed rooftop solar has thus far been ineffective. This has resulted in a combination of wasted techno-spatial resources that lie fallow and limited participation of residents and/or awareness as to the benefits of solar installations on apartment roofs.

### **Patriarchal structures that exclude women's participation beyond household-level decision making**

In the Palestinian solar energy projects, an absence of women leading medium to large scale solar developments was noted. Their technical participation was limited to temporary engineering roles.

Persistent patriarchal structures in Bangladesh emphasised the systemic exclusion of women participating in energy systems beyond the household level. This included intersectional differences and barriers, for example the lack of educational opportunities for women in rural areas.

### **Outdated grid infrastructure**

In Bangladesh, grid infrastructure poses a barrier to increasing both medium-large scale centralised and distributed renewable energy. Similarly, the Israeli-owned grid limits the possibility for Palestine to increase renewable energy capacity. In one example, the licensed solar generating capacity actually slightly exceeds the available capacity of the grid itself, risking damage to the local network.

Finally, communities that host the Rewa Mega Solar project in India struggle with a hazardous distribution network that exacerbates energy scarcity, while transmission networks are able to export locally-generated energy across state boundaries.

## RECOMMENDATIONS

The report makes the following key recommendations for implementing renewable energy in the Global South in a way that protects the rights of peoples, and moves away from a neo-colonial extractivist energy system:

1. Ensure that communities that host renewable energy projects significantly share in the decision-making processes that affect them as well as the benefits. The latter should include access to sufficient, affordable energy and meaningful socio-economic opportunities that support the wider community instead of creating tensions and divisions.
2. Promote women in technical and decision making roles beyond household level domestic spheres. Targeted and sustained efforts are needed including effective implementation of gender mainstreaming policies, and equitable training and leadership opportunities to ensure just transitions for all, not just 50% of society.
3. Carefully consider seasonal land (and water) use patterns of local communities, including intersectional differences related to gender and socio-cultural norms and practices. Importantly this must include usage of landless groups such as pastoralists.
4. Recognise the environmental and socio-economic costs of political apathy favouring centralised and fossil fuel-based business as usual approaches. Develop effective and contextualised policy implementation for the rapid deployment of renewables such as rooftop solar.
5. Develop national policies to protect ecological habitats recognised for their importance through the Ramsar convention and ensure capacity to independently monitor implementation of environmental impact policies.

**For a just transition to an energy future that is genuinely transformative for communities on the frontlines of renewable infrastructure installations and raw materials extraction, the lessons from these case studies and others like them must be heeded by policy makers and activists alike. Friends of the Earth International has many positive stories of the transformative impacts of renewable energy on the ground in the Global South, but they are not the only stories to be told and this report makes for a sobering reality check. To address the climate crisis with a rollout of renewables that meets the challenges of energy access in the Global South, peoples' rights must not be sacrificed for the 'greater good' and the mistakes of the existing extractive fossil fuel energy system must not be repeated.**

By and large the case studies highlight barriers to feminist and equitable renewable energy transitions at scale but what if different approaches had been taken shaped by equity and justice principles? What if land (and water) use patterns of pastoralists and local communities had guided the development of spatial planning for the Rewa Mega Power project? What if instead of allocating Corporate Social Responsibility funds that don't reach affected people, a financial share per MW installed was guaranteed to host communities within a limited radius of the development? What if safe access to affordable energy for every household in the vicinity of mega and urban roof-top solar projects was a condition of exporting energy resources? What if the same went for host communities of energy transition minerals? What if women's participation in energy systems was promoted beyond relegation to household roles in patriarchal societies? What if more women led the development of medium to large scale solar projects in Palestine or urban roof-top solar projects in Bangladesh? What if environmental impact assessment was used to educate and incentivise private developers of medium-large scale solar projects to protect local birds and create natural wildlife habitats? What if Ramsar designation was used to limit mineral resource extraction in Argentina and protect wildlife habitats and water sources?

## REFERENCES

Khaldi, Y., Hinn, H., and Taweel, R. (2022) *The gradual sustainable energy transition in Palestine: An enabling environment to attract local and international investment*. Ramallah: Palestine Economic Policy Research Institute. Available from: <https://mas.ps/en/publications/6944.html> [Accessed 22 January 2023].

Sanyanga Hungwe, R.A., Cossar Gilbert, S., Shaw, S., Bhatnagar, D., Mendes, E., Adam, F., Dodzi Kpondzo, K., Mariere, U-J. M., Lemos, L., Yesutanbul, Y. (2021) *A Just Recovery Renewable Energy Plan*

*For Africa*. Pietermaritzburg: Friends of the Earth Africa.

Pearce, F. (2012). *The Landgrabbers: the new fight over who owns the Earth*. London: Eden Project.

Fairhead, J., Leach, M. & Scoones, I. (2012) Green Grabbing: a new appropriation of nature? *The Journal of Peasant Studies*, 39 (2):237-261. <https://doi.org/10.1080/03066150.2012.671770>





The Rewa Ultra Mega Solar project site in Madhya Pradesh, India.  
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# RENEWABLE ENERGY & LAND USE

BARRIERS TO JUST TRANSITION IN THE GLOBAL SOUTH

FEBRUARY | 2023



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