Energy Transitions for a Socioecological Future

Position paper

FUNDACIÓN AMBIENTE Y RECURSOS NATURALES

FEBRUARY 2024

Introduction

This document outlines the main priorities, concerns, and position of Fundación Ambiente y Recursos Naturales (Environment and Natural Resources Foundation, FARN) from a comprehensive and intersectional perspective regarding the urgent need for an energy and socio-ecological transition in Argentina and globally, based on socio-environmental justice, inclusion, and citizen participation.

To this end, the document recognizes the need to address the urgent climate and ecological crises and, thus, phase out from the fossil fuel paradigm progressively. It emphasizes the importance of energy equity and sufficiency as fundamental principles in these transitions. It also focuses on the advancements and significant social and environmental impacts concerning critical mineral extraction, whose demand has escalated due to the corporatist transition paradigm. In this sense, the document focuses on lithium; it emphasizes the need to ensure full observance of the rights of indigenous peoples and communities through participation and free, prior, and informed consultation, for instance. In a context where these communities' rights and territories are constantly violated for the sake of transitions, FARN upholds the importance of **an approach based on human rights, genuine processes of dialogue, and citizen participation, to ensure that energy and socio-ecological transitions do not reproduce existing inequalities, that they are socially and environmentally reparative and are designed by and for society as a whole.**

This approach to the energy transition encompasses various dimensions and is informed by the extensive research and interdisciplinary work that FARN has undertaken to understand the complexity of ecological and social challenges. Additionally, it is crucial to acknowledge the impact of the networks and alliances in which FARN is involved, as they have contributed to enriching the perspectives presented here.

1. Perspectives and Disputes on the Energy Transition

The concept of 'energy transition' refers mainly to the structural transformation of energy systems, encompassing changes in energy sources, as well as the reconfiguration of their production, distribution, and consumption and the final disposal of waste and associated materials. Currently, this concept stems from the urgency of addressing the climate and ecological crisis the planet is facing and the need to transform fossil fuel-based energy systems towards low-carbon models.

Nevertheless, 'energy transition' is a broad concept whose interpretation and scope have remained a field of dispute. It encompasses a range of perspectives, from those focused solely on substituting energy sources and technologies without challenging the current production and consumption paradigm– referred to as 'corporate energy transition' by Svampa and Bertinat (2022)– those rooted in union demands and aimed at addressing inequality (often grouped under the concept of 'just transition' according to the International Labour Organization, 2015), to others with more holistic approaches which emphasize energy, ecological, and social systems interconnectedness. The last approach is highly critical of the modern colonial extractive structure and advocates for a comprehensive 'socio-ecological transition.'

FARN holds that **energy systems transformations cannot be isolated from the broader ecological and social challenges that frame them**. Therefore, these processes must incorporate human rights guarantees and integrate environmental, social, economic, and cultural objectives. Likewise, recognizing the diverse contexts, experiences, and realities of the communities facing the challenges of the energy transition implies speaking of 'transitions.' Not only does it mean allowing for the plurality of realities among different territories but also the range of paths, approaches, and processes that can occur within them. Specifically, there is no single model of 'transition' towards energy systems that are sustainable in ecological terms and equitable in social terms; alternatives to the system must be rooted in social dialogue, democratic participation, and environmental justice.

2. Energy Equity and Sufficiency as a Starting Point

Addressing the complexities, possible paths, and outlooks of energy transitions implies recognizing the central role that access to energy plays in shaping the configuration and well-being of human societies. Essentially it requires recognizing that inequity in access to affordable, reliable, and clean energy sources limits development opportunities and the quality of life for millions of people around the world. At the same time, it entails challenging the major inequalities in energy consumption, both between and within regions and countries, and reducing excessive and unsustainable consumption levels driven by minority sectors of society.

Many of the current approaches to energy transitions only propose changes in efficiency and technologies, projecting current energy demand into the future without questioning the underlying need for this demand in terms of human welfare, asymmetries in its consumption, and its socio-ecological impacts.

Therefore, FARN believes it is crucial to start by **prioritizing energy equity and sufficiency, emphasizing the need to reduce energy and material consumption** in socio-economic deciles currently leading unsustainable lifestyles, while also addressing the existing imbalances between the Global North and the Global South. Equity in energy access entails ensuring that all people have the opportunity to fulfill their basic needs through affordable and clean energy access. Energy sufficiency, on the other hand, implies that while access to energy is essential for a decent life, it is equally imperative to abandon overconsumption and energy waste to live within planetary boundaries.

3. The Need to Transcend the Fossil Paradigm

Fossil fuels mark a peak of energy abundance in the history of humankind and have been the driving force behind an unprecedented paradigm of development and economic growth. This unbridled and unequal growth has led us as a civilization to transgress critical planetary limits, failing to satisfy the basic needs of a large part of the population.

The massive use of fossil fuels since the Industrial Revolution, driven mainly by industrialized countries, has been, and remains, the main cause of the alarming climate and ecological crisis, which is approaching a point of no return. The combined emissions of carbon dioxide (CO_2) and methane (CH_4) from oil, gas, and coal production and consumption account for 75% of the total greenhouse gasses (GHG) that humans have added to the atmosphere[1]. It is noteworthy that Argentina is the third country with the highest GHG emissions in Latin America (**ECLAC-OECD-OECD-CAF-EU, 2022**), with a per capita emissions level higher than the G20 average (**Climate Transparency-FARN, 2022**). Emissions from the Argentine energy sector represent 51% of the total, due to the dominance of gas and oil in the national energy matrix (MAyDS, 2023), which account for more than 80% of the energy consumed in the country (Secretary of Energy, 2021).

Moreover, the development of fossil fuel projects not only exacerbates climate impacts but also leads to heightened levels of social conflict, along with various environmental and public health impacts; this factor affects the most vulnerable and marginalized communities disproportionately. Additionally, the significant economic concentration and political power associated with these resources, undermine energy sovereignty and democratization. Countries like Argentina, which lack the capital and technologies required for hydrocarbon extraction, often find themselves compelled to accept conditions imposed by private companies or other nations to acquire them. These conditions seldom benefit the country, instead creating and exacerbating external and internal inequities. The unpredictable fluctuations in fossil fuel prices, dictated by international

1. Fossil fuels contribute at least 40% of all anthropogenic methane emissions IEA, 2023, Overview –Global Methane Tracker 2023 – Analysis - IEA.

markets and the interests of major producing and consuming countries, further deepen energy dependence and worsen the macroeconomic situation of developing nations.

Moreover, as energy demand increases and more affordable reserves become depleted, the industry is forced to exploit unconventional and remote fields, using more extreme and damaging techniques, as evidenced by the expansion of the hydrocarbon frontier into deep waters and the use of fracking. This more intensive extraction worsens environmental impacts, social conflict, and geopolitical tensions at a global level.

In short, FARN is convinced that **deepening the fossil paradigm is not the way forward**. Not only does it run counter to the urgency of a just socio-ecological transition and to Argentina's climate commitments to achieve carbon neutrality by 2050, but it also fails to address the most pressing needs of citizens in terms of equity and long-term sustainability. It is essential, therefore, to explore energy and development alternatives that leave aside the current extractivist and highly polluting profile, designed in such a way that they not only provide short-term solutions but also extend over time, are socially and environmentally restorative and are designed by and for society as a whole.

4. Financial Flows to Minerals and Transition Technologies

Analysis of financial trends of international financial institutions (IFIs), including multilateral development banks (MDBs) and export credit agencies (ECAs), reveals questionable practices and lack of transparency in promoting the exploitation of fossil fuels and critical minerals. It reveals a corporate approach to energy transition that seeks to maintain existing models and neocolonial dynamics between the North and the Global South, evidencing the contradictions and double discourse of these institutions and the central economies.

Furthermore, it is fundamental to emphasize the role of the International Monetary Fund (IMF) in these financial dynamics and the conditioning of national energy policy. Despite its declared role in global economic stability, the IMF continues to push the development of the countries of the Global South towards extractivism and the export of undervalued environmental goods. Also noteworthy are the agency's recommendations to expand hydrocarbon infrastructure and make fiscal spending cuts aimed at reducing subsidies to fossil fuel demand rather than supply, thus contradicting its climate objectives.

At the same time, climate finance flows from the North to the Global South reflect a lack of transparency and overestimation, accounting for investments that are not aligned with climate objectives or that are directed to projects that are not carried out in the end. Furthermore, the quantitative financing targets remain unfulfilled. According to a **report by the Organization for Economic Cooperation and Development (OECD)**, almost US$90 billion were mobilized in 2021, failing to meet the target of mobilizing US$100 billion annually to the countries of the Global South by 2025. Furthermore, this report reveals that more than half of the financing -almost 68%- has been provided through loans, which further increases the debt of the Global South.

The fact that climate finance relies mostly on loans entails a transfer of the economic cost of fighting against climate change to countries with less historical responsibility. At the same time, the mounting debt in the Global South reduces the margins for political action, adding pressure to developing economic activities related to the exploitation of common goods for export to repay the debt. These activities, such as hydrocarbon exploitation, mining, and agriculture, cause high environmental impact and emit greenhouse gases.

In this sense, **it is necessary to rethink and restructure the global financial system holistically** and recognize the 'ecological debt' (Martínez-Alier, 1997) accrued by the countries of the North to the detriment of the countries of the Global South. FARN deems it essential to initiate further dialogues to finance integral socio-ecological transitions, including redirecting subsidies to the supply of fossil fuels, the injustice of the international trade system, and the undervaluation of environmental goods and services.

Lastly, FARN **urges the main parties who are historically responsible for the climate and ecological crisis to meet their obligations regarding financing** for mitigation, adaptation, and reparations for damages and losses. This funding must be adequate, balanced, predictable, new, and additional, based on needs and priorities, and must not result in more debt so that energy and socio-ecological transitions are just and equitable.

5. False Solutions

As the need to address the climate and environmental crisis intensifies, so does the promotion of narratives and technological promises that understate the urgency and necessity of generating substantive solutions. Far from driving comprehensive energy and socio-ecological transitions, these narratives hinder transformative change and further deepen current environmental and social problems.

One such example is the alleged need to increase natural gas production as a transition fuel since it emits less carbon compared to oil and coal. However, this vision does not fully address the methane emissions associated with gas extraction and transportation, which are a major contributor to global warming in the short term. Nor does it consider the consequences of a technological[2] lock-in or the economic risks associated with the expansion of hydrocarbon infrastructure in the face of international trends, which could result in stranded assets.

FARN is most concerned about the increasing global and national trend among states and corporate sectors towards technological optimism and mercantilist strategies. These include carbon and hydrogen capture and storage, geoengineering, and carbon markets. Such approaches perpetuate the fossil fuel paradigm and reinforce existing power imbalances. Similarly, narratives promoting the electrification of private vehicle fleets to reduce emissions in the transport sector fail to address structural issues related to the current mobility model. They also overlook the extraction, accumulation, consumption, and disposal of materials and minerals in Northern countries, perpetuating environmental problems and social inequalities.

Given a climate and ecological crisis demanding urgent and transformative actions, FARN deems **it essential to challenge and reject these reductionist approaches aiming to postpone or divert attention from the imperative need to replace fossil fuels and carry out structural changes** at a cultural and economic level. These approaches delay potential adaptation, thus transferring its burden and costs to future generations. They also delay climate change mitigation, thereby handing over the burden and costs to future generations and those most vulnerable who have contributed the least to the problem, such as societies in the Global South. And this further exacerbates socio-environmental injustice.

6. The Social and Environmental Problems of Lithium

The role of lithium as a key input for manufacturing batteries and transport and for the electrification of transport and energy systems is currently at the center of climate change debates and disputes over energy transition paradigms. In particular, the growing global demand for lithium has led to a boom in the interest and exploitation of this mineral in Argentina. The country is among the main global producers and concentrates, together with Chile and Bolivia, more than 50% of the world's lithium resources in the high Andean wetlands (USGS, 2023).

2. Lock in, technological lock-in or compartmentalization. It refers to the generation of a dependence on a certain technology. In this case, it refers to the consequences of dependence on gas and the technology and infrastructure related to it.

Consequently, lithium mining in Argentina, centered on salt flats in the Puna region, has experienced a striking surge of projects in the last decade. Like other large-scale mining activities, it has brought significant social and environmental impacts on the territories ignored to date. Indeed, the real impacts are ignored: the exploitation and processing of lithium-rich brines require high volumes of water, and there are no baseline studies on water basins as indivisible units. At the same time, lithic activity in Argentina is characterized by a lack of transparency regarding the total amount and the particular features of the mining projects. Thus, the survival of fragile wetland ecosystems, the multiplicity of benefits they provide, biodiversity, and local communities in the arid regions of the Puna are at stake.

Furthermore, the lithium extraction sites are predominantly located on ancestral territories inhabited by indigenous peoples. This situation creates tension between autonomy and self-determination rights on the one hand and private and State interests on the other, often resulting in violations of these rights. Failure to comply with the right to free, prior, and informed consultation, as established by Argentine legislation and international standards, has led to violations of the rights of indigenous communities to determine their economic, social, and cultural development. It has also impacted access to information and the protection of sacred sites. Such practices, aimed at expediting project authorization in the Argentinean salt flats, challenge the rights to access to information and justice along with citizen participation. Additionally, they fail to recognize the status of environmental defenders recognized in the Escazú Agreement.

It is essential to understand that the acceleration of global lithium demand is mostly driven by the rising production of electric vehicles for private use (IEA, 2023)[3], mainly aimed at consumers in the countries of the Global North. Many of these high-income countries have promoted different standards[4] to advance electromobility agendas in the name of energy transition and climate change mitigation without rethinking their current models of individual mobility and hyperconsumption, without addressing the limited availability of critical minerals and the need for the equitable distribution of these minerals to further transitions, and without assessing the high socio-environmental impacts of extraction in the territories of the South. This use also fails to support the take-off of renewable energies.

FARN is concerned about these trends and anticipates their exacerbation in the coming decades. Of particular concern is the risk of heading towards a corporate model of energy transition. **Lithium cannot be considered part of a socio-ecological transition if it aggravates local environmental problems, entails the violation of human rights, and does not rethink current levels of unsustainable consumption and North-South inequalities.** Before authorizing new lithium mining projects, the State must conduct a Strategic Environmental Assessment process that integrates the climate and biodiversity commitments assumed, ensures respect for human rights, and guarantees free, prior, and informed consultation.

7. Towards a New Energy Paradigm

Given the present global economic, energy, climate, and ecological crises, there is an urgent imperative for de-fossilization and diversification of the energy supply. This entails a gradual phase-out from oil, gas, and coal in the energy matrix towards cleaner and renewable sources.

FARN holds that a new post-fossil energy paradigm should not focus only on decarbonization but also on equity, democratization, deconcentration, resilience, and environmental sustainability, as these are especially relevant for the Argentine context. Therefore, adopting cleaner and renewable energy sources must rely on diversifying resources, decentralizing energy production and management, ensuring more equitable access, developing local capacities, promoting domestic industry, and creating quality jobs through new ventures and

3. For example, in 2022, total electric and hybrid vehicles (for personal or family use) accounted for 60% of global lithium demand, whereas in 2017 these single-use vehicles only accounted for 30% of lithium demand (IEA, 2023).

4. In this line are the U.S. Inflation Reduction Act of 2022, which grants incentives for clean energy generation in that country, and the European Union's Raw Materials Act of 2023, which regulates the incentive policy for access to supplies and their transformation for the community space.

value chains. Likewise, these projects must prioritize biodiversity conservation and respect for the human rights of communities living in the affected territories.

Argentina has a unique opportunity to transition towards a diversified energy matrix, leveraging its plentiful renewable energy resources across the country. This transition would enable the production of electricity and heat from sources like solar, wind, and various types of biomass, using locally developed technologies. Successful experiences in many regions of the country demonstrate the feasibility of alternative energy management and distribution models, such as cooperative distributed generation systems.

However, the macroeconomic context, lack of political decision-making, price distortions from generalized energy subsidies, limited access to financing, and constraints in the transmission capacity of the electric grid are all factors that restrict these initiatives and the deployment of renewable energies. Therefore, **transforming the energy system will require extensive political consensus and social dialogue, substantial investments in infrastructure, financial incentives, the reorientation of subsidies, and specific legislation to promote renewable energy.**

8. Key Principles for a Just and Inclusive Socioecological Transition

Energy transitions are essential elements of socioecological transition processes, and require approaches that address intersectionality, interculturality, and intergenerationality. A comprehensive vision is necessary to mitigate the climate crisis and address broader socioecological challenges, thus integrating sustainable development goals, resilience, and remedying systemic inequalities.

Human rights standards must be upheld, with a focus on the rights of women, indigenous peoples, LGBTQIA+ communities, children, persons with disabilities, future generations, farmers, and other marginalized and vulnerable groups. Active participation and respect for the principles of free, prior, and informed consent are essential for a just, inclusive, and equitable socioecological transition rooted in human rights and planetary boundaries.

Equally important is that countries in the Global can define their own paths for emissions reduction and energy system transformation, benefiting from these transitions. However, the lack of adequate funding for such transformations remains a significant constraint. In this regard, the countries of the Global North, in addition to failing to meet their financial commitments under the Paris Agreement, have promoted the development of specific sectors of interest to them, such as green hydrogen, the extraction of critical minerals and carbon markets in the Global South, thereby conditioning the transition path in these countries.

FARN believes that **the defossilization of the energy matrix must align with developing models that address each country's socioeconomic and environmental needs. This demands democratic participation, authentic citizen engagement mechanisms, and consultations with indigenous peoples, ensuring access to information and environmental justice.**

FARN advocates for a comprehensive plan for a just and popular energy transition, contrasting with isolated initiatives driven by external financing opportunities, international obligations, or short-term political agendas, lacking a sustained planning and articulation in the medium and long term.

The plan will require a comprehensive approach to Argentina's energy development that addresses not only the technical and economic viability of energy resources and technologies, but also the social, economic, and environmental implications of their exploitation and use. These aspects are vital for the decision making neces-

sary to transform the energy sector in the country. **The undertaking should be collaborative, involving multiple stakeholders, through the implementation of management tools, such as Environmental Territorial Planning, Strategic Environmental Assessment, compliance with national and provincial regulations, and international standards for environmental protection, participation, and access to information.**

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