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RECONNECTING POWER AND PARTICIPATION: ENERGY JUSTICE IN ALGERIA

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1. Introduction and Analytical Framing

Algeria stands at a pivotal crossroads in its energy and development trajectory. Long reliant on hydrocarbons as the backbone of economic growth, export revenues, and geopolitical influence, the country now faces a dual and increasingly pressing imperative: to reduce structural dependence on fossil fuels while safeguarding equitable access to energy for its population. Within this context, the pursuit of a just energy transition—one that is socially inclusive, territorially balanced, and economically empowering—emerges not merely as a policy option, but as an urgent national necessity.

This report seeks to contribute to the national energy debate by examining pathways toward a just energy transition in Algeria, understood not simply as a technical shift toward renewable energy sources, but as a broader societal transformation rooted in equity, participation, and recognition. In this study, a just energy transition is defined as a process that ensures the fair distribution of energy-related benefits and burdens, guarantees meaningful participation in decision-making, and formally recognizes historically marginalized groups and territories within energy governance. The analysis is structured around three interrelated operational dimensions of energy justice: distributional justice, which examines how costs, benefits, and opportunities are allocated; procedural justice, which assesses access to decision-making and governance processes; and recognition justice, which focuses on whose voices, identities, and territorial realities are acknowledged or excluded. Grounded in Algeria's specific social, legal, territorial, and institutional contexts, the report aims to inform policymakers and stakeholders of the reforms required to ensure that the energy transition becomes a genuine vehicle for justice.

The energy transition debate in Algeria has largely been framed around megawatt targets, infrastructure roll-outs, and investment requirements. While these dimensions are indispensable, they tend to obscure more fundamental social and institutional

questions: who benefits from the transition, who bears its costs, and who remains invisible in planning and decision-making processes. This report deliberately widens the analytical lens to foreground the distributional, procedural, and recognition dimensions of energy justice, with particular attention to intergenerational equity, decentralization, civil society engagement, and persistent and regional disparities.

The study is grounded in the argument that Algeria's energy transition will not achieve long-term sustainability or broad-based legitimacy unless governance frameworks are reformed to decentralize decision-making, local actors are empowered in planning and implementation, and national energy ambitions are explicitly aligned with inclusive development and social equity goals. It is assumed that without such structural shifts, the transition risks reinforcing existing disparities and institutional bottlenecks rather than overcoming them.

1.1 Framing Questions

To guide the analysis, the report is organized around three core questions:

- **Can Algeria undertake a socially just and territorially balanced energy transition while remaining a major hydrocarbon exporter?**

This question addresses the tension between continuity and transformation, whether the current model can evolve to integrate renewable energy without disrupting the economic and political role of hydrocarbons.

- **Who is currently excluded from Algeria's energy system and policy processes?**

The study highlights the structural exclusion of youth, women, informal workers, and residents of marginalized territories from Algeria's energy ecosystem. These groups were consulted through

focus groups, and their insights are reflected throughout the report, where their experiences help identify practical entry points for a more inclusive transition.

- **How do legal frameworks, public governance mechanisms, and financing tools promote or hinder justice in the energy sector?**

This line of inquiry explores the structural, institutional, and fiscal constraints that shape Algeria's energy landscape and determine the inclusivity of its reforms.

1.2 Methodology and Analytical Approach

The report adopts a qualitative, exploratory, and participatory methodology. It combines multiple sources of evidence and draws from both institutional and societal perspectives. The research process involved three main components:

- A comprehensive desk review of Algerian energy policy documents, legal texts, strategic plans, and international frameworks relevant to climate justice and sustainable development.
- A series of semi-structured interviews with key stakeholders across different sectors, including representatives of civil society organizations, youth-led initiatives, energy professionals, and regional actors. These interviews were designed to capture perceptions, constraints, and expectations related to the energy transition at various territorial levels. While the report sought territorial representativeness, primary data collection focused on selected highland and southern regions and thus may not fully reflect the diversity of experiences across all Algerian provinces.

Two focus group discussions were conducted with distinct categories of participants. The first brought together civil society representatives, including academic researchers, energy and climate experts, youth-led climate justice activists, members of scientific associations working on energy issues, and former professionals from the national energy sector. The second focus group was composed of private sector stakeholders, namely actively involved economic operators and entrepreneurs in Algeria's energy value chain. Together, these consultations provided qualitative insights into

public perceptions, governance challenges, and regional asymmetries related to the energy transition. The diversity of engagements was intended to reduce potential bias linked to the availability, responsiveness, and positionality of participating stakeholders, which may otherwise have influenced the perspectives captured.

2. Vision and Strategic Anchors for a Just Transition

The energy sector in Algeria is not a mere technical subsystem, but a profound social, political, and territorial institution. The direction of the country's energy transition will shape the next chapter of its development, sovereignty, and regional influence. Faced with dwindling hydrocarbon revenues, mounting domestic energy pressures, and a youthful population demanding social justice, Algeria confronts a strategic choice: preserve the hydrocarbon-driven model or pivot decisively toward a more equitable, diversified, and forward-looking trajectory. This section lays the groundwork for a just transition, rooted in economic rebalancing, social inclusion, and long-range vision. A just environmental transition is understood as a systemic transformation that simultaneously advances environmental sustainability, social equity, and democratic participation, ensuring that the costs and benefits of environmental and energy reforms are fairly distributed, decision-making processes are inclusive and transparent, and historically marginalized groups and territories are formally recognized within governance frameworks. These core principles provide the analytical foundation for the sections that follow, before turning to Algeria's specific positioning, stakeholder dynamics, and the interlinkages between energy justice, inclusive development, and sustainable security.

2.1 National Aspirations and Geopolitical Positioning of Algeria

Algeria remains an indispensable energy partner to Europe. In 2024, Algeria supplied approximately 14.4%¹ of the European Union's total natural gas imports, ranking among the bloc's top external suppliers, with volumes delivered via key pipeline infrastructure such as Medgaz to Spain and Trans-Mediterranean (TransMed) via Tunisia to Italy. This share refers to gross volumes imported into the European Union (EU) market, rather than production figures measured at extraction. In the same year, Algeria's contribution to pipeline gas imports to the EU reached about 19.3%², placing it behind Norway but ahead of Russia in terms of supply share by pipeline. These figures highlight Algeria's sustained role in European energy security and its role in diversifying gas sources amid shifting global market dynamics.

In addition to the increasing demand in Europe, Algeria's domestic energy consumption is also rising sharply, squeezing export capacity.³ In response, the National Company for Exploration, Production, Transport, Transformation and Marketing of Hydrocarbons (SONATRACH)⁴ and several European partners have forged major deals, such as developing the Berkine Basin gas fields and exploring the Trans-Saharan Gas Pipeline (TSGP) with Nigeria, to transport 30bcm/year of West African gas to Europe, reinforcing Algeria's role.⁵

Meanwhile, policymakers are signaling a strategic intent to reduce hydrocarbon dependency while preserving export revenues. In October 2024, Algeria launched its first upstream licensing round, since 2014 under its new Hydrocarbon Law⁶, marking a renewed effort to attract international investment in the hydrocarbons sector. The Renewable Energy and Energy Efficiency Development Plan (PDER), Algeria's national energy transition plan, aims for 15 gigawatts (GW) of renewable capacity by 2035. As part of this strategy, two major competitive tender rounds totaling 3GW of solar projects were finalized: a 1GW tender launched in late 2021 and a 2GW tender launched in February 2023, with contracts awarded to developers for construction and power purchase agreements signed under the state utility SONELGAZ. These awards cover multiple utility-scale solar projects ranging from 80 megawatts (MW) to 220 megawatts (MW) each, although not all awarded capacity has yet been commissioned into operation. These developments reflect a growing resolve to safeguard hydrocarbon export earnings while modernizing Algeria's energy model.⁷

Algeria presents a hybrid posture, thus combining the role of a trusted gas supplier maintaining pipeline dominance with nascent efforts to position itself as a renewable energy leader, exporting not hydrocarbons alone, but a new green paradigm.

2.2 Stakeholder Voices: Decentralization, Equity, and Intergenerational Justice

Consultations conducted for this study revealed a deep-seated expectation that energy policy should break with historic extractive models. Traditional top-down planning, notably orchestrated through

1 Council of the European Union, "Where Does the EU's Gas Come From?", 13 November 2025, available at <https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/>

2 Eurostat, "Imports of Energy Products to the EU Down in 2024", 21 March 2025, available at <https://ec.europa.eu/eurostat/fr/web/products-eurostat-news/w/ddn-20250321-1>

3 Obeid, J., "The Risks of a Delayed Transition for Algeria", ECCO Climate, 31 July 2025, available at <https://eccoclimate.org/the-risks-of-a-delayed-transition-for-algeria/>

4 SONATRACH is Algeria's national state-owned oil and gas company, responsible for the exploration, production, transport, transformation, and commercialization of hydrocarbons, and a central actor in the country's energy policy and export strategy.

5 Elliott, S., "Algeria, Niger, Nigeria Pledge Acceleration of Work on Trans-Saharan Gas Link", S&P Global Commodity Insights, 21 June 2022, available at <https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/062122-algeria-niger-nigeria-pledge-acceleration-of-work-on-trans-saharan-gas-link>

6 Loucif, R., "Algeria Bid Round 2024: A Strategic Shift under the New Algerian Hydrocarbon Law", International Bar Association, 8 June 2025, available at <https://www.ibanet.org/algeria-bid-round-2024-hydrocarbon-law>

7 Deboutte, G., "Algeria Reveals Winners in 3GW of PV Tenders", PV Magazine, 25 March 2024, available at <https://www.pv-magazine.com/2024/03/25/algeria-reveals-winners-in-3-gw-of-pv-tenders/>

SONELGAZ⁸ and line ministries, was frequently seen as detached from local realities and aspirations. Civil society actors emphasized the urgent need to shift toward distributed, community-led governance capacities that embrace regional energy autonomy and co-ownership of projects. Notably, participants from the High Plateaus wilayas and from wilayas in and around Algiers consistently described existing energy planning as overly centralized and insufficiently responsive to local needs.

Equity emerged repeatedly as both a baseline condition and a desired outcome, as stakeholders insisted that the benefits of renewable energy—job creation, revenue sharing, and infrastructure development—should reach underserved regions and youth, particularly in the south and interior. Intergenerational justice was raised not as an abstract principle, but as a tangible demand: that future generations should inherit energy systems that are cleaner, more affordable, and socially inclusive. Insights from the consultations also stressed the importance of recognizing experience gained through civil society organizations and associations not as tokenistic participation, but as a bridge between youth engagement and more formal involvement in local energy planning. These voices align with global best practices calling for co-design and participatory governance as necessary conditions to reach full social acceptance and democratic legitimacy in clean-energy transitions.⁹

2.3 Energy Justice, Inclusive Development, and Sustainable Security

A transition cannot be dissociated from energy justice, conceived as fair access, equitable distribution of benefits, and protection from harm. In Algeria, this translates to ensuring rural or marginal communities are not bypassed by renewables, and that self-generation (solar rooftops), cooperatives, and microgrids become instruments of

empowerment rather than exclusion. However, the current legal framework presents barriers to these instruments achieving their full potential. While Law 04-09 of 14 August 2004 on the Promotion of Renewable Energy establishes a general framework for expanding renewable generation, specific provisions for self-generation and net metering remain absent. Algeria does not yet have a formal net-metering policy that would facilitate the export of surplus electricity from small producers to the grid, thereby limiting the viability of rooftop self-generation and community microgrids for individual and collective use, as opposed to utility-scale projects. Absence of such regulatory clarity means that, in practice, households or cooperatives cannot reliably sell excess generation or participate fully in decentralized energy markets, constituting a key barrier to equitable empowerment. The single most important regulatory change required would be the adoption of a clear self-generation and net-metering framework that defines rights, interconnection standards, compensation mechanisms, and simplified permitting procedures for small-scale producers, thereby enabling solar rooftops, cooperatives, and microgrids to operate under transparent and predictable conditions.¹⁰

Inclusive development requires aligning energy policies with broader economic inclusion, training youth and women for renewable energy jobs, recognizing informal sector involvement, and linking energy investments to local entrepreneurship. Sustainable Development Goals (SDG)-based frameworks further require that energy policy ensure affordability alongside decarbonization. Finally, sustainable security, an emerging concept in regional diplomacy, frames energy transition as a stabilizer, not only domestically but across the Mediterranean. As Europe grapples with post-Russia energy dependencies, Algeria's renewable expansion and gas reliability are key elements of regional geostrategic resilience. This is echoed in European policy briefs advocating an integrated North African green corridor built on renewable cooperation and an improved investment climate.¹¹

8 SONELGAZ is Algeria's national state-owned electricity and gas company, responsible for the generation, transmission, distribution, and commercialization of electricity and natural gas, and a central actor in the country's energy sector governance and infrastructure planning.

9 Keskes, H., *Energy Transition in the Middle East and North Africa: The Road to COP28*, Resource Governance Institute, 30 November 2023, available at <https://resourcegovernance.org/publications/energy-transition-middle-east-and-north-africa-road-cop28>

10 Law No. 04-09 relative to the renewable energy promotion within the framework of sustainable development.

11 El Katiri, L., "Sunny Side Up: Maximizing the European Green Deal's Potential for North Africa and Europe", *European Council on Foreign Relations*, 9 January 2023, available at <https://ecfr.eu/publication/sunny-side-up-maximising-the-european-green-deals-potential-for-north-africa-and-europe>

2.4 Guiding Principles

Four principles emerge as essential for a just transition:

1. Long-term planning: Algeria must embed renewable energy and efficiency targets into multi-decade frameworks with clear monitoring and transparency, replacing reactive short-termism with strategic continuity.
2. Rights-based approach: Energy policy formulation should be structured around the principles of energy as a social right, community consent, and the availability of effective grievance and remedy mechanisms.¹²
3. Regional integration: A sustainable transition requires integrated energy corridors (e.g., the hydrogen corridor to Europe), technology alliances (e.g., regional renewable research hubs), and aligned policy frameworks that match Mediterranean Development Goals.
4. Intersectoral coherence: Policies across energy, industry, environment, education, and social protection must be aligned to ensure consistency and legitimacy across ministries and institutions.

These anchors, once translated into law and practice, can transform the energy transition from a technical project into a comprehensive model of justice, sovereignty, and collective progress.

12 In the Algerian administrative context, “consent” is primarily understood as procedural participation rather than substantive approval, notably through environmental impact assessment mechanisms and legally mandated public information and consultation processes preceding the authorization of major projects. “Remedy” refers to the available complaint and appeal pathways for affected users and communities. In the electricity and gas sectors, the Commission de Régulation de l’Électricité et du Gaz is mandated under the Electricity and Gas Law (Law 02-01) to receive and examine consumer complaints, providing an established administrative recourse mechanism for users. More broadly, administrative decisions may be challenged through prior administrative remedies, including *recours gracieux* or *recours hiérarchique*, and, if unresolved, through judicial review before the administrative courts under the Code of Civil and Administrative Procedure. The time limit for initiating contentious administrative litigation is generally set at two months from notification or publication of the contested decision, with further appeal or cassation proceedings available before the Conseil d’État in accordance with applicable procedural rules.

3. Socioeconomic and Territorial Dimensions of Algeria’s Energy System

Algeria’s energy landscape is underpinned by stark socioeconomic and geographical asymmetries that directly influence the inclusivity and viability of a just energy transition. The country’s energy system, while unified in principle, functions heterogeneously across regions: coastal cities benefit from reliable grid access and modern infrastructure, whereas interior and Saharan provinces experience service disruptions, limited connectivity, and dependence on diesel-fueled microgeneration. These divides carry significant socioeconomic implications, as energy poverty, unemployment, and vulnerability to climate shocks are disproportionately concentrated in regions least equipped to adapt. Moreover, the fiscal structure characterized by large fossil fuel subsidies exacerbates inequality by disproportionately supporting energy consumption in wealthier households and curbing investment in distributed clean alternatives. Understanding these layers of disparity is essential to designing interventions that are both equitable and responsive to Algeria’s varied territorial realities.

3.1 Structural Energy Inequalities: North–South, Coast–Interior, Urban–Rural

Despite achieving virtually universal national electrification by 2022, Algeria’s energy provision remains uneven across its vast territory. According to the International Energy Agency (IEA), 100% of Algerian households are connected to the national or regional electricity grid, yet power quality, grid stability, and access to cooling or heating vary significantly among coastal and Saharan provinces. Northern cities enjoy a relatively stable supply

and higher per capita electricity consumption.¹³ In contrast, in southern and high plateau regions, electricity disruption persists, and many households rely on subsidized diesel generators and kerosene for basic power needs, despite being nominally grid-connected, highlighting a de facto energy poverty that official statistics obscure. This physical and economic dualism constitutes a significant barrier to equitable access and local development, often leaving communities unable to benefit from decentralized renewable solutions despite their suitability for off-grid deployment.

3.2 Labor Market Transition: Construction and Public Works, Digital, Renewables, Local Industrial Ecosystems

Algeria's labor market is marked by high youth unemployment estimated at 29.3% in 2024—and especially high joblessness among women (25.4%), while the aggregate rate stands at 12.7%.¹⁴ A just recovery bound up in the energy transition can serve as a vital job engine, but only if employment is reframed around domestic renewal and empowerment. The construction and public works (BTP) sector, digital infrastructure, maintenance of solar and wind farms, and nascent hydrogen clusters offer skills pathways to absorb affected fossil fuel workers and the unemployed youth demographic. For these opportunities to materialize at scale, technical and vocational training systems must be equipped to respond rapidly, bridging historic gaps between fossil fuel legacies and clean energy futures.

3.3 Energy Poverty and Subsidy-Induced Inefficiencies

Algeria's energy subsidy system remains a defining feature of its socioeconomic model, deeply embedded in the national identity and functioning as a pillar of the social contract. Assessing its fiscal weight depends on the accounting approach adopted: international analyses indicate that, in 2021, implicit energy subsidies covering fuel, gas, and electricity—reflecting administered prices, kept below economic cost—were estimated at approximately 7.7% of the Gross Domestic Product (GDP).¹⁵ These implicit subsidies represent the largest component of price support mechanisms, while explicit budgetary allocations for energy-related subsidies are comparatively smaller. Broader estimates that aggregate additional social price controls (for example, on basic goods or water) suggest an even higher overall cost of price support policies when all forms of social transfers are taken into account. These variations reflect differences in scope and accounting conventions rather than inconsistencies in the underlying phenomenon, and they underscore the central role of subsidies in Algeria's public finances. At the same time, these transfers are highly regressive, as higher-income households capture a disproportionate share of energy subsidies, undermining both equity and long-term fiscal sustainability.

Although visible when revenues peak, proposals to reform fuel subsidies repeatedly founder on political sensitivities. After the 2019 Hirak protests, which surged amid economic hardship, any attempt to eliminate blanket subsidies is widely regarded as impractical.¹⁶ Advocates warn that the subsidy framework is itself a sacred symbol of national cohesion, and that its abrupt removal risks triggering a recurrence of social unrest. Even in times of high oil prices, political leadership has maintained a cautious approach toward energy reform, prioritizing short-term stability over structural adjustments.

13 International Energy Agency, National Climate Resilience Assessment for Algeria, IEA, July 2025, available at <https://www.iea.org/reports/national-climate-resilience-assessment-for-algeria>

14 World Bank, "The World Bank in Algeria: Economic Overview", 25 April 2025, available at <https://www.worldbank.org/en/country/algeria/overview>

15 Arab Reform Initiative, "Algeria's Social Subsidies: Between Financial Thresholds and Accounting Budgets", 14 February 2023.

16 Arab Reform Initiative, "Social Subsidy Policy in Algeria: The Economic Cost and the Imperative for Reform", 14 February 2023.

In Algeria’s specific context, any abrupt elimination of fossil fuel subsidies would risk undermining social stability and public support. When assessed using a broader economic approach, the implicit cost of energy subsidies—defined as the gap between domestic energy prices and international reference prices, combined with foregone tax revenues—was estimated at about 10.7% of GDP in 2021, according to International Monetary Fund assessments based on national data. This higher figure reflects a wider analytical perimeter than budgetary subsidy estimates, capturing the full economic opportunity cost of administered energy prices and highlighting both the scale of the subsidy regime and the political sensitivity of reform.¹⁷ Yet, the value of a just transition lies precisely in reconciling reform with protection. Rather than sweeping cuts, a targeted, progressive phasing-out of subsidies for more affluent households—while preserving them for lower-income groups—combined with revenue recycling (i.e., redirecting savings into social support programs, energy efficiency investments, and clean-energy infrastructure) offers a path that is both socially equitable and economically productive.¹⁸ Such partial reforms have consistently delivered welfare gains globally, reduced emissions without triggering major shocks, and opened fiscal space for developmental spending.¹⁹ In Algeria, this model would honor the constitutional commitment to state-led redistribution while financing retraining in green trades and creating a nascent renewable energy capacity. By doing so, subsidy reform would shift from being perceived primarily as a political risk to becoming a lever for social justice, economic diversification, and long-term stability, including through greater inclusivity in emerging sectors beyond hydrocarbons.²⁰

3.4 Education and Behavioral Factors: Knowledge Gaps and Consumption Culture

The energy transition in Algeria cannot be envisioned solely through technological investments or regulatory frameworks; it must also address the social and cultural dimensions of energy use. Algerian households have long internalized a model of abundant, low-cost energy consumption, shaped by decades of generous state subsidies and narratives framing hydrocarbons as national patrimony. Insights from this study frequently associate this historical framing with a perception of energy as a quasi-public entitlement, rather than as a resource carrying ecological and fiscal tradeoff.

Research participants also pointed to persistent knowledge gaps regarding both the environmental impacts of fossil fuel consumption and the practical benefits of renewable energy alternatives. In their view, energy literacy remains uneven across socioeconomic groups, particularly outside major urban centers. Technologies such as energy efficiency measures, solar thermal systems, or household-scale photovoltaic installations were often described as poorly understood, perceived as technically complex, or viewed as financially inaccessible. These perceptions were commonly attributed to the absence of sustained public awareness campaigns and the limited integration of energy-related topics into formal education curricula.

Discussions with participants further highlighted how consumption patterns are shaped by a combination of climatic pressures and evolving social norms. The increasing reliance on air conditioning during summer months was frequently cited as an example of rising energy demand driven by higher temperatures and shifting comfort expectations. This dynamic is reinforced by subsidized tariffs and weak price signaling, as well as the absence of awareness regarding building insulation, demand management, or efficiency practices.

Drawing on established sociological insights on energy transitions, participants and experts alike emphasized that behavioral change is more likely when policies engage with the symbolic

17 International Monetary Fund, *Algeria: Selected Issues* (IMF Country Report No. 24/089), IMF, 2024.

18 International Energy Agency, *National Climate Resilience Assessment for Algeria*, IEA, 3 July 2025.

19 Black, S., Liu, A. A., Parry, I. W. H., and Vernon-Lin, N., *IMF Fossil Fuel Subsidies Data: 2023 Update* (IMF Working Paper No. 23/169), IMF, 22 August 2023.

20 Boukhatem, I., “*The Challenges of the Energy Transition in Fossil Fuel-Exporting Countries: The Case of Algeria*”, Transnational Institute, 5 September 2022.

and cultural dimensions of consumption.²¹ In the Algerian context, several interlocutors suggested that renewable energy could gain broader social acceptance if framed not as a constraint or external imposition, but as an expression of national autonomy and intergenerational responsibility. Examples cited in other contexts include the use of demonstrator projects in socially visible spaces such as schools, religious institutions, or community facilities to generate social proof and normalize new practices.

Overall, both consultation findings and relevant social theory converge on the idea that behavioral and attitudinal change requires more than individual awareness-raising. It depends on collective narratives, trusted intermediaries, and place-based learning processes. From this perspective, energy justice in Algeria is understood not only as a matter of infrastructure and regulation, but also as a pedagogical and cultural challenge linked to the ability of public institutions to foster inclusive and socially resonant imaginaries of the energy future.

3.5 Social Acceptance: Perceptions of Renewables, Trust in Public Institutions, and the Role of Symbolic and Practical Inclusion

In Algeria, as in other energy-exporting countries with a long history of universal energy subsidies, the process of embedding renewable energy into societal consciousness depends on more than technology alone. It is closely linked to social acceptance, understood here as the interplay between public attitudes, symbolic meanings attached to energy, and levels of trust in public institutions. In parallel, public behaviors shaped by generations of cheap fossil energy and strong cultural attachment to hydrocarbons pose real challenges.²²

Algerian households tend to view fossil fuels not just as commodities but as symbols of national sovereignty and social stability, supported by subsidies deeply woven into the social contract.²³ By contrast, large-scale renewable energy projects are often perceived as costly, experimental, or driven by distant elites, which can generate skepticism at the grassroots level. Addressing these perceptions requires sustained and targeted education efforts that link climate awareness to practical information on how renewable energy investments, including their local economic and social benefits, can translate into tangible improvements for communities.

Research across comparable contexts suggests that perceived fairness in decision-making and meaningful opportunities for participation significantly shape acceptance. When communities feel included in planning via participatory workshops, advisory councils, or visibility into project benefits, they develop a sense of ownership and legitimacy. Conversely, top-down initiatives breed resistance.²⁴

Ultimately, building trust in state and institutional actors is essential. In the Algerian context, social acceptance is shaped less by the technical performance of renewable energy technologies than by the perceived fairness, transparency, and accountability of decision-making processes. Acceptance tends to increase when civil society organizations, youth groups, and municipalities are consulted through meaningful participatory mechanisms, when communities can clearly see how benefits are shared, and when implementation results are tracked publicly. Where civil society actors lack clear legal avenues and institutional space to operate and engage, participatory processes are harder to sustain, and legitimacy can

21 Shove, E., and Walker, G., "Governing Transitions in the Sustainability of Everyday Life", *Research Policy* 39, no. 4 (2010).

22 Harrouz, A., Belatrache, D., Boulal, K., Colak, I., and Kayisli, K., "Social Acceptance of Renewable Energy Dedicated to Electric Production: Evidence from the Adrar Region, Algeria", paper presented at the International Conference on Renewable Energy Research and Applications (ICRERA), 2020.

23 Haddoum, S., Bennour, H., and Ahmed Zaid, T., "Algerian Energy Policy: Perspectives, Barriers and Missed Opportunities", *Global Challenges* 2, no. 8 (2018), 1700134.

24 Liu, L., Bouman, T., Perlaviciute, G., and Steg, L., "Public Participation in Decision Making, Perceived Procedural Fairness and Public Acceptability of Renewable Energy Projects", *Energy & Climate Change* 1 (2020), 100013.

weaken, even when projects are technically sound.²⁵

4. Policy and Legal Frameworks: Instruments of Change or Inertia?

The legal and policy architecture underpinning Algeria's energy sector sits at the crossroads of strategic continuity and urgent transformation. For decades, the sector has been closely tied to national sovereignty, with hydrocarbons serving as both a developmental backbone and a diplomatic instrument. However, mounting internal pressures ranging from rising domestic energy demand to socio-territorial inequalities and external imperatives, including global decarbonization and shifting energy geopolitics, have exposed the limits of the current regulatory framework. Despite the existence of ambitious policy instruments such as the Renewable Energy Development Program (PDER) 2035 and formal adherence to the Paris Agreement, Algeria's energy governance remains fragmented, with overlapping mandates and limited institutional coherence. The absence of a unified regulatory authority, delays in reforming outdated laws, and underutilization of enabling instruments like self-generation all reflect a deeper inertia in the system. A just energy transition, therefore, demands more than policy proclamations: it requires a recalibration of the legal and institutional foundations to embed equity, decentralization, and accountability at the heart of the energy system.²⁶

4.1 Review of Current Energy Plans: PDER 2035, NDCs, and SDGs

Algeria's principal planning instruments frame a clear, ambitious trajectory toward renewable energy: the Renewable Energy Development Program (PDER) initially targeted the deployment of 22,000MW by 2030, including 12,000MW for domestic use and 10,000MW for exports, with solar accounting for almost 60% of this total ambition.²⁷ By 2025, the goal was recalibrated, now involving 15,000MW by 2035 to reflect mounting constraints and a more phased approach.²⁸

To date, the deployment of renewable capacity in Algeria remains modest relative to these targets. According to official compilations, the total installed renewable energy capacity connected to the national grid was approximately 600.9MW at the end of 2023, primarily from solar photovoltaic, with additional small contributions from hydropower and wind power.²⁹ A new round of national solar projects totaling 3,200MW has been launched as part of the first major phase of the updated program, with multiple solar plants under construction and the first of them expected to enter commercial service before the end of 2025.³⁰ Despite this momentum, these additions still fall far short of the 15,000MW target by 2035, highlighting the gap between planning and deployment, while underscoring the urgent need to accelerate implementation if national and international ambitions are to be met.³¹

Parallel to these capacity goals, Algeria's Nationally Determined Commitments (NDCs) under the Paris Agreement pledge a conditional reduction in greenhouse gas (GHG) emissions of up to 22% by 2030, alongside improved energy efficiency

25 Wüstenhagen, R., Wolsink, M., and Bürer, M. J., "Social Acceptance of Renewable Energy Innovation: An Introduction to the Concept", *Energy Policy* 35, no. 5 (2007), pp. 2683–2691.

Hess, D. J., "Energy Democracy and Social Movements: A Multi-Coalition Perspective on the Politics of Sustainability Transitions", *Energy Research & Social Science* 40 (2018), pp. 177–189.

26 Boukhatem, I., "The Challenges of the Energy Transition in Fossil Fuel-Exporting Countries: The Case of Algeria", *Transnational Institute*, 5 September 2022.

27 Climate Laws & Policies, "Algeria's Renewable Energy Targets: 22,000 MW by 2030", available at <https://climate-laws.org/geographies/algeria>

28 Goosen, M., "Algeria's Strategic Energy Vision: A Roadmap for Modernization and Diversification", *Energy Capital & Power*, 20 January 2025.

29 Algeriainvest.com, "Énergies Renouvelables en Algérie: La Capacité Installée à Fin Décembre 2023 S'Élève à 600,9MW", 2 September 2024.

30 Deboutte, G., "En Algérie, les Deux Premières Centrales Solaires de l'Appel d'Offres de 3 GW Bientôt Opérationnelles", *pv magazine France*, 10 October 2025.

31 Climate Analytics, "Power – Algeria", 1.5°C National Pathway Explorer, 2025, available at <https://1p5ndc-pathways.climateanalytics.org/countries/algeria/sectors/power?>

consistent with SDG 7 and SDG 12.³² While these frameworks express an alignment between national policy and global climate norms, the conceptual coherence masks a growing disjunction between formulation and execution.

While the vision is clear, the pace of implementation suggests opportunities to enhance delivery. Renewable energy accounts for a modest share of total electricity generation, with capacity additions proceeding at a gradual pace.³³ This subtle imbalance reveals an opening for reinforcing implementation pathways through enhanced project coordination, optimized institutional roles, and strengthened private sector engagement without implying systemic failure. Strengthening the alignment between national policy instruments and operational processes will enhance continuity and boost confidence in Algeria’s evolving energy landscape.

4.2 Missed Deadlines: Between Electricity Exchange Promises and the Elusive Role of the Regulator

Algeria’s Law 0201 of 2002 legally unbundled the National Company for Exploration, Production, Transport, Transformation, and Marketing of Hydrocarbons (SONELGAZ) and established the Electricity and Gas Regulatory Commission (CREG) as an independent authority tasked with ensuring fair access to electricity and gas markets.³⁴ At that time, the legislation conceived of a gradual opening of the wholesale electricity market, envisaging an electricity exchange to allow independent producers to sell directly rather than through a single state buyer. Five percent renewable electricity was the intermediate goal for 2017, to move toward broader

liberalization.³⁵ Yet, by December 2025, the only operational model remains a centralized buyer–single supplier architecture. No national electricity exchange exists, and cross-border power trade under the North African Power Pool (COMELEC) remains confined to pilot interconnections, not routine contractual transactions.³⁶ This slow momentum has restricted transparent price discovery, inhibited private investment beyond state-led tenders, and maintained Algeria’s electricity sector under quasi-monopolistic structures that were widely expected to have been gradually dismantled through earlier reform efforts.³⁷

What was initially conceived as a phased transition model has, in practice, translated into prolonged implementation delays. Statutory timelines associated with self-generation regulation, net-metering arrangements, and time-of-day settlement mechanisms were not met.³⁸ While a basic regulatory framework exists, several secondary instruments required to operationalize market opening, including updated and enforceable grid access rules, settlement arrangements, and net-metering provisions, have remained limited, delayed, or unevenly implemented, despite the legislative mandate assigned to CREG.³⁹

As a result, CREG’s role has tended to remain more advisory than enforcement-driven, shaped by overlapping institutional competencies with SONELGAZ and the Ministry of Energy, and by constraints on regulatory autonomy. Although CREG was established as an independent regulatory authority with legal personality and financial autonomy under Law No. 02-01, and its formal functions explicitly include advising

32 UNDP, UN Sustainable Development Cooperation Framework: Algeria 2023–2027, UNDP, 2023, available at <https://www.undp.org/>

33 Climate Analytics, “Algeria Power Sector in 1.5 °C Pathways: Capacity and Mix Projections”, 2025.

34 Ersoy, S. R., and Terrapon-Pfaff, J., Sustainable Transformation of Algeria’s Energy System: Development of a Phase Model, Climate Change, Energy and Environment Study, Friedrich-Ebert-Stiftung, Algeria Office, May 2021.

35 Brand, B., and Zingerle, J., The Renewable Energy Targets of the Maghreb Countries: Impact on Electricity Supply and Conventional Power Markets (EWI Working Paper No. 10/02), Institute of Energy Economics, University of Cologne, May 2010.

36 Association of Mediterranean Energy Regulators, NRA’s Role in Opening the Market to Competition, Mediterranean Energy Regulators, Milan, 2024.

37 League of Arab States and World Bank, Integration of Electricity Networks in the Arab World: Regional Market Structure and Design – Volume I (Study of Institutional and Regulatory Frameworks, Part III), 2013.

38 Bouznit, M., del P. Pablo-Romero, M., and Sánchez-Braza, A., “Measures to Promote Renewable Energy for Electricity Generation in Algeria: Legislative Framework, Financial Aid and Implementation Challenges”, Sustainability 12, no. 4 (2020), 1468.

39 International Renewable Energy Agency, North Africa: Policies and Finance for Renewable Energy, IRENA, 2023.

public authorities on market organization and supervision, regulatory indicators on sustainable energy governance point to persistent institutional constraints affecting regulatory performance and the implementation of market-opening measures.⁴⁰

These overdue milestones invite not accusatory rhetoric, but regulatory calibration. Strengthening CREG’s operational remit, particularly with respect to fair grid access, market rule-making, and private generation licensing, would help align regulatory practice with Algeria’s long-stated energy transition ambitions.

4.3 Legal and Regulatory Opportunities

Algeria’s legal and regulatory frameworks play a pivotal role in shaping the pace and direction of its energy transition. While the country has taken significant legislative steps, such as establishing a renewable energy support scheme and introducing a regulatory authority, implementation challenges and outdated provisions have limited their transformative potential. As the global energy landscape evolves and Algeria pursues its own economic diversification, there is a growing need to modernize the legal infrastructure in ways that not only attract investment but also reflect principles of justice, inclusion, and territorial equity. Reforming the Electricity Law to facilitate decentralized and self-generated energy, embedding equity concerns within subsidy structures, and enhancing governance oversight mechanisms are all part of a broader agenda to align legal instruments with the aspirations of a just energy transition. These legal pathways are not only regulatory corrections but are enablers of national transformation.

A. Reform of the Electricity Law to Support Self-Generation

Algeria’s legal framework currently allows for the self-production of electricity using renewable sources under Law No. 0201 of 2002, which established CREG as the independent market

regulator.⁴¹ A pivotal mechanism for renewable deployment was introduced via Executive Decree No. 1798 of February 2017, outlining reverse-format tenders implemented through Requests for Proposals (RfPs) and Power Purchase Agreements (PPAs).⁴² ⁴³ However, key operational rules remain pending, notably, grid code standardization, enforceable third-party access, and net-metering configurations.

Citizens, municipalities, and anchor institutions such as schools or primary health clinics could benefit significantly from a modernized and consolidated self-generation framework. A strategic reform could bring together self-generation and net-metering provisions within a single dedicated “Self-Generation Law” or implementing decree, designed to clarify operational rules and reduce administrative uncertainty.

Such a framework would notably define clear eligibility thresholds for small-scale producers (for example, differentiated capacity caps for households, public buildings, and municipal installations), establish standardized interconnection procedures with binding time limits for grid connection approval, and specify technical metering standards to ensure transparent measurement of injected and consumed electricity. It would also identify an appropriate dispute-resolution forum, such as CREG or a specialized administrative chamber, for addressing interconnection or billing disputes.

To support gradual implementation and institutional learning, the framework could

40 Electricity and Gas Regulation Commission, “CREG – About Us”, available at <https://creg.gov.dz/en/home/>
ESMAP, Algeria – Regulatory Indicators for Sustainable Energy, World Bank, 2024.

41 MEDREG – Association of Mediterranean Regulators for Electricity and Gas, Mediterranean Energy Regulatory Outlook 2017, MEDREG, Milan, November 2017.

42 A Power Purchase Agreement (PPA) refers to a long-term contract under which an electricity producer sells power to a designated buyer under agreed conditions, including price, duration, and delivery terms. In the Algerian renewable energy context, PPAs are typically concluded between project developers and a public off-taker, usually a subsidiary of SONELGAZ, following competitive tendering processes. PPA structures define the contractual and financial framework governing risk allocation between the producer and the buyer, including pricing mechanisms, payment guarantees, grid connection obligations, and conditions for dispatch and settlement. Such arrangements are designed to provide revenue certainty for investors while enabling public authorities to control procurement volumes and tariff structures within the electricity system.

43 Norton Rose Fulbright, “Algeria: Publication of the Decree Setting Out the Framework for Tenders for Renewable Energies IPPs”, Norton Rose Fulbright, April 2017.

further provide for pilot deployment in selected municipalities or regions, allowing procedures and technical requirements to be tested before national scaling. Building on earlier executive instruments, including the 2004 feed-in tariff decree (Decree No. 2004-92), such a consolidated approach would link compensation mechanisms directly to legally defined self-generation rights, offering long-term predictability for users while preserving system oversight.⁴⁴

Moreover, restructuring and formally integrating Sustainable Hydrocarbon Development Company (SHAEMS)⁴⁵, the joint venture between the National Electricity and Gas Company (SONELGAZ) and the National Company for Exploration, Production, Transport, Transformation and Marketing of Hydrocarbons (SONATRACH), responsible for clean-energy tenders, into a transparent, codified procurement process could reassure both local stakeholders and foreign partners.⁴⁶ The objective would be to ensure that legal frameworks support localized ownership and managerial space, thereby increasing public legitimacy and aligning with the ethos of a just energy transition.

B. Integration of Energy Justice into Social Protection and Fiscal Policy

Energy access in Algeria remains heavily subsidized, yet urban households disproportionately benefit. A thoughtful reform pathway would tie subsidy mechanisms to explicit energy poverty indicators, thereby improving equity and freeing fiscal space for targeted support. Reforming the existing feed-in tariff tools (adopted through Decree No. 92-2004) could simultaneously embed social criteria and deliver direct benefits to vulnerable communities, via subsidized solar kits, community microgrids, or

support for “clean cooking” facilities.⁴⁷

To translate energy transition into meaningful socioeconomic outcomes, Algeria’s regulatory framework must evolve to better accommodate local initiative, equitable participation, and decentralized energy generation. Current investment provisions—though partially modernized for large-scale ventures—still fall short of enabling broader societal inclusion in the energy sector, particularly for youth, women, cooperatives, and local governments. Advancing a just energy transition requires codifying supportive legal mechanisms that open pathways for these actors. In practical terms, this entails clarifying and amending existing sectoral legislation, such as electricity, local governance, and investment laws, to explicitly recognize small-scale producers, energy cooperatives, and municipal initiatives as legitimate market participants, and to provide them with simplified licensing, access to the grid, and eligibility for support schemes. Comparable approaches in other contexts have shown that such legal recognition, combined with proportionate regulatory requirements, can significantly lower entry barriers for community-based energy projects without undermining state oversight or system reliability.

These adaptations do not require abandoning Algeria’s strategic control over key sectors, but rather refining its instruments to align sovereign energy policy with inclusive Development Goals. In doing so, the transition becomes not only a technological or financial shift but a lever for territorial empowerment, social redistribution, and long-term resilience.

5. Governance and Institutional Architecture

A coherent and inclusive institutional architecture remains foundational for Algeria’s just energy transition. While the country has articulated ambitious goals through the PDER 2035 and related

44 Climate Change Laws of the World, “Executive Decree No. 2004-92 on the Diversification of Power Generation Costs (REFIT)”.

45 SHAEMS (Société Algérienne des Énergies Renouvelables) is a renewable energy company jointly owned by Algeria’s state-owned oil company, SONATRACH, and the national electricity and gas utility, SONELGAZ. Established as a specialized vehicle for the development and procurement of large-scale renewable energy projects, SHAEMS participates in tender rounds and may take equity stakes in project special purpose vehicles, supporting project development, financing, and power purchase arrangements under long-term contracts.

46 International Trade Administration, U.S. Department of Commerce, “Algeria – Renewable Energy”, Country Commercial Guide: Algeria, 31 January 2023.

47 Bouznit, M., del P. Pablo-Romero, M., and Sánchez-Braza, A., “Measures to Promote Renewable Energy for Electricity Generation in Algeria”, Sustainability 12, no. 4 (2020), 1468.

strategies, the fragmented nature of governance structures, limited institutional synergy, and modest levels of local empowerment continue to slow the pace of structural transformation. In this context, strengthening institutional coherence across vertical and horizontal levels of governance is not merely an operational consideration; it is essential to building legitimacy, trust, and responsiveness in policy design and implementation.

The current energy governance landscape is marked by a multiplicity of actors with overlapping mandates. The Ministry of Energy and Mines is the central authority responsible for both the hydrocarbon and renewable energy sectors, a configuration that has evolved following the dissolution of the short-lived Ministry of Energy Transition and Renewable Energies. Alongside it, major state-owned enterprises (SOEs) such as SONATRACH and SONELGAZ retain considerable autonomy in project development, infrastructure planning, and sectoral leadership. The Electricity and Gas Regulatory Commission (CREG) theoretically acts as an independent regulator; yet in practice, its operational reach remains constrained due to intersecting roles with other institutional actors and limited enforcement capacity. The emergence of subsidiaries like SHAEMS (jointly created by SONATRACH and SONELGAZ for renewable project development) further diversifies the institutional terrain but adds new layers of complexity, which blur lines of accountability and strategic coherence.

This fragmentation is mirrored by weak horizontal coordination among relevant ministries, namely those in charge of energy, environment, industrial development, and planning. Policy formulation remains compartmentalized, with each department operating within its own procedural logic and policy cycle. At the same time, vertical coordination with subnational levels, particularly municipalities (Communal People's Assemblies, APCs), regional assemblies (wilayas), and advisory bodies, is minimal. Local authorities, despite being closest to the populations affected by renewable energy projects, are rarely involved in planning or regulatory deliberations. This exclusion diminishes both the contextual sensitivity of energy transition policies and the chances for bottom-up innovation or feedback loops.

In light of these institutional gaps, the proposal to establish a National Energy Transition Agency (NETA) stands as a strategic opportunity. Rather

than replacing existing institutions, NETA would function as a coordination platform and meta-governance body, tasked with harmonizing mandates, facilitating structured inter-agency dialogue, and embedding the energy transition within a long-term, rights-based, and territorially responsive framework. In institutional terms, such an agency could be envisaged as a specialized body attached to the ministry in charge of energy transition, with a mandate focused on coordination, monitoring, and stakeholder interface rather than direct project execution. Its added value would lie in clarifying roles across ministries, state-owned enterprises, and local authorities, while providing a structured channel for engagement with civil society, youth organizations, and territorial actors. It would also serve as a dedicated interface with civil society, local authorities, and international donors, enhancing transparency and policy coherence without necessitating the dismantling of existing institutions. To address these structural limitations, several co-governance mechanisms can be explored. Multi-actor platforms that bring together ministries, state-owned enterprises (SOEs), academia, municipalities, youth organizations, and civil society groups could institutionalize more participatory policy processes. Independent monitoring bodies such as renewable energy observatories or citizen review panels could help track implementation, conduct periodic social audits, and foster public trust in the transition. These structures would align energy governance with broader public values.

Lastly, embedding decentralization into the governance model of energy transition is essential for its long-term viability. Empowering municipalities through technical assistance, participatory planning mechanisms, and financial autonomy (e.g., local budgeting for community energy initiatives) would help root the transition in Algeria's diverse regional realities. At the same time, strengthening the roles of regional authorities and advisory institutions like the National Economic, Social and Environmental Council (CNESE) could create multi-level governance ecosystems responsive to both national strategies and local imperatives. In the Algerian context, where centralized planning has historically dominated development trajectories, such shifts toward inclusive governance mark a necessary evolution toward a just and territorially balanced energy transition.

Table. Actor–Role Mapping in Algeria’s Energy Governance

Actor	Current Role (as observed today)	Main Limitations	Proposed Role After Reform
Ministry of Energy and Mines	Central authority overseeing hydrocarbons and renewable energy policy; strategic planning and sectoral supervision	Overextended mandate combining hydrocarbons and renewables; limited horizontal coordination with environment, planning, and industry ministries	Strategic oversight of energy transition policy, with clearer coordination mechanisms and delegation of cross-cutting functions to NETA
SONATRACH	State-owned enterprise leading hydrocarbon production and exports; major contributor to state revenues; involvement in selected renewable and hydrogen projects	Mandate primarily anchored in hydrocarbon logic; limited integration of social and territorial objectives	Continued strategic role in national energy security, while operating within a more coordinated transition framework aligned with national decarbonization goals
SONELGAZ	Monopoly operator for electricity and gas generation, transmission, and distribution; parent company of multiple subsidiaries in diversification	Highly centralized operational model; limited space for decentralized or local initiatives	System operator within a more open and coordinated governance model, enabling decentralized generation and municipal participation
CREG	Legally independent regulator responsible for market supervision; advisory role in practice	Limited enforcement capacity; overlapping mandates with line ministries and SOEs	Strengthened regulator with clearer enforcement powers, binding rule-making authority, and oversight of market access and dispute resolution
SHAEMS (SONATRACH-SONELGAZ JV)	Vehicle for renewable energy project development and tender participation	Procurement role not fully embedded in a transparent, codified framework; blurred accountability	Integrated into a transparent procurement architecture with clear rules, evaluation criteria, and oversight
Other line ministries (Environment, Industry, etc.)	Sector-specific inputs into energy-related policies	Weak horizontal coordination; siloed policy cycles	Structured inter-ministerial coordination through NETA to align climate, industrial, and territorial objectives
Municipalities (APCs) and Wilayas	Minimal involvement in energy planning and project design	Exclusion from decision-making despite proximity to affected communities	Active partners in participatory planning, pilot projects, and decentralized energy initiatives
Civil society and youth organizations	Informal or ad hoc consultation	Lack of institutionalized participation channels	Formalized engagement through consultative platforms, citizen panels, and monitoring mechanisms
Proposed NETA	Not currently existing	Fragmentation and lack of meta-coordination across actors	Meta-governance body attached to the ministry in charge of energy transition, coordinating actors, monitoring implementation, and interfacing with civil society, local authorities, and donors

6. Role of State-Owned Enterprises: Blockers or Enablers?

In Algeria, the state-owned enterprises (SOEs) such as SONATRACH and SONELGAZ do not merely participate in the energy sector; they define it. Their dominance reflects a historical model where state control has shaped industrial development, energy security, and national sovereignty. In the context of a just energy transition, this centrality presents both strategic potential and systemic rigidity. Unlike more liberalized markets, Algeria's transition depends largely on the capacity of its SOEs to evolve institutionally, embrace sustainability, and integrate local and social imperatives. The challenge lies not in marginalizing these actors, but in transforming them into engines of inclusive, decentralized, and future-ready energy governance.

6.1 Dominance of SONATRACH and SONELGAZ: Potential vs. Inertia

SONATRACH and SONELGAZ occupy dual roles: their infrastructural scale and financial weight position them as indispensable enablers, yet their operational rigidity and legacy mandates pose key barriers to transformative change. Built upon a hydrocarbon-led model, SONATRACH generates the majority of export revenues and state budget income,⁴⁸ underpinning national energy policy. Meanwhile, SONELGAZ controls generation, transmission, and distribution of both electricity and gas; its corporate umbrella now includes a dozen subsidiaries dedicated to diversification, such as SONELGAZ Renewable Energies, the Algerian

Company for Electrical and Gas Industries (SAIEG).⁴⁹ These enterprises thus form the institutional core of Algeria's energy architecture.

The potential lies in their capacity to mobilize domestic capital, leverage global networks, and steer large-scale infrastructure. Projects like Hassi R'Mel Integrated Solar Combined Cycle (ISCC) power plant, a hybrid solar-gas facility developed by New Energy Algeria (NEAL)⁵⁰ (a SONATRACH-SONELGAZ JV), illustrate how synergies can reduce carbon emissions while maintaining grid stability.⁵¹ Similarly, joint ventures with actors like Hecate Renewable Energy and Tosyali on green hydrogen reflect an effort to leapfrog into emerging clean technologies.⁵²

Yet this potential is tempered by operational inertia in Algeria's renewable energy transition. Algeria's energy mix remains dominated by hydrocarbons and gas-fired electricity generation, even as policies aim to expand solar deployment. Currently, flagship hybrid solar-gas projects such as the Hassi R'Mel Integrated Solar Combined Cycle (ISCC) power plant — a combined cycle facility with a total capacity of approximately 150MW including about 25MW from solar thermal — have served primarily as demonstration projects rather than the basis for a replicable pipeline of hybrid or renewable-only plants, in part because the broader policy and regulatory framework for decentralized project replication is still emerging.⁵³

49 SAIEG is an industrial subsidiary of the SONELGAZ Group responsible for manufacturing and maintenance activities in the electricity and gas sectors, including electrical equipment and related energy infrastructure.

50 NEAL (New Energy Algeria) is a renewable energy development company established in 2002 as a joint venture between Algeria's state-owned oil company, SONATRACH, the national electricity and gas utility, SONELGAZ, and private partners. Its mission focuses on advancing renewable energy production and technology partnerships, including the development of hybrid solar-gas plants and wind projects, and facilitating collaboration with national and international enterprises in renewable energy technologies.

51 *National Renewable Energy Laboratory*, "ISCC Hassi R'Mel CSP Project", in *Concentrating Solar Power Projects*, 3 December 2021, available at <https://solarpaces.nrel.gov/project/iscc-hassi-rmel>

52 SONATRACH, "SONATRACH Signs a Memorandum of Understanding with the American Company Hecate and Tosyali Algeria", 24 June 2025, available at <https://sonatrach.com/en/sonatrach-signs-a-memorandum-of-understanding-with-the-american-company-hecate-and-tosyali-algeria/>

53 Global Energy Monitor, "Hassi R'Mel Integrated Solar Combined Cycle Power Station", 5 August 2025.

48 U.S. Energy Information Administration, Country Analysis Brief: Algeria (focus on hydrocarbon export dominance and SONATRACH fiscal centrality), U.S. Energy Information Administration, 5 June 2025.

Similarly, decentralized solar installations in rural areas—for example, small photovoltaic systems connected in Saharan villages such as Hassi Mounir and Tamadjert—illustrate technical feasibility but have remained limited in scope and scale without structured mechanisms for grid integration, standardized interconnection procedures, or scalable procurement programs.⁵⁴ While Algeria’s renewable energy strategic targets envisage substantial capacity increases under national programs, integration and operationalization of decentralized renewables beyond pilot stages is dependent on complementary regulatory instruments and grid planning frameworks that are under development or not yet fully connected to decentralized deployment pathways.⁵⁵

Thus, while SONATRACH and SONEGAS are rightly central to Algeria’s energy transition, their model needs reform to shift from dominance toward enablement. Their corporate charters should integrate explicit sustainability targets, emissions reduction pathways, and territorial accountability. Mandates should require engagement with regional councils, APCs, and youth bodies in project design and impact evaluation. Procurement and partnership frameworks must be broadened to include private innovators, municipal cooperatives, and disaggregated generators. This would transform these SOEs from bottlenecks into platforms for innovation, inclusion, and equitable development—more than state energy custodians, the engines of a locally embedded and future-ready energy system. This shift can be operationalized through a combined legal and institutional mandate. Legally, the state as shareholder can revise the SOEs’ statutes and issue a formal “owner expectations” or performance agreement that translates the just transition into measurable obligations, including time-bound decarbonization targets, territorial service standards, and disclosure requirements, alongside procurement rules that lower barriers for smaller actors through standardized contracts and published evaluation criteria. Institutionally, dedicated units for decentralized renewables and community partnership delivery can be mandated inside SONATRACH and SONEGAS, with clear coordination protocols with the regulator and line

54 Algeria Renewable Energy Program (AREP), African Development Bank.

55 Ersoy, S. R., and Terrapon-Pfaff, J., Sustainable Transformation of Algeria’s Energy System: Development of a Phase Model, Friedrich-Ebert-Stiftung, 2021.

ministry to avoid overlap and ensure enforceability. Comparable state ownership frameworks show how shareholder mandates and publicly stated expectations can be used to align SOE strategy with public policy goals while retaining state control and accountability.⁵⁶

6.2 Need for Public-Private Innovation and Territorial Responsiveness

State-owned enterprises such as SONATRACH and SONEGAS have driven Algeria’s energy transition through pilot projects in green hydrogen, solar, and hybrid generation. Yet these initiatives remain largely centralized and circumscribed, highlighting the need for public-private innovation models firmly rooted in local ecosystems and responsive to regional realities.

Algeria is forging ahead with bold strategic visions. For example, the national energy plan aims to position the country as a green hydrogen hub producing up to 40TWh annually by 2040 and meeting 10% of European demand via projects like the SouthH₂ Corridor pipeline.⁵⁷ Notable Memorandums of Understanding between SONATRACH and international actors (e.g., The Spanish Petroleum Company (CEPSA), Hecate Renewable Energy, and European consortiums such as the Gas Network Association (VNG), Snam, and Seacorridor) emphasize developing green hydrogen production plants powered by solar and wind farms, storage facilities, and downstream ammonia/methanol production infrastructure.⁵⁸ Meanwhile, SONEGAS’s launch of 20 photovoltaic (PV) plants across several wilayas, including Adrar, El Oued, and Béchar, is backed by domestic tender rules stipulating 42% local content and marketing

56 Organization for Economic Cooperation and Development, OECD Guidelines on Corporate Governance of State-Owned Enterprises, OECD Legal Instruments, OECD, 2024, and Organization for Economic Cooperation and Development, State-Owned Enterprises and Sustainability, OECD, 2025.

57 Energy Capital & Power, “Algeria, Global Partners Formalize SouthH₂ Green Hydrogen Pipeline Project”, Energy Capital & Power, 27 January 2025.

58 Energy Capital & Power, “SONATRACH, CEPSA Sign Green Hydrogen MoU: Feasibility Study for Integrated Algiers–EU Supply Project”, Energy Capital & Power, 17 October 2024.

incentives.⁵⁹

Yet these projects reflect a top-down approach that does not fully embed innovation within Algeria's growing private sector and startup ecosystem. According to industry analysts consulted as part of this study, although state-run entities dominate Algeria's renewable sector, mechanisms for integrating micro, small, and mid-sized enterprises (MSMEs), as well as startups, are still nascent.⁶⁰ In contrast, Algeria is simultaneously building key infrastructure to support innovation: the Algeria Startup Fund (ASF) and the National Venture Studio, supported by institutions like the Research Center on Scientific and Technical Information (CERIST), have begun financing and incubating early-stage startups in green technology and digital-enabled energy services.⁶¹ Insights from consultations and sector observations suggest the emergence of a modest but growing number of energy-focused startups in Algeria, particularly in areas such as micro-grid solutions and solar technologies. However, their collaboration with SOEs remains limited.

Forging effective public-private innovation platforms would align ambitious SOE-led pilots with territorial energy challenges. This means establishing co-design mechanisms that include startups specialized in microgrids, Internet of Things (IoT)-enabled monitoring, or hybrid solar storage; placing them alongside SONELGAZ or SONATRACH operations in southern Saharan wilayas; and integrating their services within decentralized energy contracts. A stronger role for digital innovation hubs supported by international partners to bring together SOEs, local governments, and green technology startups would enable prototyping, training, and co-investment in renewable mini projects.

This type of territorial anchoring has multiple benefits: (a) promotes technology transfer and skills development from national to regional levels; (b) ensures renewable projects deliver social and economic value aligned with local communities; (c) strengthens local ownership and acceptance; and

(d) allows small-scale innovation to scale through pilot validation and eventual integration into grid-level systems.

In short, while SONATRACH and SONELGAZ provide critical scale and state backing, Algeria needs new institutional mechanisms that make room for public-private innovation partnerships, especially at the sub-national level. By doing so, pilot projects transform into locally responsive engines of a truly just and decentralized energy transition.

7. Civil Society and Bottom-Up Initiatives

Civil society in Algeria plays a potentially transformative yet still underutilized role in advancing a just energy transition. Although the national policy landscape is predominantly state-centric, a constellation of local associations, university clubs, professional networks, and environmental non-governmental organizations (NGOs) has emerged with varying degrees of engagement in energy discourse. However, this landscape remains fragmented, unevenly distributed, and structurally constrained by legal, financial, and institutional limitations. Empowering civil society actors, particularly those rooted in local communities and youth engagement, is essential to translating national energy ambitions into inclusive, bottom-up change.

7.1 Mapping Active CSOs: Geography, Typology, and Influence

Civil society organizations (CSOs) engaged in the energy and environment fields are concentrated primarily in urban and coastal wilayas such as Algiers, Oran, Constantine, and Tizi Ouzou. These regions host most of the university-affiliated initiatives like Club Énergie (Energy Club), as well as professional alumni associations often composed of retired engineers and former staff from SONATRACH or SONELGAZ. Such organizations benefit from elite access, technical expertise, and proximity to decision-making hubs. However, insights gathered

59 Global Flow Control, "SONELGAZ Plans the Construction of 20 Photovoltaic Solar Power Plants", press release, 16 March 2024.

60 International Trade Administration, U.S. Department of Commerce, "Algeria – Renewable Energy", Country Commercial Guide: Algeria, 31 January 2023.

61 DeepMinds™, "A New Era for Innovation: ASF, CERIST and DeepMinds Unite to Build 1,000+ Tech Ventures Across Algeria", press release, 1 June 2025.

during the civil society consultations conducted for this report indicate they rarely engage in field-based or community-oriented work, with most of their activities remaining confined to conferences, academic panels, and policy seminars.

Conversely, grassroots and youth-led initiatives in the interior and southern regions, such as Adrar, Ouargla, and Tamanrasset, face chronic underfunding, weak institutional support, and logistical challenges. Environmental NGOs active in these areas often operate without formal recognition, limited staff, and highly localized reach. Some associations linked to former public utility employees (retired SONATRACH/SONELGAZ) possess access to technical knowledge and networks, reinforcing inequalities within the civil society space.

7.2 Operational and Legal Constraints

Algerian civil society operates under a restrictive legal framework, particularly in the context of Law 12-06 on associations, which imposes stringent registration requirements, state supervision, and limits on foreign partnerships. Associations are legally barred from receiving foreign funding without prior state approval, effectively limiting access to most international support mechanisms and constraining sustained engagement with global environmental and development networks. In practice, civil society actors have adapted by pursuing international cooperation through alternative lawful channels, most commonly via universities and research institutions, or through social and solidarity enterprises, which offer more flexible avenues for partnership.

Additionally, CSOs suffer from a lack of structural funding and institutional recognition. Most do not have access to stable public grants or endowments, and associative experience is not valorized in formal employment or public service recruitment. This leads to a pattern where civic engagement remains precarious, sporadic, and highly dependent on the voluntary efforts of a small number of committed individuals. Despite their technical and social potential, most associations are unable to scale or sustain their initiatives due to these constraints. In practice, the spaces currently open to civil society action are concentrated around a limited set of activities, primarily environmental awareness

campaigns, youth engagement and volunteerism, local sustainable development projects, and community-based initiatives related to renewable energy promotion or ecological protection. As reflected in the civil society landscape identified for this study, many organizations operate at the local or regional level, focusing on training workshops, public outreach, small-scale pilot projects, or advocacy linked to sustainable development and environmental preservation. While these activities contribute meaningfully to local awareness and social mobilization, they remain largely project-based and fragmented, with limited institutional anchoring or pathways for scaling into long-term, territorially embedded energy initiatives.

7.3 Structural Disparities and the Need for Reconfiguration

There is a pronounced asymmetry between elite-linked CSOs and grassroots actors. Organizations that enjoy connections with the energy elite, such as former SOE executives, technical universities, and policy advisors, are better positioned to influence discourse, access funding, and gain visibility. However, this reinforces a technocratic model of civil society, disconnected from grassroots realities. Youth or women-led initiatives, community cooperatives, or rural environmental groups remain peripheral, both in institutional terms and within national dialogue platforms.

The fragmentation of this landscape reflects broader governance patterns: a top-down energy transition strategy with limited avenues for localized experimentation or decentralized participation. Yet it is precisely these underrepresented groups that are best placed to catalyze behavioral change, raise awareness, and anchor energy justice in local socioeconomic realities.

7.4 Toward an Enabling Environment: Pathways for Empowerment

A just energy transition in Algeria requires the creation of enabling conditions for civil society to act as a credible and effective partner. This entails not only legal reforms, such as the liberalization of Law

12-06 to allow foreign cooperation and autonomous action, but also institutional innovation. Civil society should be included in formal energy planning processes, from municipal consultations to national advisory bodies such as the National Observatory of Civil Society (ONSC), whose role could be extended to provide structured input on energy transition policies. Initiatives such as participatory budgeting for renewable projects, regional energy assemblies, and youth-led sustainability labs could provide structured entry points for civic engagement. Furthermore, associative experience—understood as sustained voluntary engagement, project work, or internships within civil society organizations—should be recognized as valuable social capital in recruitment, education, and public administration. Structured capacity-building programs targeting local CSOs, especially in underserved areas, could enhance project design, financial management, and advocacy skills. This would enable a bottom-up energy ecosystem rooted in trust, legitimacy, and social inclusion.

8. Finance and Investment Environment

The financial landscape of Algeria's energy transition remains heavily dependent on the state budget, which is primarily fueled by hydrocarbon revenues. This budget centralization constrains the diversification of funding sources, especially in a context where domestic capital markets are still underdeveloped and insufficiently oriented toward green investments. The predominance of public financing mechanisms hinders private sector participation and prevents the emergence of innovative financial solutions tailored to the specificities of the energy transition.

Among the main barriers to green investment are the absence of mechanisms to hedge foreign exchange risk for international investors, the lack of bank guarantees, and a regulatory vacuum regarding incentive tools such as carbon pricing or green certificate systems. Additionally, the persistence of the so-called 51:49 rule, which mandates a majority of Algerian ownership in any joint venture, continues to act as a barrier to the involvement of foreign partners in renewable

energy projects despite the fact that such projects often require significant capital and technology transfers. While this rule has been lifted for most sectors, it has been retained for activities classified as strategic, including the energy sector, thereby constraining the development of public-private partnerships in this domain. Nonetheless, several opportunities deserve to be explored to create a more favorable investment environment. The idea of establishing a sovereign green fund, financed by a share of hydrocarbon revenues, could support mitigation and adaptation projects while initiating a gradual shift away from oil dependency. Similar funds already exist in some fossil-fuel-producing countries, such as Norway,⁶² and could be adapted to the Algerian context to support renewable energy projects with strong territorial anchorage.

Likewise, the use of financial instruments such as sovereign green bonds or concessional loans could facilitate the funding of high-impact projects, provided that reforms in financial governance and transparency in resource allocation are implemented. The involvement of multilateral organizations such as the African Development Bank (ADB) or the EU in providing risk mitigation mechanisms could also help reduce perceived investment risk for international financiers.

From a just energy transition perspective, financing mechanisms must also be reoriented to promote greater inclusion. This implies not only better targeting of energy subsidies toward vulnerable populations, but also the creation of mechanisms allowing local communities to invest in energy infrastructure through cooperatives or shared governance projects. Such a model would reinforce local ownership while helping to reduce territorial inequalities in access to sustainable energy.

62 Reuters, "Norway Wealth Fund Hits Record 20 trillion crowns, Invests in Renewable Energy Projects", Reuters, 6 December 2024.

9. Education, Training, and Capacity Building

A socially just energy transition requires more than technological adaptation; it demands a reconfiguration of knowledge systems, professional pathways, and educational outreach. In Algeria, this transformation must be anchored in inclusive educational and training infrastructures that prepare diverse populations for a low-carbon future. However, the current landscape reveals structural bottlenecks, institutional disconnects, and territorial disparities that hinder human capital mobilization for energy transition objectives. Addressing these gaps is not simply a technical endeavor but a social, territorial, and generational imperative.

Green vocational academies remain a critical structural need in Algeria's energy transition framework. While institutions such as the Algerian Petroleum Institute (IAP) and several faculties of engineering offer programs related to conventional energy, training opportunities for technicians and operators in renewable energy technologies remain scarce. This absence is particularly pronounced in southern wilayas and high plateau regions where solar and wind energy potential is highest, but skilled labor is often unavailable. Efforts to establish dedicated vocational tracks in green energy, with programs designed in coordination with public enterprises and local authorities, are essential to ensure place-based inclusion and long-term employment pathways.

A central weakness of the current system lies in the research-to-product pipeline, as universities and enterprises often function in silos. Despite significant academic output in renewable energy research, especially in solar technologies, these innovations rarely translate into viable commercial solutions or field deployment. Mechanisms such as joint research laboratories, innovation clusters, and structured university-industry consortiums are underdeveloped. Bridging this gap requires institutional incentives, co-financing schemes, and national coordination bodies that can mediate knowledge transfer and industrial scaling.

Building a resilient energy future also hinges on the development of social innovation ecosystems. Several incubators, such as those hosted by the National Agency for the Promotion and Development of Technology Parks (ANPT) or university-based hubs, have begun supporting green startups, but often lack long-term funding and market access. The integration of pilot projects into public procurement, support for cooperative models, and legal recognition of social enterprises in the energy domain could significantly increase impact. These ecosystems must also extend beyond urban centers, ensuring that regional youth and entrepreneurs are included.⁶³

Educational outreach must begin early. The integration of renewable energy themes into school curricula, including in primary and secondary education, remains embryonic. Civil society initiatives have sometimes stepped in to fill this gap, but without institutional support, their reach is limited. A culturally sensitive vector of diffusion is mosque-based outreach, which has shown potential. Religious leaders, when adequately engaged and equipped with environmental literacy tools, can play a role in raising awareness on energy sustainability and responsible consumption, especially in rural areas. This dimension aligns with the ethics of stewardship and intergenerational justice, often emphasized in Islamic teachings.⁶⁴

Finally, territorial inclusion remains paramount. Many southern regions and High Plateaus suffer from a double exclusion: energy vulnerability and educational marginalization. Public policies should prioritize the creation of energy training hubs in these territories, coupled with mobility grants, local employment quotas in green infrastructure projects, and investments in local innovation ecosystems. These efforts would not only reduce regional inequalities but also root the energy transition in territories that are often overlooked in national planning.

63 "We Are Tech Africa", "ANPT Builds a Supportive Ecosystem for ICT Growth in Algeria", 8 March 2024.

Arabeche, Z., "The Actions Carried Out by the Cyberparc Incubator of Sidi Abdellah During the Period of 2010–2020: State of Play and Perspectives", *Economics and Business* 36 (2022), pp. 17–33.

64 Bentley, C., "Muslim Environmentalists Give Their Religion — and Their Mosques — a Fresh Coat of Green", 30 December 2016.

10. Strategic Roadmap and Key Recommendations

Algeria’s just energy transition is a project of national reconfiguration. To move from an extractive, centralized, and hydrocarbon-dependent system toward a more equitable, inclusive, and sustainable energy paradigm, the country must engage in deep legal, institutional, and societal transformation. The following strategic roadmap outlines key reforms and operational recommendations rooted in the principles of energy justice, territorial cohesion, youth inclusion, and intergenerational equity. These proposals build on the lessons from existing policies, stakeholder consultations conducted as part of this study, and international experiences, while being grounded in the Algerian context.

10.1 Legal and Policy Reforms for a Rights-Based Energy Transition

A just transition cannot be achieved without a legal framework that recognizes energy as a social right and ensures access, affordability, and remedy for vulnerable populations. Algeria’s current legislation remains anchored in centralized control, with incomplete liberalization and limited space for community energy or decentralized actors.

To address this, the Electricity Law should be reformed to enable genuine self-generation, decentralized production, and third-party access. This includes establishing clear net-metering regulations, simplifying permitting procedures for small-scale producers, and embedding provisions for participatory planning. Moreover, energy justice principles should be explicitly integrated into fiscal and subsidy policies, shifting from regressive, blanket subsidies to targeted support for low-income households, while redirecting savings into social investment and clean energy infrastructure.

In operational terms, reform of the electricity framework should be complemented by the adoption of a consolidated self-generation and net-metering regime, either through a dedicated “Self-Generation

Law” or through harmonized implementing decrees. Such a framework should specify differentiated capacity thresholds for households, public institutions, and municipal installations; establish standardized interconnection procedures with binding approval timelines; and define transparent technical standards for metering and settlement. It should also designate a clear dispute-resolution forum—such as CREG or a specialized administrative mechanism—to address interconnection, billing, or compensation disputes. To ensure institutional learning and reduce implementation risk, the reform should be rolled out through pilot municipalities or regions before national scaling, building on existing instruments such as the 2004 feed-in tariff decree while linking compensation mechanisms directly to legally defined self-generation rights.

To increase implementation capacity and mitigate political risk, subsidy reform should be sequenced as a three-step transition package designed to protect vulnerable households upfront and to avoid abrupt price shocks. First, visible protection measures should be introduced before any reduction in universal price support, notably through a targeted social tariff for essential electricity and gas consumption and/or calibrated cash transfers to low-income households. Second, initial fiscal savings should be channeled into highly visible and territorially balanced community investments, such as subsidized household solar kits, retrofitting of schools and primary health facilities, and energy efficiency upgrades in underserved wilayas, to demonstrate immediate redistribution and build public trust. Third, price signaling should be phased in gradually through predictable adjustment rules and automatic stabilizers, including fuel price bands and indexed revisions, so that changes remain incremental, transparent, and resilient to external price volatility. Framed this way, reform becomes a protection-first transition that strengthens equity and fiscal sustainability while keeping social acceptance manageable. Parallel to these reforms, Algeria must develop a comprehensive “Just Energy Transition Law” that consolidates disparate regulatory tools, defines rights and responsibilities of all actors, and codifies mechanisms for community benefit-sharing, grievance redress, and social impact monitoring.

10.2 Institutional Realignment and Creation of Independent Coordination Bodies

Fragmentation and overlapping mandates have slowed Algeria's energy transition. The dissolution of the Ministry of Energy transition and the constrained role of the Electricity and Gas Regulatory Commission (CREG) illustrate the institutional inertia impeding reform.

A National Energy Transition Agency (NETA) should be established as a meta-governance body tasked with strategic coordination, monitoring, and interface with civil society, international donors, and local authorities. NETA would not replace existing institutions but ensure coherence across them. It would house technical working groups on regional equity, youth inclusion, and legal reform, and provide annual progress reports to the public and Parliament.

To be effective, the establishment of NETA should be underpinned by clear institutional parameters. The agency could be created by decree and attached to the ministry in charge of the energy transition, ensuring political anchoring while preserving a cross-sectoral coordination mandate. Its core funding should come from a dedicated state budget line, complemented by earmarked contributions linked to hydrocarbon revenues and, where appropriate, international partner support, thereby reinforcing accountability of the hydrocarbon sector in financing the transition.

NETA would report directly to the supervising ministry and contribute periodic progress reports to the government, while operating in complementarity with existing institutions. Its role would not overlap with CREG's regulatory mandate, nor with line ministries' sectoral responsibilities, but rather focus on strategic coordination, monitoring, and policy coherence across actors, including state-owned enterprises such as SONELGAZ and SONATRACH. In addition, NETA should be mandated to organize structured interfaces with civil society, youth organizations, and local authorities through consultative councils or thematic panels, ensuring that social, territorial, and equity considerations are systematically integrated into energy transition planning and implementation.

Simultaneously, the operational independence and capacity of CREG must be reinforced. This includes granting it enforcement powers, adequate staffing, and the authority to issue binding market rules. Without a credible regulator, investor confidence and citizen trust will remain low. In parallel, institutional realignment should extend to the governance of renewable energy procurement. Where entities such as SHAEMS play a central role in organizing large-scale clean-energy tenders, their integration into a transparent and codified procurement framework is essential for credibility and inclusiveness. In principle, such transparency would require the systematic publication of standardized contractual templates, including power purchase agreement models, to lower entry barriers for smaller or non-incumbent actors; the disclosure of clear and publicly accessible evaluation criteria covering technical, financial, and social impact dimensions; and the establishment of a defined appeals or review mechanism, overseen by CREG or an independent administrative body, to address procedural disputes. Embedding these elements would not entail redesigning procurement rules in detail, but would signal that a just energy transition depends as much on accessible and transparent procedures as on investment scale, thereby reinforcing institutional trust among local stakeholders and international partners alike.

10.3 Inclusive Financing Strategy Targeting Equity and Territorial Cohesion

The current financing environment remains overly dependent on state budgets and SOEs, with limited space for private or community-based investment. To correct this, Algeria must adopt a dual financing strategy: (1) Institutional innovation at the national level, and (2) Territorial empowerment at the local level.

At the national level, the creation of a sovereign green fund, capitalized by a share of hydrocarbon revenues, could support equity-focused investments such as microgrids in energy-poor regions, vocational training for women and youth, and retrofitting public buildings with solar technologies. The issuance of green bonds or concessional loans, with support from partners like the African Development Bank (ADB) or the European Investment Bank (EIB), should be explored.

To bridge the persistent gap between research, innovation, and market deployment, inclusive financing instruments should support structured collaboration across universities, industry, and territories. In this regard, the establishment of joint applied research laboratories could be prioritized as an eligible financing window under national transition funding mechanisms. These joint labs would be co-funded by universities, state-owned enterprises, and local authorities, with transparent cost-sharing arrangements and clearly defined governance structures.

Their mandate would focus on applied themes directly linked to domestic needs and job creation, such as solar operation and maintenance, energy storage solutions, grid integration, or the valorization of hydrogen by-products. To ensure that innovation translates into concrete socioeconomic outcomes, pilot projects developed within these laboratories should benefit from a preferential public procurement pathway, allowing limited-scale testing and deployment through municipal projects or SOE-led tenders. Such an approach would connect human capital development with market access, while anchoring innovation in territorial and employment objectives.

At the local level, frameworks enabling community energy cooperatives must be developed. These could include matching grants for local projects, technical assistance for municipal energy planning, and legal status for energy-user associations. Decentralized finance mechanisms must be aligned with decentralization of planning and ownership.

At the same time, the scaling up of export-oriented renewable and hydrogen initiatives calls for careful attention to how financial, infrastructural, and human resources are allocated, in order to avoid unintended trade-offs with domestic energy access and territorial equity objectives.

Large-scale export-oriented energy projects can generate significant revenues and strategic benefits, but they may also absorb scarce resources such as land, grid capacity, concessional finance, skilled labor, and institutional attention. Without deliberate coordination, these resources risk being diverted away from domestic priorities, including upgrading transmission and distribution networks in underserved wilayas, supporting household and municipal self-generation, and addressing persistent forms of energy poverty in southern

and high plateau regions. Making this allocation challenge explicit is therefore essential to ensure that export-linked investments and domestic equity objectives remain mutually reinforcing rather than competing.

10.4 Recognition of Civil Society and Youth as Legitimate Energy Stakeholders

A just transition cannot succeed without the meaningful inclusion of those historically excluded from energy governance, particularly civil society and youth. Yet legal constraints (e.g., Law 12-06 on associations), structural underfunding, and centralized planning continue to marginalize bottom-up actors.

Legal reform is necessary to allow CSOs to operate freely, receive funding (such as from international partners), and participate in formal decision-making. Beyond legal status, institutional recognition must be embedded: youth-led organizations and local NGOs should be represented on advisory councils, municipal energy boards, and monitoring committees.

The state should launch national youth programs focused on energy citizenship, offering training, seed funding, and civic engagement opportunities. Energy transition labs linked to universities and local governments could serve as incubators for youth innovation, public education, and participatory planning.

In parallel, these energy transition labs should be explicitly designed as entry points for youth, early-career researchers, and regional innovators. Linked to universities, vocational institutes, and local governments, they could offer applied training, paid research placements, and project-based learning tied to real deployment opportunities. By integrating research outputs into public or SOE-backed pilot projects, these labs would help transform academic knowledge into local employment, entrepreneurship, and service provision, particularly in peripheral regions. Such arrangements would ensure that participation in the energy transition is not limited to large incumbents but opens tangible pathways for young professionals and locally embedded actors.

10.5 Creation of Monitoring and Accountability Frameworks

Transparency and accountability are prerequisites for social legitimacy. Without robust monitoring, energy transition risks becoming a technocratic exercise, detached from public oversight.

To address this, Algeria should institutionalize a multi-tiered monitoring framework. This includes: (a) An independent national energy transition observatory tasked with publishing annual scorecards, evaluating social and territorial impacts, and benchmarking Algeria's progress against global standards. To embed energy justice, monitoring should rely on a concise set of indicators covering distributional justice (e.g., regional allocation of energy investments, reliability of access, and employment outcomes by region and gender), procedural justice (e.g., number of public consultations, proportion of projects adjusted following stakeholder input, and grievance resolution timelines), and recognitional justice (e.g., inclusion of youth, women, and local communities in governance and project design). All indicators and underlying datasets should be published through an open-data platform to ensure transparency, independent scrutiny, and public accountability. These monitoring functions should be complemented by participatory and oversight mechanisms at the territorial level, notably (b) Regional citizen panels or "transition forums" that meet regularly to review local project performance; and (c) Mandatory social audits for all publicly funded energy projects. Together, these instruments would ensure that national monitoring is grounded in local feedback and enforceable accountability. To support these monitoring and accountability mechanisms, public access to data must be guaranteed via a digital platform that tracks subsidies, emissions, employment outcomes, and project financing in real time.

10.6 Phased Decentralization and Public Participation

True energy justice requires democratizing energy governance. This means shifting away from centralized planning led exclusively by SONELGAZ or ministerial bodies toward participatory, regionally grounded models.

A phased roadmap should be adopted to progressively transfer certain competencies to subnational authorities. In the short term, municipalities should be empowered to co-design local energy plans, receive direct budget lines for renewable projects, and access technical support. In the medium term, regional energy councils composed of local officials, civil society, youth representatives, and private actors could manage territorial energy programs. In the long term, legal provisions should allow municipalities to co-own energy assets and derive revenues from them. Participatory budgeting and social dialogue forums should be embedded into every phase of project development, from feasibility to evaluation.

This strategic roadmap translates the principles of energy justice into actionable reforms for Algeria. It recognizes that energy transition is not only about megawatts and megaprojects: it is about inclusion, redistribution, and long-term resilience. Implementing these recommendations would not only align Algeria's transition with global norms but more importantly, root it in national realities and societal aspirations.

Taken together, these measures are intended to ensure that strategic energy investments serve both national objectives and local development needs by reconciling export-oriented ambitions with inclusive governance, territorial equity, and social resilience. By explicitly acknowledging how strategic energy choices shape the distribution of infrastructure, finance, and human capital, this roadmap emphasizes that the effectiveness of the energy transition depends not only on scale and ambition but also on the governance arrangements through which investments are planned, implemented, and monitored. The proposed reforms seek to anchor Algeria's energy transition in national priorities while responding to the needs of communities and regions that have historically remained at the margins of energy policy.

11. Conclusion: From a Hydrocarbon Legacy to an Inclusive Energy Future: Algeria at a Crossroads

Algeria's energy transition is not simply a matter of replacing fossil fuels with renewable energy. It is a societal project that requires a fundamental rethinking of governance structures, development models, public participation, and territorial equity. Rooted in a legacy of centralization, hydrocarbon dependence, and institutional fragmentation, Algeria now stands at a pivotal juncture. Whether the country leverages the energy transition as a transformative vector for inclusive development or remains confined to incremental change will depend on the ambition, coherence, and political resolve of its reforms. This report has sought to outline the contours of a just, pragmatic, and nationally anchored transition pathway.

Algeria's current institutional landscape remains marked by fragmentation, limited horizontal coordination among ministries, and weak integration of local authorities into national planning. The absence of a dedicated energy transition agency, combined with the constrained mandates of regulatory bodies, has hindered progress. To date, state-owned enterprises continue to dominate the energy space, simultaneously advancing innovation through select pilot initiatives while reproducing centralized inertia. Their capacity to enable a just energy transition will ultimately depend on whether they are willing to embrace decentralization, public-private collaboration, and greater societal accountability.

Civil society and youth actors remain marginal in the design and monitoring of energy policy. While numerous initiatives exist, particularly among university-based centers, retired professionals, and local environmental groups, legal and financial constraints continue to limit their impact. Structural

disparities favor elite-linked organizations that are often disconnected from grassroots realities.

The financial landscape is still overly dependent on public budgets, with capital markets underdeveloped and foreign investment constrained by the 51:49 ownership rule. Opportunities such as green bonds, a sovereign green fund, and concessional climate finance exist, but require legal reform and guarantee mechanisms. Lastly, the infrastructure and technical systems, especially in high-potential but underserved regions, lack the resilience and coverage required for a rapid transition. Similarly, education and training ecosystems do not yet align with green job market needs. The gap between research institutions and productive sectors remains wide.

Throughout this report, one idea has emerged consistently: Algeria's energy transition is not just an environmental imperative but a national development project. A just transition can serve as a lever to revitalize lagging regions, empower youth, foster job creation, and build a more resilient and equitable social contract. But this will not occur unless it is embedded in a framework of rights, territorial cohesion, and co-governance. Institutional inertia, technocratic approaches, and top-down planning must give way to inclusive leadership, intergenerational dialogue, and citizen participation. The path forward requires redefining the role of the state not as a sole actor, but as an enabler of distributed agency, shared responsibility, and multi-scalar coordination. This report is not a prescription, but an invitation to policymakers, institutions, civil society, youth, and international partners to co-construct an energy transition rooted in Algerian realities and guided by universal principles of justice and sustainability.

About the Arab Reform Initiative

The Arab Reform Initiative is an independent Arab think tank working with expert partners in the Middle East and North Africa and beyond to articulate a home-grown agenda for democratic change and social justice. It conducts research and policy analysis and provides a platform for inspirational voices based on the principles of diversity, impartiality, and gender equality.



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