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Riding the Solar Wave. Morocco's Renewable Energy Agenda—*A Prospective Analysis*

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Final Degree Project
Cover: Ouarzazate Noor solar power plants I, II, III

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PRESENTATION

This report asks a simple question with far-reaching implications: Will Morocco, over the next decade, actually become a worthwhile place for a foreign company to build large-scale solar and battery projects? It is written for a European renewable energy developer that is weighing an entry into the country and needs forward-looking political risk analysis specifically focused on the solar and storage value chain rather than a broad country profile.

The focus is deliberately narrow. The report examines how Morocco's energy and climate agenda, power-sector reforms, and institutional practices on the ground shape the risk–return balance for solar and storage investments. Particular attention is paid to the "friction points" that decide whether projects move or stall: permitting and bureaucracy, grid capacity and connection, land access and local reaction, the availability and cost of funding, and Morocco's attempt to position itself as an energy bridge between Africa and Europe.

Analytically, the report combines country and sector analysis with prospective tools used in political risk assessment. It employs a SWOT analysis and develops three sets of scenarios for the evolution of the Moroccan solar and storage market between now and 2035, identifying the outcome that appears most plausible and the conditions under which it could shift. The goal is not to recommend policies, but to give decision-makers clear, estimative judgements on the main opportunities and risks they would assume by committing capital to Morocco's renewable energy sector.

EXECUTIVE SUMMARY

Morocco enters the 2026–2035 period as one of the most stable and predictable renewable energy markets in North Africa, with macro-financial conditions that, while not free of structural challenges, are broadly supportive of long-term infrastructure investment. Growth has stabilised above 3.5% since 2023 and inflation around 1%, while fiscal consolidation and an upgrade to investment-grade sovereign ratings have reduced funding costs and strengthened the state's capacity to back energy-sector projects. Political continuity under King Mohammed VI and the expected outcome of the 2026 elections suggest limited policy disruption, reinforcing visibility for investors.

Against this backdrop, Morocco is advancing rapidly toward its target of a 52% renewable share in installed electricity capacity by 2030, with solar as the central pillar of the strategy. Installed solar capacity is projected to reach 4.7–5.5 GW by 2030 and up to 8–10 GW by 2035, while storage is becoming integral to the system, as reflected in hybrid projects such as Noor Midelt and the growing use of battery energy storage systems. Recent regulatory reforms have opened new avenues for private participation through corporate PPAs, self-generation for industrial users and a gradual reinforcement of grid and interconnection planning.

Morocco is also positioning itself as an energy bridge between Africa and Europe, leveraging existing interconnections with Spain and an ambitious pipeline of port, transmission and hydrogen-related projects. Strong industrial demand—notably from OCP Group and the automotive and mining sectors—together with concessional financing from international financial institutions enhances project bankability. For foreign developers, the market can offer attractive returns, with unlevered equity IRRs in the high single-digit to low double-digit range under credible assumptions.

However, key constraints remain. Permitting processes average 18–24 months, grid bottlenecks limit connection capacity in certain regions and several flagship projects, including cross-border interconnectors and new port infrastructure, face execution, financing and security risks that could delay or scale back their contribution to the energy system. Projects in Western Sahara also entail legal and reputational risks linked to international rulings. Overall, Morocco presents a solid but conditional investment case: strong fundamentals and clear growth prospects are offset by operational and regulatory constraints, and timelines are subject to slippage. Partnerships with domestic actors remain the most effective strategy to mitigate risks and secure long-term returns.

Key Terms for Renewable Energy Investment in Morocco

Market Structure & Revenue Model	
PPA	Long-term Power Purchase Agreement defining price and delivery of electricity
IPP	Independent Power Producer operating generation assets for sale.
Off-taker	Entity purchasing electricity (utility or industrial client).
Merchant Risk	Exposure to market price fluctuations without contractual protection.
Technology & Energy Systems	
PV	Photovoltaic solar technology converting sunlight into electricity.
CSP	Concentrated Solar Power using thermal systems and storage
BESS	Battery Energy Storage Systems storing electricity for later use.
PtX	Power-to-X technologies (notably green hydrogen and ammonia).
Grid & System Constraints	
Grid Congestion	Insufficient transmission capacity limiting electricity flows.
Hosting Capacity	Maximum generation the grid can absorb without instability.
HVDC	High Voltage Direct Current
Financial Metrics & Investment Logic	
LCOE	Average lifetime cost of electricity generation.
IRR	Internal Rate of Return of an investment.
CapEx	Initial capital investment required for project development.
OpEx	Ongoing operational and maintenance costs.
Units & Technical Metrics	
GW / MW	Units of installed capacity (1 GW = 1,000 MW).
MWp	Peak output of a solar PV system.
kV	Unit of voltage in transmission systems.
kWh/m²/day	Solar irradiation metric.
MAD	Moroccan Dirham.

1. MOROCCO'S ENERGY AND CLIMATE CONTEXT

Morocco enters the energy transition with the profile of a resilient middle-income economy that has largely absorbed recent global and climatic shocks, maintaining growth rates above 3.5% since 2023 and keeping inflation around 1% with a stable currency framework and gradual fiscal consolidation. A more diversified productive base—from automotive and mining to tourism and services—together with record international reserves, improved sovereign ratings and continued access to Eurobond markets have reduced macro-financial risk and strengthened the country's capacity to finance large-scale infrastructure, including grid upgrades and renewable projects. These fundamentals support long-term project bankability and lower the probability of abrupt policy reversals driven by balance-of-payments or fiscal stress.

On the political side, Morocco combines a constitutional monarchy with competitive elections, which has produced a high degree of continuity around pro-business and infrastructure-driven policies since the early 2000s. King Mohammed VI and the current coalition government have placed energy diversification, industrial decarbonisation and regional interconnections at the core of the development agenda, while diplomatic alignment with key European and Gulf partners has translated into sustained support for trade, energy cooperation and investment flows. Episodes of social mobilisation and unresolved territorial questions, notably Western Sahara, persist but have been managed without systemic instability, and the political centre of gravity remains firmly committed to expanding renewables capacity as a strategic pillar of Morocco's growth model.

1.1. Morocco's Energy Mix and Strategic Resources

Morocco's primary energy mix in 2025 relies heavily on imports (90% of needs), with oil at 57%, coal 30%, biofuels/waste 6%, renewables 5%, and natural gas 3%. The electricity sector is undergoing a clear and accelerating transition, driven by the need to meet rising demand from population growth, industrial expansion, and urbanization while reducing heavy reliance on imported fossil fuels.[1] Historically, the country has imported most of its primary energy,

[1] International Energy Agency, *"Morocco – Energy Mix,"* IEA, 2024, https://www.iea.org/countries/morocco/energy-mix

leading to vulnerability from global price swings and supply risks. In response, Morocco has pursued a deliberate strategy since the 2009 National Energy Strategy to diversify sources, enhance energy security, and lower long-term costs through renewables.[2] Key institutions like the Office National de l'Électricité et de l'Eau Potable (ONEE), which handles much of the grid and generation, and the Moroccan Agency for Sustainable Energy (MASEN), which leads major renewable energy projects with partner organizations, helping to ensure they are coordinated efficiently.

As of early 2026, Morocco's total installed electricity capacity stands at 12 GW, with renewables representing 45-46% of this capacity, a substantial rise from around 37-38% just a few years earlier.[3] Within the renewable share, wind leads with roughly 2,390 MW total capacity (44% of renewable capacity), followed by hydropower at 24% (approximately 1,340 MW), solar at 17% (reaching 900-1,000 MW by late 2025), and pumped storage at 15% (around 840 MW). This rapid expansion reflects Morocco's commitment to its national targets: achieving 52% renewables in installed capacity by 2030, including an estimated 4.7 GW of solar, 4.3 GW of wind, and 1.5 GW of hydropower as core components of the plan.[4]

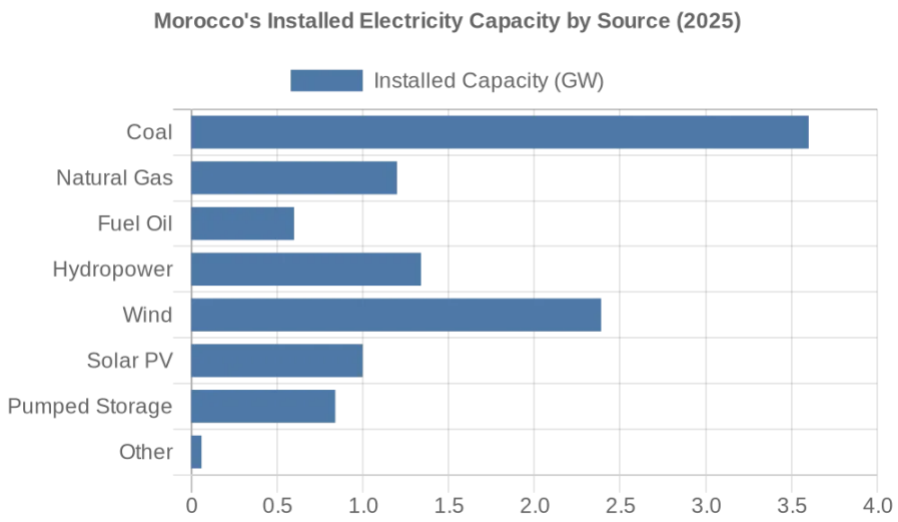

Figure 1. Morocco's Installed Electricity Capacity by Source (IEA, 2025)

[2] Khadidja Sakhraoui, Redha Agadi, Christian von Hirschhausen, and Güvenc Sarper Ege, "Energy Policy in Morocco: Analysis of the National Energy Strategy's Impact on Sustainable Energy Supply and Transformation," *Next Energy Research* (2024), https://doi.org/10.1016/j.nexres.2024.100072

[3] European Commission, Joint Research Centre. "The Potential of Renewable Hydrogen in the Mediterranean Region." Luxembourg: Publications Office of the European Union, 2023. https://publications.jrc.ec.europa.eu/repository/handle/JRC132933

[4] Rabab Hteit, "Morocco's National Energy and Energy Efficiency Plan," SDG16+ Policy Initiative, June 6, 2023, https://www.sdg16.plus/policies/moroccos-national-energy-and-energy-efficiency-plan/

A critical distinction emerges when comparing installed capacity with actual electricity generation. Although renewables represent 46% of installed capacity as of 2025, coal and natural gas continue to dominate actual electricity output.[5] In 2023, Morocco's electricity generation mix reflected coal at 64% of total production, natural gas at 10%, fuel oil and diesel at 3.8%, and renewables at 21.7%, with wind at 15.4%, solar at 5.1%, hydropower at 1%, pumped storage at 0.4%, and other sources at 0.4%. This disparity between capacity share and generation share persists because thermal plants operate continuously to provide baseload and system stability, whereas wind and solar output varies seasonally and diurnally. As new renewable projects come online and grid infrastructure adapts, this gap is expected to narrow: preliminary 2025 data (January–August) show total electricity production up 5.3% compared to the same period in 2024, though complete annual figures remain preliminary.[6]

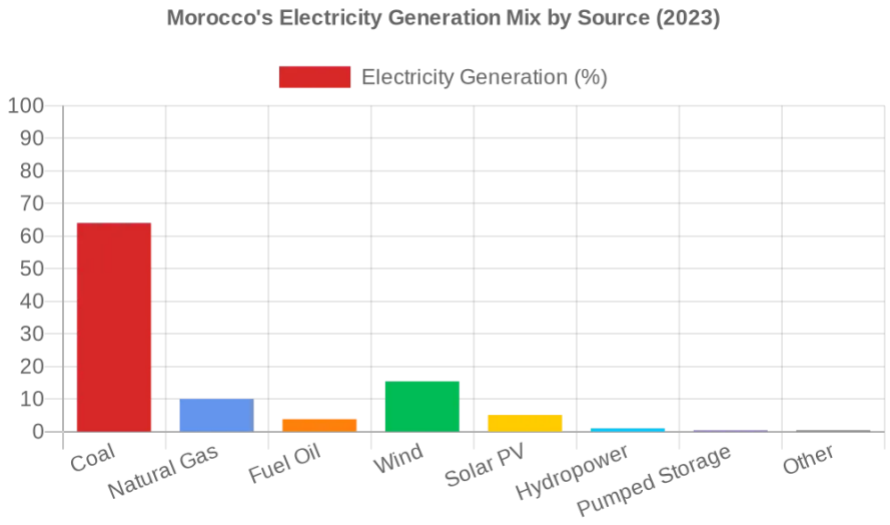

Figure 2. Morocco's Electricity Generation Mix by Source, % of total production (IEA 2023)

Solar photovoltaic (PV) deployment stands out as a key driver of this progress, thanks to Morocco's outstanding resource potential: more than 3,000 annual sunshine hours and irradiation levels frequently above 5 kWh/m²/day, especially in the south. Installed solar capacity has built steadily, reaching about 900–1,000 MW by late 2025, including both utility-scale plants and emerging distributed/self-consumption systems. Iconic projects like the Noor Ouarzazate complex (over 500 MW of CSP with thermal storage for reliable dispatch) have set

[5] International Trade Administration, U.S. Department of Commerce, "Morocco – Energy," Country Commercial Guide, accessed March 12, 2026, https://www.trade.gov/country-commercial-guides/morocco-energy

[6] Rabat Hteit, "Morocco's National Energy and Energy Efficiency Plan," SDG16+ Policy Initiative, June 6, 2023, https://www.sdg16.plus/policies/moroccos-national-energy-and-energy-efficiency-plan/

global benchmarks, while newer additions focus on PV for cost efficiency. Production costs have dropped sharply, to 0.34–0.42 MAD per kWh in recent tenders, making solar competitive with fossil options. Annual solar generation now contributes several TWh (with utility scale output in the range of 1.6-4 TWh depending on estimates and availability), supporting overall renewable growth.

In essence, Morocco's power mix today reflects a foundational shift: fossil fuels remain central for reliable baseload, but renewables, led by wind and increasingly by solar PV, are gaining ground rapidly. This trajectory, backed by strong policy commitment, falling costs, and international partnerships, positions the country not only to meet its 2030 goals ahead of schedule but also to build a more resilient, competitive energy system. The growing role of solar PV, in particular, highlights abundant natural advantages and practical progress, laying solid groundwork for the deeper expansions and investment opportunities explored in later sections of this report.

1.2. Grid, Storage and Interconnections

Morocco's electricity grid is managed by the *Office National de l'Électricité et de l'Eau Potable* (ONEE) and operates at high-voltage levels, facing challenges from sustained demand growth and environmental protection requirements that make energy security and emission mitigation key drivers for transformation.[7] A detailed high-voltage network model reveals that renewable integration alters power flows, with wind increasing southern-corridor transfers from about 55 MW to 83 MW, while solar effects remain localized near production zones.[8] These changes highlight that electrical connectivity and dispatch interactions, rather than mere geography, determine impacted corridors. Hosting capacity (HC) assessments indicate that the grid's ability to accommodate renewables is constrained by thermal, voltage, protection, and stability limits. Excessive distributed generation beyond HC can lead to over/under voltages, line overloads, increased losses, and protection issues. In Morocco's medium-voltage distribution network, deterministic models show risks of overvoltage, reverse power flow, and feeder overloading under high RES scenarios. Transmission-level HC is dynamic, varying with topology,

[7] Y. Boulakhbar et al., "Renewable Energy Integration in Morocco: Strategy and Challenges," *Renewable and Sustainable Energy Reviews* 2020. Towards a large-scale integration of renewable energies in Morocco - ScienceDirect

[8] Arfaoui et al., "Hosting Capacity and High-Voltage Grid Modeling in Morocco," 2026. JSDEWES: Assessment of the Hosting Capacity of the Moroccan Electricity Grid for the Integration of Renewable Energies

contingencies, and hourly demand, emphasizing the need for hourly simulations to identify bottlenecks. For instance, 2022 scenarios with 8% solar, 12% wind, and 20% mixed renewables demonstrate that wind and solar induce variability in line flows, complicating grid stability. The grid's current configuration supports Morocco's renewable ambitions, but intermittency from solar and wind, dependent on weather, poses risks of large voltage and frequency deviations if unmanaged. Efforts to enhance grid flexibility through advanced planning and control are underway, aligning with the national strategy to boost RES while maintaining reliability.

In contrast to Morocco's developing grid, Spain's electricity system, as a nearby market, key interconnection partner, and advanced renewables deployer, is experiencing severe saturation, with over 80% of its grid nodes unable to accommodate additional electricity volume as of late 2025, leading to delays in new renewable and industrial connections.[9] This saturation has resulted in high rates of solar and wind energy curtailment, congestion at nodes, and episodes of negative or zero prices in the Iberian market (MIBEL), as highlighted by the International Energy Agency (IEA) in its World Energy Outlook 2025, which warns that the Iberian grid is not prepared for the renewable era.[10] A major blackout on April 28, 2025, affecting Spain, Portugal, and parts of southern France, underscored these vulnerabilities, occurring when renewables accounted for 78% of generation, with solar at nearly 60%, and limited conventional backup leading to a system collapse.[11] During the recovery, Morocco played a crucial role by supplying up to 900 MW through its interconnections, demonstrating the benefits of cross-border links in stabilizing saturated systems.[12] Spain's grid operator, Redeia (REE), manages a system with interconnections to France (up to 4250 MW exchange capacity), Portugal (up to 3300 MW), and Morocco (currently 1400 MW, with a third 700 MW line planned for 2026), but the overall network requires major investments to alleviate bottlenecks and support higher renewable integration.[13]

[9] European Network of Transmission System Operators for Electricity (ENTSO-E), "28 April 2025 Iberian Blackout," last modified October 3, 2025, https://www.entsoe.eu/publications/blackout/28-april-2025-iberian-blackout/

[10] International Energy Agency (IEA), *World Energy Outlook 2025* (Paris: IEA, 2025), World Energy Outlook 2025 – Analysis - IEA

[11] Raúl Bajo, "The Iberian Blackout of April 28, 2025," Baker Institute, 2025, The Iberian Peninsula Blackout — Causes, Consequences, and Challenges Ahead | Baker Institute

[12] ESI Africa, "Morocco Supplies 900 MW to Spain During Blackout," 2025, How Morocco stepped in when electricity grid in Spain failed - ESI-Africa.com

[13] Redeia (REE), *Annual Grid Development Report*, 2026, Transmission Grid Development Plan 2021- 2026

Morocco's interconnection infrastructure enhances grid stability by enabling electricity imports/exports, particularly with Europe, and supports RES integration through diversified supply. The primary interconnection is the Morocco-Spain link, consisting of two short-distance subsea AC cables operational since the late 1990s, with a 400 kV line facilitating energy exchange up to 1400 MW. This allows Morocco to import during peak demand and export green energy, aligning with global trends in cross-border grids.[14] A third interconnection with Spain, adding 700 MW, is planned for commissioning in 2026, further strengthening ties.[15] Additionally, a new Morocco-Portugal link is slated for 2030, enhancing Iberian integration. Regionally, Morocco maintains interconnections with Algeria, including a 400 kV overhead circuit line and two 220 kV overhead lines carrying up to 1400 MW, from Bourdim to Hassi Ameur, and from Oujda to Ghazaouet and Tlemcen, respectively.[16] These links, though limited by political factors, help meet demand. Globally, such interconnections mitigate RES variability by sharing resources across time zones and climates. Morocco's strategy envisions exporting green energy to Europe, leveraging its high solar radiation (4.7-5.6 kWh/m²/day) and wind potential, positioning the country as a hub connecting Europe to Africa.

Compared to Spain, where grid saturation has led to widespread curtailment and a major blackout in 2025, Morocco's grid is less congested but still developing, with interconnections providing a buffer against similar issues. While Spain struggles with over 80% node saturation and needs urgent upgrades to handle its high renewable penetration, Morocco's system benefits from lower current saturation levels, allowing for planned expansions like the third Spain link and potential Portugal connection to facilitate exports and balance regional imbalances.[17] However, interconnections face challenges, including the need for high-voltage direct current (HVDC) for longer distances to minimise losses. Morocco's grid must address hosting capacity limits to fully utilise these links without overloads.

[14] Aitor Ciarreta, Anas Damoun, and Maria Carmen Espinosa, "A Restructured Moroccan Electricity Market and Its Interaction with the Iberian Power Market," *Energy Policy* 206 (2025), A restructured Moroccan electricity market and its interaction with the Iberian power market - ScienceDirect

[15] Ramón Roca, "La tercera interconexión con Marruecos tendrá una capacidad de 700 MW y costará 150 millones," El Periódico de la Energía, 14 de febrero de 2019, https://elperiodicodelaenergia.com/la-tercera-interconexion-con-marruecos-tendra-una-capacidad-de-700-mw-y-costara-150-millones.

[16] Meliani et al., "Morocco's Power System Expansion and Forecasting Models," 2022, Smart Grid Challenges in Morocco and an Energy Demand Forecasting with Time Series | Scientific.Net

[17] PV Tech, "Spain's Renewable Curtailment and Grid Congestion," 2026. High PV curtailment expected in Spain through 2027 – pv magazine International

Energy storage plays a critical role in addressing the intermittency of RES, enabling Morocco to stabilize its grid and achieve higher renewable penetration. The country has integrated various storage technologies, particularly in conjunction with concentrated solar power (CSP) and hydroelectric facilities. Thermal energy storage is prominent in Morocco's solar projects, such as the Noor complex in Ouarzazate. Noor 1, with a 160 MW capacity using parabolic trough collector (PTC) technology, incorporates molten salt storage for up to 3 hours of operation post-sunset. Noor 2 (200 MW, parabolic mirrors) and Noor 3 (150 MW, solar tower) extend storage to 7 hours, allowing dispatchable power during peak demand.[18] These systems use advanced CSP with thermal oil and molten salt, considered mature and simple for integration, requiring sites with direct normal irradiance (DNI) of at least 2,000–2,800 kWh/m²/year. Hydroelectric storage, via pumped energy transfer stations (PETS), complements solar and wind. Morocco's hydroelectric installed capacity was 1,770 MW in 2018, with pumped storage providing flexibility for load balancing. The Afourer PETS, for example, supports renewable integration by storing excess energy during high generation periods. Power-to-X (PtX) technologies are emerging as a storage and utilization strategy. Morocco's strategy includes PtX for decarbonizing sectors beyond electricity, such as producing hydrogen or synthetic fuels from surplus RES.[19] However, storage inefficiencies, resulting in only about 38 TWh available to end-users from 43 TWh produced in 2022, underscore the need for modernization to reduce losses and enhance stability.[20]. Challenges include the high cost and complexity of storage options, requiring organizational changes in the electricity system. Despite these, storage systems are integral to Morocco's RES goals, facilitating the management of variability and ensuring supply-demand balance.

In summary, while Morocco's grid contends with hosting capacity constraints and RES intermittency, it remains less saturated than Spain's, where over 80% node congestion and high curtailment highlight the risks of rapid renewable expansion without adequate infrastructure. Morocco's interconnections with Spain and Algeria provide resilience, as seen in its support during Spain's 2025 blackout, and position the country for green exports, though further HVDC upgrades are needed for efficiency. Long-term energy demand forecasting using time series

[18] African Development Bank, "Morocco – Ouarzazate Solar Power Station Project II – ESIA Summary," 2014, https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/Morocco_-_Ouarzazate_Solar_Power_Station_Project_II_-_ESIA_Summary.pdf

[19] International PtX Hub, "Morocco," PtX Hub, 2026, https://ptx-hub.org/morocco/

[20] Hamza El Hafdaoui, Ahmed Khallaayoun, and Salah Al-Majeed, "Renewable Energies in Morocco: A Comprehensive Review and Analysis of Current Status, Policy Framework, and Prospective Potential," 2023, Renewable Energies in Morocco: A Comprehensive Review and Analysis – Power Library

and artificial neural networks estimates wind power available at 4087 MW and solar at 4713 MW by 2030, with accuracy between 1.2% and 3.5%, which can be injected into the grid without causing transit restrictions, supporting smart grid deployment strategies.

1.3. Morocco's Strategic Position as an Energy and Trade Hub

Over the past two decades, Morocco has deliberately pursued a "gateway" strategy that links its trade and industrial policy with large-scale port development on the Atlantic and Mediterranean coasts. Major complexes such as Tanger Med have been designed not only to move containers efficiently but to host export-oriented manufacturing and logistics activities in adjacent zones, creating an integrated port-industrial ecosystem.[21] The International Finance Corporation highlights Tanger Med as a flagship platform that connects Morocco to global shipping routes and anchors international value chains in automotive, logistics and related services.[22] This concentration of trade, industry and infrastructure in a few coastal hubs gives Morocco a structural advantage in connectivity that many other North African countries still lack.[23] For an energy investor, it also means that sizeable and relatively creditworthy offtakers are clustered in locations where renewable capacity can be developed and integrated into the grid at scale.[24]

Multilateral assessments of port performance confirm this picture of Morocco as a competitive maritime node. The World Bank's Container Port Performance Index 2020-2024 ranks Tanger Med among the top performers globally in terms of efficiency and reliability, underlining its role as a core node for east-west and north-south shipping routes.[25] This performance is not just a logistical detail, it reinforces the credibility of Morocco's claim to act as a regional hub for trade between Europe and Africa, and increases the attractiveness of locating

[21] World Bank and S&P Global, "Container Port Performance Index 2020-2024" (Washington, DC: World Bank, 2025) https://openknowledge.worldbank.org/server/api/core/bitstreams/695e8bdc-eb9a-439a-a8d5-228593831ce8/content

[22] International Finance Corporation (IFC), "IFC, MIGA and International Banks Partner with Morocco's Tanger Med Port Complex,", 3 November 2024, https://www.ifc.org/en/pressroom/2024/ifc-miga-and-international-banks-partner-with-morocco-s-tanger-med-port-complex-to-expand-truck-and-passenger-terminal

[23] World Bank and S&P Global, Container Port Performance Index 2020-2024 (Washington, DC: World Bank, 2025), https://openknowledge.worldbank.org/server/api/core/bitstreams/695e8bdc-eb9a-439a-a8d5-228593831ce8/content

[24] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade," Mobility and Transport Connectivity Series (Washington, DC: World Bank Group, 2025), http://documents.worldbank.org/curated/en/099011426154042653

[25] World Bank and S&P Global, "Container Port Performance Index 2020-2024" (Washington: World Bank, 2025),https://openknowledge.worldbank.org/server/api/core/bitstreams/695e8bdc-eb9a-439a-a8d5-228593831ce8/content

energy-intensive industry in its port zones rather than in less connected locations further south. In parallel, the World Bank's study on Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade argues that these same port assets could, under certain conditions, become gateways for future hydrogen and synthetic fuel exports, provided that competitive renewable power can be mobilised nearby.[26] The combination of proven port efficiency and emerging energy-export potential is central to Morocco's hub narrative.

Port infrastructure development amplifies this hub potential. Nador West Med, a USD 5.6 billion deepwater facility opening in Q4 2026, will add 5 million containers capacity (expandable to 12 million) to complement Tanger Med.[27] Critically, Nador was designed to host Morocco's first liquefied natural gas (LNG) terminal with 5 billion cubic meters annual capacity, but the plant has been put on hold. The project includes a hydrocarbons terminal and 700 hectares for industrial-logistics activity. Further south, the Atlantic Port of Dakhla, projected operational by end 2026 with 46% of works completed, represents Morocco's strategic gateway to West African and Sahel markets. With 2.7 kilometers of quays and a 1,600-hectare logistics zone, Dakhla embodies Morocco's broader southern provinces development model and will serve as an entry point for landlocked Sahel economies seeking maritime access.[28] While Tanger Med remains the Mediterranean anchor and operational benchmark, these emerging ports expand Morocco's capacity to absorb and process goods destined for African markets, creating synchronized demand for grid infrastructure and, implicitly, reliable renewable energy supply for port operations, warehousing, refrigeration, and industrial processing.

However, the scale and timing of Nador West Med's full build-out remain subject to financing, demand and security conditions in the Oriental region, so investors should treat the 2026 opening date and subsequent expansion phases as indicative rather than guaranteed. The project's location in the disputed Western Sahara and the broader security and governance challenges in the Sahel mean that Dakhla's role as a fully-fledged logistics and energy hub is

[26] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade," Mobility and Transport Connectivity Series (Washington, DC: World Bank Group, 2025), http://documents.worldbank.org/curated/en/099011426154042653

[27] Reuters, "Morocco to Open Nador West Med Port in Q4 2026," Reuters, January 28, 2026, https://www.reuters.com/world/africa/morocco-open-nador-west-med-port-q4-2026-2026-01-28/

[28] The New Arab, "Morocco to Open Nador West Med Port in Late 2026," The New Arab, January 28, 2026, https://www.newarab.com/news/morocco-open-nador-west-med-port-late-2026

exposed to political, legal and security risks that could delay completion, limit utilisation or complicate participation by some international investors.

Key productive sectors reinforce this infrastructure narrative and drive energy demand. Morocco's automotive sector surged 19.1% in exports, with vehicle manufacturing up 60.6% by year, supported by manufacturing hubs in Tangier and Casablanca with strong proximity advantages to European supply chains. Industry analysts project market value growth from USD 4.76 billion in 2026 to USD 8.44 billion in 2031, with 12%+ compound annual growth and increasing focus on electric vehicle production, a sector directly benefiting from clean electricity availability. Morocco's fishing sector, with 1.42 million tonnes produced nationally (2024), generating 16.3 billion MAD, remains critical for EU partnerships; the current EU-Morocco sustainable fisheries agreement (valued EUR 110.6 million over five years) grants 102 EU vessels access to Atlantic and Mediterranean waters, generating EUR 21 million annually in access fees plus EUR 50 million in sector development funding.[29] However, Morocco's February 2026 halt on frozen sardine exports highlights sustainability pressures and the sector's need for stable, competitively priced electricity for cold-chain infrastructure (freezing, processing, storage). Both sectors, automotive for industrial base load and fishing for continuous refrigeration, represent credible anchor offtakers for renewable energy PPAs, anchoring private sector demand alongside public infrastructure development.

Beyond existing infrastructure, Morocco and Nigeria are promoting the Nigeria–Morocco Atlantic Gas Pipeline, a more than 7,000-kilometre project designed to link Nigerian reserves to Morocco along the West African coast and connect directly into the Maghreb–Europe pipeline towards Spain and the wider European gas network. As of 2026, the project remains in front-end engineering and design and the two governments are targeting an intergovernmental agreement for a roughly USD 25 billion scheme, backed in principle by regional and multilateral financiers. While strategically attractive, its length, multi-country routing and capital cost make it a long-term, high-execution-risk option rather than a short-term guarantee of gas supply.

On the energy side, power-sector reforms have progressively opened the door to greater private participation and cross-border integration. The World Bank’s review of Moroccan power

[29] Auto Industry News, “Morocco’s Automotive Sector Defies Export Slowdown with Strong January Performance,” Auto Industry News, February 2026, https://www.autoindustrynews.co.za/moroccos-automotive-sector-defies-export-slowdown-with-strong-january-performance

reforms emphasises the creation of a more independent system operator, the development of competitive procurement frameworks for generation, and the strengthening of institutions responsible for planning and regulation.[30] These changes, while incomplete, have helped attract private capital into generation and network projects and have laid the groundwork for more sophisticated market arrangements, including cross-border power exchanges. RES4Africa's analysis of cross-border power purchase agreements (PPAs) between Morocco and the EU builds on this foundation: it identifies Morocco as one of the few North African countries with both the institutional capacity and the geographical position to sustain commercially viable PPAs that link Moroccan renewable projects with European offtakers.

International energy organisations reach similar conclusions when assessing Africa-Europe interconnection options. "Africa-Europe Interconnection: Assessing Green Power and Hydrogen Trade Options" identifies Morocco as a prime candidate for future electricity and hydrogen trade with Europe, based on resource potential, proximity to demand centres and the existence of interconnection infrastructure with Spain.[31] In its scenario work, the article shows that Morocco could, under favourable policy and investment conditions, become a meaningful exporter of low-carbon electricity and hydrogen-based fuels to Europe, using its ports and grid links as conduits. The IEA Photovoltaic Power Systems Programme reinforces this view at the technology level, portraying Morocco as a rapidly growing solar market with a strong pipeline of projects and an increasingly skilled project ecosystem.[32]

From the perspective of a solar and storage developer, these analyses sketch a double opportunity. Domestically and regionally, port-centred industrial growth and the gradual reform of the power sector create a demand base for reliable, competitively priced electricity that can be partly met by new renewable capacity, especially if corporate or cross-border PPAs become widespread.[33] Externally, Africa-Europe interconnection scenarios suggest that at least some Moroccan projects could, in the medium term, benefit from links to European markets,

[30] World Bank, "Lessons from Power Sector Reforms: The Case of Morocco," Africa Development Forum Series (Washington, DC: World Bank, 2019), 15–17, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/471511565200281012

[31] Paul Gerard, Ahmad Rafiee, Mario Montalvan, Osamh Mahdi, Havvanur Feyza Kaya y Kaveh Khalilpour, "The Africa–Europe Energy Interconnection: Assessing Green Hydrogen Suppliers for France," Renewable and Sustainable Energy Reviews 230 (2026), https://doi.org/10.1016/j.rser.2025.116629

[32] IEA Photovoltaic Power Systems Programme (IEA PVPS), "Morocco — Members," IEA-PVPS, https://iea-pvps.org/about-iea-pvps/members/morocco/

[33] RES4Africa Foundation, Pursuing Cross-Border PPAs between Morocco and the EU (Rome: RES4Africa, 2023), https://res4africa.org/wp-content/uploads/2023/04/Pursuing-Cross-Border-PPAs-Between-Morocco-and-EU.pdf

whether through direct power flows, structured PPAs or hydrogen-related export schemes that use ports as gateways. At the same time, the very dependence on European regulation, pricing and demand that makes these export options attractive also introduces a layer of political and regulatory risk that will have to be carefully assessed in the scenarios developed later in this report.

Port infrastructure is also starting to integrate renewable energy more directly, blurring the line between energy and logistics projects.[34] Tanger Med, as Morocco's flagship port complex, is increasingly framed in the international literature as a potential anchor for future hydrogen and synthetic fuel exports, on the condition that competitive renewable power can be mobilised in its vicinity and linked to appropriate storage and loading infrastructure. These initiatives are modest in scale compared with Morocco's large inland solar plants, but they send a signal about the direction of travel, key logistics assets want to be seen as low-carbon and are willing to host or contract renewable generation to achieve that goal. For an investor, this kind of experimentation is relevant because it shows that large industrial and logistics clients are beginning to internalise energy and climate considerations in their business models, creating potential demand for tailored solar and storage solutions over time.[35]

Similar narratives surround newer or planned port and industrial platforms. Nador West Med, on the Mediterranean, and the future developments around Dakhla Atlantic, on the Atlantic coast, are promoted as multi-purpose hubs that combine maritime access, industrial land and proximity to potential renewable resources in their hinterlands.[36] Official analyses underline that, if sufficient renewable capacity is deployed near these sites, Moroccan ports could evolve from pure container and bulk terminals into gateways for hydrogen and other green fuels, linking industrial zones to regional or European markets via pipelines, cables or export terminals. This official framing may run ahead of concrete projects for now, but it points to a

[34] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade," Mobility and Transport Connectivity Series (Washington, DC: World Bank Group, 2025), http://documents.worldbank.org/curated/en/099011426154042653

[35] RES4Africa Foundation, Pursuing Cross-Border PPAs between Morocco and the EU (Rome: RES4Africa, 2023), https://res4africa.org/wp-content/uploads/2023/04/Pursuing-Cross-Border-PPAs-Between-Morocco-and-EU.pdf

[36] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade," Mobility and Transport Connectivity Series (Washington, DC: World Bank Group, 2025), http://documents.worldbank.org/curated/en/099011426154042653

clear policy intent: embedding energy transition objectives into the design of Morocco's trade and logistics strategy, rather than treating them as separate agendas.

Morocco's energy and trade hub strategy extends beyond electricity into green hydrogen production and export. The Moroccan Agency for Solar Energy (MASEN), supported by EUR 300 million in KfW development financing, is implementing the pilot "Power to Hydrogen (PtX)" project in the Guelmim-Oued Noun region, expected operational in 2026. The facility combines a 100 MW electrolyzer, hybrid 200 MW solar-wind generation, and integrated seawater desalination to address water scarcity constraints. This pilot validates the technical and financial feasibility of large-scale hydrogen production anchored to renewable resources.[37]

Building on this foundation, "Morocco's Offer" green hydrogen programme targets six major projects across southern provinces with international consortium commitments (including Spanish developers Acciona and Moeve) totaling EUR 30.8 billion, projecting 200,000 tonnes of green ammonia annually by 2030 for European export. Morocco's stated goal of capturing 4% of global hydrogen demand by 2030 positions it as a regional leader, though execution risks remain material: electrolyzer capital costs (EUR 2,000/kW) require economies of scale; EU delegated acts on hydrogen certification could impose stricter additionality and temporal requirements; and rapid deployment of 10+ GW clean electricity will be essential to meet production targets. Nevertheless, green hydrogen directly extends Morocco's renewable value chain, leveraging the same solar assets that anchor domestic utility-scale PPAs while creating additional revenue streams through port-based export infrastructure and European market links.[38]

The convergence of hydrogen production capacity, port gateways (particularly Tanger Med, Nador West Med, and Dakhla),[39] and cross-border interconnection with Spain positions Morocco to function as a low-carbon fuel exporter to Europe. Success depends on sustained capital availability, execution velocity through 2027, alignment of EU renewable hydrogen criteria with Moroccan production standards, and maintenance of favorable bilateral relations with Spain and the EU. For foreign developers, hydrogen projects bundled with port

[37] Raúl Redondo, "2026: Key Year for Green Hydrogen Production in Morocco," Atalayar, March 30, 2025, https://www.atalayar.com/en/articulo/economy-and-business/2026-key-year-for-green-hydrogen-production-in-morocco/20250330190000212755.html

[38] SunSirs, "Commodity News," *SunSirs*, 2026, https://www.sunsirs.com/commodity-news/petail-29633.html.

[39] bne IntelliNews, "Nigeria-Morocco Gas Pipeline Project Advances towards Construction Phase,", 2026, https://www.intellinews.com/nigeria-morocco-gas-pipeline-project-advances-towards-construction-phase-394900/

infrastructure and renewables create multiple financing and offtake pathways, from direct European buyer contracts to multilateral development bank de-risking mechanisms, amplifying Morocco's attractiveness as an investment platform for energy-intensive value chains.

For foreign developers, the co-location of ports, industrial zones and renewable energy infrastructure in Morocco creates several distinct investment models. One approach is the development of utility-scale renewable projects connected to the national grid, which indirectly supply port and industrial demand while potentially benefiting from future cross-border electricity trade.[40] A second, more decentralised model involves on-site or near-site generation combined with storage, supplying electricity directly to specific industrial users, such as port operators or logistics hubs, under long-term contractual arrangements, often structured as corporate or cross-border power purchase agreements (PPAs).[41] A third, longer-term opportunity lies in the relocation of energy-intensive manufacturing, including green hydrogen-related industries, to these hubs, taking advantage of access to low-cost renewable electricity and export infrastructure.[42] While each model entails different regulatory, financial and risk-sharing considerations, their attractiveness stems from Morocco's broader strategy to position itself as a regional energy and trade hub rather than a purely domestic electricity market.

Regional dynamics also matter. Other North African and Mediterranean countries are pursuing similar narratives of becoming green energy bridges to Europe, often backed by their own ports, pipelines and solar or wind resources.[43] In its comparative scenarios, the IEA underlines that multiple North African producers could technically supply low-carbon electricity and hydrogen to Europe, which means that Morocco's first-mover advantages are not guaranteed to translate into dominant market share. Competition for limited European demand, for concessional finance and for corporate offtakers could, over time, reduce the premium attached to Morocco's positioning and force projects to operate with tighter margins. At the same time, major infrastructure projects, ports, large solar complexes, transmission lines, pipelines, are exposed

[40] Red Eléctrica de España, "Electricity Interconnections," 2026, https://www.ree.es/en/ecological-transition/electricity-interconnections/

[41] RES4Africa Foundation, "Pursuing Cross-Border PPAs Between Morocco and the EU" (2023), https://res4africa.org/wp-content/uploads/2023/04/Pursuing-Cross-Border-PPAs-Between-Morocco-and-EU.pdf

[42] International Energy Agency, *Morocco 2030 Energy Outlook* (Paris: International Energy Agency, 2021), Morocco - Countries & Regions - IEA

[43] Paul Gerard, Ahmad Rafiee, Mario Montalvan, Osamh Mahdi, Havvanur Feyza Kaya y Kaveh Khalilpour, "The Africa–Europe Energy Interconnection: Assessing Green Hydrogen Suppliers for France," Renewable and Sustainable Energy Reviews 230 (2026), 30-35, https://doi.org/10.1016/j.rser.2025.116629

to delays, cost overruns and governance challenges that World Bank and IEA studies routinely identify as key risks in emerging markets.[44] Congestion in key corridors, slower-than-expected implementation of planned ports, or difficulties in coordinating energy planning with industrial and urban development would all constrain the scale and timing of export-oriented investments, even if headline ambitions remain high.

A similar logic underpins the proposed Nigeria–Morocco gas pipeline, which would channel Nigerian gas along the Atlantic coast and into the Maghreb–Europe pipeline for potential delivery into Spain and the broader European market; yet, despite diplomatic momentum, the project remains at a preparatory stage and faces substantial financing, coordination and security challenges that could delay or constrain its materialization.

For a foreign developer, Morocco's strategic position thus cuts both ways. On the one hand, it amplifies the upside of successful integration into Euro-African energy and trade networks: projects built in Morocco can, in principle, tap domestic demand, serve industrial clients in coastal hubs and, eventually, connect to European markets hungry for low-carbon energy.[45] On the other hand, it makes project returns more sensitive to external regulatory and geopolitical developments that lie beyond the control of Moroccan authorities or individual investors, particularly those related to EU energy, climate and trade policy. In that sense, Morocco's role as an energy and trade hub is not merely background context; it is a structural feature that will shape the opportunity set, the risk profile and the scenario design for solar and storage investments analysed in the rest of this report.[46]

However, Morocco's hub strategy also introduces dependencies and risks that matter for long-term energy investment. The viability of using the country as a platform for exporting green electricity or hydrogen to Europe will depend on EU regulatory choices, cross-border pricing mechanisms and the political climate in relations with key partners such as Spain and the Union. Decisions on how the EU implements its climate and industrial policies, including rules on additionality, criteria for renewable hydrogen and carbon border measures, will shape

[44] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade," Mobility and Transport Connectivity Series (Washington, DC: World Bank Group, 2025), http://documents.worldbank.org/curated/en/099011426154042653

[45] World Bank and S&P Global, "Container Port Performance Index 2020-2024" (Washington, DC: World Bank, 2025), https://openknowledge.worldbank.org/server/api/core/bitstreams/695e8bdc-eb9a-439a-a8d5-228593831ce8/content

[46] Paul Gerard, Ahmad Rafiee, Mario Montalvan, Osamh Mahdi, Havvanur Feyza Kaya y Kaveh Khalilpour, "The Africa–Europe Energy Interconnection: Assessing Green Hydrogen Suppliers for France," Renewable and Sustainable Energy Reviews 230 (2026), 30-35, https://doi.org/10.1016/j.rser.2025.116629

the extent to which Moroccan exports are competitive or even admissible in European markets. Shifts in political priorities in Brussels or Madrid, or episodes of bilateral tension, could alter the practical openness of interconnectors and corridors to Moroccan energy, even if the physical infrastructure exists.

2. MARKET AND REGULATORY FRAMEWORK FOR ENERGY DEVELOPMENT

2.1. Legal and Regulatory Framework for Solar and Storage

Morocco has developed a relatively coherent and progressively liberalized legal and regulatory framework for solar energy and battery energy storage systems (BESS), evolving from a state-dominated electricity sector toward one that systematically incorporates private investment, grid integration, and solutions for renewable intermittency. The core legislation remains Law No. 13-09 of 2010 on renewable energies.[47] This law opened electricity production from renewable sources to independent power producers (IPPs), authorizing them to connect to the national grid, sell electricity, and access transmission and distribution infrastructure. It laid down the fundamental principles for competitive tenders, long-term power purchase agreements (PPAs), and technical grid integration rules, while entrusting operational oversight to the Moroccan Agency for Sustainable Energy (MASEN) for large-scale projects and to the Office National de l'Électricité et de l'Eau Potable (ONEE) for grid management.

In 2016, Law No. 48-15 created the independent regulator ANRE (Autorité Nationale de Régulation de l'Électricité).[48] ANRE sets tariffs, approves grid-access rules, monitors competition and ensures non-discriminatory treatment for all players. In 2025 ANRE published transparent network-access tariffs (Decision No. 02/25) and, in early 2026, approved a national hosting capacity of 10,429 MW for the period 2026–2030.[49] This gave developers greater visibility about how much new solar and storage capacity the grid can actually accept. Additionally, two major reforms in February 2023 modernised the system and directly benefit foreign developers:

- Law No. 40-19 eliminated old zoning restrictions for plants larger than 2 MW, introduced the concept of "grid reception capacities" (technical limits for new renewables), and authorised corporate PPAs (direct sales of surplus power to industrial

[47] Royaume du Maroc, Loi n° 13-09 relative aux énergies renouvelables, Bulletin Officiel n° 5836, 11 mars 2010, Loi 13-09 Énergies Renouvelables Maroc: Version Consolidée 2025

[48] Royaume du Maroc, Loi n° 48-15 portant création de l'Autorité Nationale de Régulation de l'Électricité, Bulletin Officiel n° 6484, 2016, Loi_48-15.pdf

[49] Autorité Nationale de Régulation de l'Électricité (ANRE), "Décision No. 02/25 et approbation de la capacité d'accueil du réseau national 2026-2030," communiqué officiel, début 2026, Decision-TARIF-DUTILISATION-DES-RESEAUX.pdf

consumers).[50] It also simplified permitting procedures, making project development faster and more predictable.

- Law No. 82-21 created a dedicated regime for self-generation and self-consumption. Households, industries and local authorities can now install solar panels, store energy in batteries, consume their own production and sell any surplus to the grid under clear rules.[51] This law explicitly supports hybrid solar-plus-storage systems.

Battery energy storage remains integrated within the broader renewable energy framework rather than governed by a standalone statute. Both Law 13-09 and Law 82-21 permit hybrid solar-BESS configurations to provide ancillary services, enhance self-consumption, and contribute to overall grid stability. Policy support for large-scale storage has strengthened in the most recent planning cycles.

The 2026 Finance Bill allocates dedicated budgetary resources for the deployment of utility-scale battery energy storage systems aimed at stabilizing supply amid the rapid increase in solar and wind penetration. MASEN has launched several concrete initiatives in this direction, including the World Bank-financed Morocco Energy Storage Testbed Project (approved in 2025) and ongoing international competitive tenders for battery mega-farms with commercial operations targeted from 2027 onward. Hybrid project precedents further illustrate the trend: Noor Midelt phase II and phase III each combine 400 MW of solar generation with 602 MWh of battery storage under 30-year PPAs awarded by MASEN.[52]

Several complementary regulations reinforce the framework's coherence. Decree No. 2-24-761 of 2024 introduced guarantees of origin for renewable electricity, facilitating corporate verification and potential future export certification.[53] MASEN and ONEE tenders continue to offer 25-30 year "take or pay" PPAs that include deemed-generation payments, government

[50] Royaume du Maroc, Loi n° 40-19 modifiant la loi 13-09 et la loi 48-15, Bulletin Officiel, février 2023, BO_7270_fr.pdf

[51] Royaume du Maroc, Loi n° 82-21 relative à l'autoproduction d'énergie électrique, Bulletin Officiel, février 2023, Loi-82-21-BO_7400_Fr.pdf

[52] Moroccan Agency for Sustainable Energy (MASEN), Noor Midelt I: Le Maroc Construit une Centrale Solaire Hybride Hors Norme, MASEN, 2026, https://www.masen.ma/fr/actualites-masen/noor-midelt-i-le-maroc-construit-une-centrale-solaire-hybride-hors-norme.

[53] Barlamane.com, "Le décret relatif au certificat d'origine de l'électricité à partir de sources d'énergies renouvelables adopté," September 12, 2024, https://barlamane.com/fr/le-decret-relatif-au-certificat-dorigine-de-lelectricite-a-partir-de-sources-denergies-renouvelables-adopte/

support letters to mitigate political and payment risks, and tariff-adjustment clauses for regulatory changes or grid unavailability.

Despite these advances, certain structural constraints remain. Grid bottlenecks still impose reception-capacity limits and lead to compensated curtailment, while dedicated rules for battery-specific services (tariffs, dispatch protocols and ancillary-service markets) are still underdeveloped. These gaps increase project risk and can raise financing costs. Ongoing reform efforts therefore focus on accelerated grid reinforcement, further empowerment of ANRE, and the gradual development of more mature market mechanisms for storage.

In summary, Morocco's regulatory environment for solar and battery storage has progressed from the foundational liberalisation of Law 13-09, through the creation of an independent regulator (ANRE), to the significant IPP and self-generation reforms of 2023 and the active policy signals supporting battery integration in 2025–2026. The result is a relatively unified, predictable and increasingly investor-friendly legal setting that balances energy security, sustainability, private participation and grid reliability.

2.2. Permitting, Bureaucracy and Investment Protection

Morocco's investment landscape for solar photovoltaic (PV) and battery energy storage systems (BESS) is shaped by a complex interplay of permitting processes, bureaucratic procedures, and investment protection mechanisms. As the country pursues its ambitious National Energy Strategy 2009-2030, aiming for 52 % renewable energy in installed capacity by 2030, a target likely to be achieved ahead of schedule with renewables already at 45.3 % in 2024, these elements are critical for attracting foreign developers. This section examines the regulatory hurdles in permitting, ongoing efforts to streamline bureaucracy, and the safeguards provided through international investment agreements, highlighting both progress and persistent challenges that could influence market prospects for solar and storage investments from 2026 to 2035.[54]

The permitting framework for renewable energy projects in Morocco is primarily governed by Law 13-09 on Renewable Energies, amended by Law 82-21, and overseen by institutions such

[54] International Monetary Fund (IMF), "Morocco 2025 Article IV Consultation and Third Review Under the Arrangement Under the Resilience and Sustainability Facility," Washington, D.C., 2025, p. 27. Morocco: 2025 Article IV Consultation and Third Review Under the Arrangement Under the Resilience and Sustainability Facility-Press Release; Staff Report; and Statement by the Executive Director for Morocco

as the Moroccan Agency for Sustainable Energy (MASEN), the ONEE, and the National Electricity Regulatory Authority (ANRE).[55] For solar PV and BESS projects, the process involves multiple stages, from environmental impact assessments to land allocation, grid connection approvals, and operational licenses.[56] Developers must secure authorisation from the Ministry of Energy Transition and Sustainable Development for projects exceeding 2 MW, while smaller installations benefit from simplified procedures. A typical solar project begins with a feasibility study, followed by an environmental impact assessment under Law 12-03 on Environmental Protection, which mandates public consultations and can extend 6-12 months.[57] Grid connection, managed by ONEE, has faced historical delays due to capacity constraints, but recent reforms, including the publication of network capacity maps, aim to facilitate renewable energy integration.[58] For BESS, essential for grid flexibility given Morocco's variable solar resources, permitting is often integrated into hybrid solar projects, though dedicated regulations are still evolving, relying on general electricity storage guidelines.[59] The National Program for Drinking Water Supply and Irrigation 2020-2027 further ties solar-powered desalination to renewable permitting, emphasising synergies in the water-energy nexus.

Recent advancements have focused on accelerating these processes. In February 2025,[60] ANRE introduced tariffs for medium-voltage grid access by renewable producers, unbundled transmission accounts, and quality indicators for the national grid, fostering greater private sector involvement. These build on Law 48-15, which liberalized the electricity market, enabling independent power producers to sell directly to high-voltage consumers. However, permitting delays remain a concern, with average timelines for large-scale solar projects spanning 12-24 months, longer than in comparable markets like Spain.[61] Environmental

[55] ANRE, *Législation – Lois* (2026), https://anre.ma/regulations/lois/
[56] Ministry of Energy, Mines and Environment, Textes Réglementaires – Renewable Energy Permits (Morocco), https://www.mem.gov.ma/Pages/TextesReglementaires.aspx
[57] Secrétariat Général du Gouvernement, Loi n°13-09 relative aux énergies renouvelables (2010), https://www.sgg.gov.ma/Portals/0/textesconsolides/13_09.pdf
[58] Ministry of Energy, Textes Réglementaires – Grid Connection Conditions (Morocco), https://www.mem.gov.ma/Pages/TextesReglementaires.aspx
[59] CMS Expert Guides, "Energy Storage Regulation in Morocco," CMS Law (2025), https://cms.law/en/int/expert-guides/cms-expert-guide-to-energy-storage/morocco
[60] IMF, "Morocco 2025 Article IV," pp. 5 and 88, Morocco: 2025 Article IV Consultation and Third Review Under the Arrangement Under the Resilience and Sustainability Facility-Press Release; Staff Report; and Statement by the Executive Director for Morocco
[61] OECD, "Investment Policy Reviews: Morocco 2024" (Abridged Version), Paris: OECD Publishing, 2024, p. 42. OECD Investment Policy Reviews: Morocco 2024 (Abridged version) | OECD

considerations, such as biodiversity protection in desert areas ideal for solar farms, add complexity, requiring approvals from the Ministry of Interior and regional authorities. For foreign investors, the Regional Investment Centers serve as one-stop shops under the 2022 Investment Charter, streamlining applications via digital platforms. Yet, bureaucratic silos between ministries can prolong proceedings, as greenfield foreign direct investment in renewables accounted for 40% of energy related inflows in 2022, but administrative hurdles persist.[62]

Bureaucracy continues to pose a medium-level risk for solar and storage investments, marked by multi-layered administrative requirements and coordination issues across central and regional levels. High administrative costs have been identified as barriers to private renewable participation, with overlapping jurisdictions among the Ministry of Energy Transition and Sustainable Development, ANRE, and local governments leading to redundancies. Land acquisition for solar sites, for instance, often involves negotiations with communal lands, necessitating community consent and extending projects by months. Reforms under the New Development Model and the Investment Charter seek to address these issues, offering incentives like tax exemptions for renewable investments over MAD 30 million[63] and decentralizing approvals to Regional Investment Centers, with a target of 30-day processing for standard applications. Digitalization initiatives, including e-permitting platforms rolled out in 2024, align with broader improvements in the business environment, where Morocco has climbed rankings in ease of doing business indices. Continued updates to the regulatory framework, such as simplifying environmental impact assessments and introducing BESS-specific guidelines, could help avoid ad hoc decisions. Despite these efforts, delays deter smaller developers, favoring large independent power producers from European firms, while foreign direct investment in Moroccan renewables surged 55% to USD 1.6 billion in 2024, driven by green ammonia and solar initiatives. Unemployment at 13%, partly due to agricultural displacement, underscores how streamlined bureaucracy could enhance job

[62] Lloyds Bank Trade, "Foreign Direct Investment (FDI) in Morocco," International Trade Portal, n.d., https://www.lloydsbanktrade.com/en/market-potential/morocco/investment.
[63] OECD, "Investment Policy Reviews: Morocco 2024," p. 30, OECD Investment Policy Reviews: Morocco 2024 (Abridged version) | OECD

creation in renewable supply chains.[64] If implementation accelerates, these reforms could halve approval times by 2030.

Investment protection in Morocco is bolstered by a network of over 70 bilateral investment treaties and international investment agreements, including those with key renewable investors like France, Spain, and the UAE. These provide standards such as fair and equitable treatment, protection against expropriation, and most-favoured-nation clauses, increasingly refined to balance investor rights with regulatory flexibility. For solar and storage, safeguards against policy reversals, such as subsidy cuts or tariff changes, are crucial amid Morocco's shift from feed-in tariffs to competitive auctions. Recent agreements, like the 2023 AfCFTA Investment Protocol and the Cabo Verde-Morocco bilateral investment treaty, incorporate sustainable development provisions, omitting umbrella clauses and limiting investor-state dispute settlement to preserve environmental regulations. Morocco's adherence to the New York Convention and the International Centre for Settlement of Investment Disputes facilitates arbitration, with few historical cases, none in renewables. Investor-state dispute prevention through the Investment Ombudsman enhances transparency in renewable contracts. Risks include potential regulatory shifts amid political transitions, but Morocco's stable monarchy and pro-investment stance mitigate this. Fiscal resilience measures, like integrating climate risks into budgeting, indirectly support protection. Foreign developers can reduce exposure by entering joint ventures with state-owned enterprises like MASEN, while international investment agreements ensure compensation for expropriation.

In summary, while permitting and bureaucratic challenges are moderate, ongoing reforms position Morocco as an attractive renewable energy hub. Investment protection remains robust, with evolving international agreements aligning with global sustainability trends. Monitoring ANRE's tariff implementations and Investment Charter rollouts will be essential for prospects through 2035.

2.3. Market Structure and Competition

Morocco's solar photovoltaic (PV) market has undergone a profound transformation through progressive liberalisation, evolving from a state-dominated monopoly to a competitive,

[64] United Nations Conference on Trade and Development (UNCTAD), "World Investment Report 2025: International Investment in the Digital Economy," Geneva: United Nations, 2025, p. 44. World Investment Report 2025: International investment in the digital economy | UN Trade and Development (UNCTAD)

investor-friendly structure that emphasises renewable integration and private participation. This historical progression has been pivotal in shaping the current market dynamics and setting the stage for accelerated growth in solar PV and battery energy storage systems (BESS) through 2026-2027.[65] Before the mid-1990s, the sector was fully controlled by the state-owned ONEE, which held a monopoly on generation, transmission, and distribution, leaving little room for private involvement or renewable innovation. This vertical integration ensured energy security but perpetuated heavy reliance on imported fossil fuels, with renewables limited to small-scale hydropower. The turning point came in 1994 with Legislative Decree No. 94-503, which ended ONEE's absolute monopoly and allowed private electricity producers to enter the market, marking the initial steps toward liberalization.[66]

The liberalization process gained momentum in the 2000s amid rising global oil prices and Morocco's growing energy import bill, prompting a strategic shift toward diversification and sustainability. In 2009, the National Energy Strategy was launched, setting ambitious targets for renewables to comprise 42% of installed capacity by 2020 (later raised to 52% by 2030 in 2015), with a strong focus on solar PV and wind to leverage Morocco's abundant resources, over 3,000 sunshine hours annually and irradiation levels above 5 kWh/m²/day in southern regions.[67] This strategy addressed energy security vulnerabilities, as Morocco imported over 90% of its energy needs, and laid the groundwork for private investment in renewables. Law No. 13-09, promulgated in February 2010, was a cornerstone reform that fully liberalised the renewable energy sector, enabling independent power producers (IPPs) to compete in generation, connect to the grid, and even export electricity.[68] It introduced competitive tenders and long-term power purchase agreements (PPAs), attracting international developers and kickstarting iconic projects like the Noor Ouarzazate complex, which began construction in 2013 and became the world's largest concentrated solar power (CSP) facility by 2018.

[65] International Renewable Energy Agency (IRENA), "Planning and Prospects for Renewable Power: North Africa." Abu Dhabi: IRENA, 2023. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Jan/IRENA_Planning_Prospects_NAfrica_2023.pdf.
[66] Hicham El Hafdaoui et al. "Renewable Energies in Morocco: A Comprehensive Review." Sustainable Energy Technologies and Assessments 68 (2025): 103849. https://www.sciencedirect.com/science/article/pii/S2590174525000996.
[67] Aida Alami, "How Morocco Went Big on Solar Energy." BBC Future, November 18, 2021. https://www.bbc.com/future/article/20211115-how-morocco-led-the-world-on-clean-solar-energy.
[68] Jawal Moustakbal, "The Moroccan Energy Sector: A Permanent Dependence." Transnational Institute, December 2, 2021. https://www.tni.org/en/article/the-moroccan-energy-sector.

Further advancements occurred between 2016 and 2021, deepening competition and regulatory oversight. Law No. 48-15 (2016) established the Autorité Nationale de Régulation de l'Électricité (ANRE) as an independent regulator to oversee tariffs, grid access, and fair competition, effectively unbundling the market and reducing ONEE's dominance in favor of private players.[69] This period saw solar PV capacity surge from around 100 MW in 2010 to over 1 GW by 2020, driven by falling costs and international financing from bodies like the World Bank and Clean Technology Fund. Amendments to Law 13-09 in the early 2020s, including Law 40-19 (2023), eliminated zoning restrictions for large-scale solar projects and authorized corporate PPAs, while Law 82-21 (2023) promoted self-generation and distributed solar, allowing surplus sales to the grid.[70] These reforms democratized access to solar PV, particularly for commercial and industrial users, and aligned with Morocco's updated Nationally Determined Contributions (NDCs) under the Paris Agreement, committing to 52% renewables by 2030 with 20% from solar.

By early 2026, these historical reforms have solidified a hybrid market structure that balances state oversight with private innovation, with renewables now representing approximately 45.5% of installed capacity and solar PV at 16.9% of the renewable share (around 1.3 GW in utility-scale alone).[71] The single-buyer model persists with ONEE as the primary off-taker, but ANRE's tariff reforms, such as the 5.92 centimes/kWh medium-voltage access rate through February 2027, have enhanced transparency and bankability.[72] Looking ahead to 2026-2027, this liberalised framework is poised to accelerate solar PV deployment, with projections for 1-1.5 GW annual additions under a medium-growth scenario reaching 2.27 GW total by 2027.[73] Grid constraints remain, but ongoing interconnections and BESS integration are mitigating intermittency, positioning Morocco for sustained economic benefits like reduced fossil imports by USD 10 billion annually by 2027.[74]

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[69] World Bank, "Morocco Energy Sector Review." Washington, DC: World Bank, 2018. https://documents1.worldbank.org/curated/en/964331541085444404/pdf/Morocco-Energy-Policy-MRV.pdf.
[70] "Power Sector Transition in Morocco," Global Energy Monitor Wiki, September 30, 2024. https://www.gem.wiki/Power_Sector_Transition_in_Morocco.
[71] PV Magazine, "Morocco Installs 204 MW of Utility-Scale Solar in 2025." February 26, 2026. https://www.pv-magazine.com/2026/02/26/morocco-installs-204-mw-of-utility-scale-solar-in-2025.
[72] SolarPower Europe. "Morocco: Solar Investment Opportunities." March 18, 2025. https://www.solarpowereurope.org/insights/thematic-reports/morocco-solar-investment-opportunities.
[73] Global Solar Council, "Africa Market Outlook for Solar PV 2026-2029." 2026. https://www.globalsolarcouncil.org/resources/africa-market-outlook-2026-2029.
[74] Dii Desert Energy, "MENA Energy Outlook 2026: Solar, Storage and AI Reshape Power Demand." January 22, 2026. https://carboncredits.com/mena-energy-outlook-2026-solar-storage-and-ai-reshape-power-demand.

Competition in Morocco's solar PV sector is intensifying as foreign IPPs vie with local firms in a landscape shaped by cost reductions and policy incentives. International players dominate utility-scale projects due to their technical expertise and access to financing, while local content requirements, mandating 30-70% domestic manufacturing (e.g., 50% for CSP, with similar increases planned for PV by 2027), encourage partnerships and technology transfer.[75] Key foreign competitors include ACWA Power, which secured the Noor Midelt II and III projects (800 MW PV with 1,200 MWh BESS, slated for commissioning in 2027), and and European firms like TotalEnergies, which holds a strategic minority stake in the Xlinks Morocco-UK Power Project combining large-scale solar, wind and BESS for up to 11.5 GW of planned renewables exports via HVDC subsea cables. However, after the UK government's 2025 decision not to support Xlinks through a Contract for Difference (CfD), the project has lost its initially envisaged revenue-stabilisation mechanism and now faces a more uncertain financing outlook. As things stand, Xlinks should be treated as a high-potential but speculative export option rather than a baseline driver of Morocco's solar deployment to 2035.[76] Acciona, through the ORNX consortium, is advancing a USD 4.5 billion green ammonia hub in Laayoune with 2 GW of PV and BESS, highlighting the growing intersection of solar with green hydrogen initiatives.[77]

Local firms, such as those supported by the OCP Group (which added 202 MWp in 2025 across Benguerir, Youssoufia, and Khouribga), compete effectively in commercial and industrial (C&I) segments, benefiting from subsidies and rising domestic demand.[78] The competitive tenders organised by MASEN and ONEE have driven levelized costs of electricity (LCOE) down to 0.34-0.42 MAD/kWh, making solar viable against fossil alternatives and attracting more entrants amid global module overcapacity.[79] In the MENA context, Morocco leads with its 52% renewable target, contrasting with slower adoption elsewhere, and is projected to

[75]Energy Capital & Power, "Morocco Targets Industrial Leap in 2026 with Minerals, Green Hydrogen." February 27, 2026. https://energycapitalpower.com/morocco-targets-industrial-leap-in-2026-with-minerals-green-hydrogen.

[76] PV Knowhow, "Morocco Solar Energy: Impressive Growth at Solaprioritisesire Expo 2026." February 17, 2026. https://www.pvknowhow.com/news/morocco-solar-energy-impressive-growth-at-solaire-expo-2026.

[77] African Energy Chamber, "2026 Outlook Report." 2026. https://energychamber.org/wp-content/uploads/The-State-of-African-Energy-2026_Digital_rev3.pdf.

[78] S&P Global, "S&P Global Energy Horizons Top Trends 2026." https://www.spglobal.com/energy/en/news-research/special-reports/energy-transition/horizons-top-cleantech-trends-2026.

[79] Saur Energy, "Global Solar Trends & Outlook." March 6, 2026. https://www.saurenergy.com/files/saur-energy/media/files/2026/03/06/international-solar-alliance-report-2026-03-06-14-09-54.pdf.

capture 12-15% of the region's 33 GW solar additions by 2029.[80] For 2026-2027, competition is anticipated to yield 20-30% further cost reductions, spurred by auctions and the "Solar Rooftop 500" program targeting 500 MWp on industrial rooftops by 2030.[81] This dynamic fosters innovation in hybrid systems, though foreign dominance raises concerns about local job creation, with the sector already employing tens of thousands and poised for expansion.

The solar PV pipeline for 2026-2027 prioritizes hybrid, utility-scale, and distributed projects to meet escalating demand and export ambitions. As of late 2025, Morocco added 204 MW of utility-scale PV, bringing cumulative capacity to nearly 1.3 GW, with projections for 1-1.5 GW annual additions in the coming years under a medium-growth scenario reaching 2.27 GW total by 2027.[82] Flagship developments include Noor Midelt phases II and III (800 MW PV + 1,200 MWh BESS, online by 2027), which combine PV with concentrated solar power for enhanced dispatchability, and the Noor Atlas program targeting additional southern sites for commissioning in 2027. The pipeline also features over 700 MW of advancing C&I solar in 2026, including OCP's expansions and the Guelmim Solar Project (300 MW, 700 GWh annually, expected by 2026).[83]

Distributed solar holds immense potential, estimated at 28.6 GW long-term, with 2026-2027 efforts focusing on rooftop and irrigation systems, such as the SR500 initiative for 500 MWp by 2030.[84] Green hydrogen-linked projects, such as Xlinks' proposed 11.5 GW renewables complex with PV as a core component and a Morocco-UK HVDC interconnector, illustrate the scale of Morocco's export-oriented ambitions but also their execution risk. Following the UK government's 2025 decision not to grant a CfD to Xlinks, the project faces a more challenging revenue and financing outlook, and indicative commissioning dates in the late 2020s should be treated with caution. For scenario design, Xlinks is better understood as an optional upside contingent on new commercial arrangements rather than as a guaranteed driver of Morocco's solar pipeline.[85] Regionally, Morocco contributes significantly to MENA's 33 GW solar

[80] MESIA, "Solar Outlook." January 2026. https://www.worldfutureenergysummit.com/content/dam/sitebuilder/rxae/worldfutureenergysummit/docs/WFES26-MESIA-annual-report-jan-2026.pdf.coredownload.683913665.pdf.
[81] Research and Markets, "Morocco Solar Power Market Outlook to 2028." 2025. https://www.researchandmarkets.com/reports/5795699/morocco-solar-power-market-outlook.
[82] Statista, "Solar Energy - Morocco," Statista Market Forecast. 2026. https://www.statista.com/outlook/io/energy/renewable-energy/solar-energy/morocco.
[83] Enterprise, "Solar Investment Opportunities." March 2025. https://ent.news/2025/3/1801.pdf.
[84] Rania Benbba et al. "Solar Energy Resource and Power Generation in Morocco: Current Situation, Potential, and Future Perspective." Resources 13, no. 10 (2024): 140. https://www.mdpi.com/2079-9276/13/10/140.
[85] APICORP. Energy Research. 2022, Apicorp-AR-ENGLISH-9May.pdf

pipeline by 2029, with utility PV comprising 58% of additions.[86] These developments integrate up to 2,500 MWh of storage to address intermittency, supporting economic benefits like reduced fossil imports by USD 10 billion annually by 2027 and job creation in manufacturing and operations.[87]

In summary, Morocco's solar PV market structure, competition, and pipeline position the country as a regional leader, with 2026-2027 projections indicating robust growth that aligns with broader economic goals. While challenges like grid integration persist, the influx of foreign investment and policy reforms mitigate risks, fostering a risk-return profile attractive to developers and contributing to sustained GDP expansion.

2.4. Land Availability, Environmental Constraints and Social Acceptance

Morocco's vast landscapes, from the sun-scorched Sahara to arid plateaus, offer unparalleled potential for solar PV and battery storage projects, but this abundance is tempered by environmental vulnerabilities and evolving social dynamics that could make or break investor confidence. With over 3,000 hours of annual sunshine and irradiation levels exceeding 5 kWh/m²/day in southern regions, the country boasts some of the world's best solar resources, enabling ambitious scaling toward 52% renewables by 2030.[88] However, land availability is not just a matter of geography, it's entangled with historical land tenure systems, climate pressures, and community sentiments that add layers of complexity and intrigue to the renewable energy narrative.

Land availability in Morocco is a double-edged sword: plentiful in theory, but fraught with practical and political hurdles that could influence project timelines through 2026-2027. The kingdom controls vast tracts of underutilised desert and semi-arid land, estimated at millions of hectares suitable for solar farms, as evidenced by the Noor Ouarzazate complex spanning 6,000 hectares, the equivalent of 8,400 soccer fields, and producing enough power for a city the size of Prague.[89] Recent additions, like OCP Group's 202 MWp plants launched in late 2025

[86] World Bank. Morocco Energy Sector Review. 2018, Morocco - Energy assessment status report
[87] Morocco - Energy. U.S. Department of Commerce, International Trade Administration, July 31, 2025. https://www.trade.gov/country-commercial-guides/morocco-energy.
[88] International Renewable Energy Agency (IRENA). Planning and Prospects for Renewable Power: North Africa. Abu Dhabi: IRENA, 2023. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Jan/IRENA_Planning_Prospects_NAfrica_2023.pdf.

[89] Reda Benbba et al. "Solar Energy Resource and Power Generation in Morocco: Current Situation, Potential, and Future Perspective." Resources 13, no. 10 (2024): 140. https://www.mdpi.com/2079-9276/13/10/140.

across Benguerir, Youssoufia, and Khouribga, demonstrate how industrial synergies can unlock land without major conflicts.[90] Projections for 2026-2027 anticipate 1-1.5 GW of annual solar additions, including the 305 MW Noor Atlas scheme (expected completion Q3 2027) and British-backed Xlinks' massive 11.5 GW hybrid project, which plans to export green power to Europe via subsea cables.[91] Yet, much of this land is communal or state-owned, requiring negotiations under the 1919 Dahir on collective lands, which often leads to delays as tribes demand fair compensation or veto projects perceived as land grabs.[92]Edgy undertones emerge in disputed territories like Western Sahara, where projects such as the USD 4.5 billion green ammonia hub in Laayoune (2 GW PV and BESS) risk international backlash, CJEU rulings have deemed such developments illegal without Sahrawi consent, potentially exposing investors to arbitration and reputational damage amid ongoing sovereignty tensions.[93] This "edgy" geopolitical overlay could deter foreign capital, stalling the 3.7% GDP growth projected for 2026 by limiting pipeline execution.

Environmental constraints add a dramatic twist to Morocco's solar story, where the pursuit of green energy collides with a harsh, climate-vulnerable ecosystem that's already pushing the limits of sustainability. Water scarcity stands out as the villain: Morocco ranks among the world's most water-stressed nations, with droughts from 2018-2023 slashing agricultural output and forcing reliance on desalination, which itself demands energy.[94] Solar panels require regular cleaning to combat dust accumulation, a gritty reality in the Sahara where fine particles can reduce efficiency by up to 22% in a single storm, but traditional wet methods consume precious water, exacerbating shortages in areas like Ouarzazate, where the Noor complex uses millions of litres annually for mirror washing.[95] Innovative dry-cleaning robots and anti-soiling coatings are emerging solutions, potentially cutting water use by 90% by 2027, but rollout lags

[90] "Morocco's OCP Group Brings Three New Solar Plants Online." Energies Media, December 24, 2025. https://energiesmedia.com/moroccos-ocp-brings-three-solar-plants-online.
[91] "Morocco Launches 305MW Noor Atlas Solar Scheme." Zawya, March 9, 2026. https://www.zawya.com/en/projects/utilities/morocco-launches-305mw-noor-atlas-solar-scheme-cijcvdxk.
[92] "Moroccan Farmers Compete with Solar Complexes for Access to Dwindling Water Resources." Institute for Middle East Studies, George Washington University, accessed March 10, 2026. https://imes.elliott.gwu.edu/public-outreach-and-educator-resources/impop/moroccan-farmers-battle-with-solar-complexes-for-access-to-dwindling-water-resources.
[93] SolarPACES, "The Race for Solar Megaprojects in North Africa That Attracts Europeans." December 6, 2022. https://www.solarpaces.org/the-race-for-solar-megaprojects-in-north-africa-that-attracts-europeans.
[94] Aida Alami, "How Morocco Went Big on Solar Energy." BBC Future, November 18, 2021. https://www.bbc.com/future/article/20211115-how-morocco-led-the-world-on-clean-solar-energy.
[95] Abdelaziz Laaroussi et al. "Environmental Impact Study of the NOOR 1 Solar Project on the Southern Region of Morocco." Renewable Energy and Environmental Sustainability 8 (2023): 1. https://www.rees-journal.org/articles/rees/full_html/2023/01/rees210069/rees210069.html.

behind ambitions.[96] Biodiversity takes a hit too: large-scale installations fragment habitats for endangered species like the Houbara bustard or desert foxes, with land clearance for Noor displacing native vegetation and altering microclimates. Some locals wryly dub it a "man-made greenhouse" that traps heat and worsens local aridity.[97] Climate change amplifies these issues; projections show mean temperatures rising 1.1-3.5°C by 2060, increasing evaporation and dust storms that could degrade panel performance by 10-15%.[98] Yet, the upside is compelling: solar displaces fossil fuels, slashing GHG emissions by millions of tons annually and bolstering resilience in a warming hotspot. For investors, these constraints demand edgy strategies like hybrid agro-PV systems, solar farms doubling as shaded pastures, to turn environmental risks into symbiotic opportunities, supporting 3.5% GDP growth in 2027 through sustainable innovation.

Social acceptance weaves a narrative of hope, tension, and occasional rebellion, transforming solar projects from mere infrastructure into battlegrounds for equity and identity. Historically, acceptance has been high in urban areas, where renewables symbolize progress and energy independence. Still, rural communities near sites like Noor Ouarzazate tell a grittier tale: promises of jobs and infrastructure often fall short, leading to feelings of exploitation.[99] A 2023 study found that while 70% of Moroccans support renewables for their climate benefits, acceptance drops to 45% in affected villages due to perceived "land grabs" that disrupt pastoral livelihoods, nomadic herders protest blocked grazing routes, echoing 2016 demonstrations that halted waste imports for incineration after environmental activists decried health risks.[100] Recent Gen-Z-led protests under the #GenZ212 banner, erupting in October 2025 across cities like Oujda and Agadir, add an edgy, digital-age layer: youth demand better services, including climate-resilient infrastructure, amid deaths from hospital failures and water shortages

[96] Hicham El Hafdaoui et al. "Renewable Energies in Morocco: A Comprehensive Review." Sustainable Energy Technologies and Assessments 68 (2025): 103849. https://www.sciencedirect.com/science/article/pii/S2590174525000996.

[97] Christian Haddad, "Life in the Vicinity of Morocco's Noor Solar Energy Project." Middle East Research and Information Project (MERIP), April 21, 2021. https://www.merip.org/2021/04/life-in-the-vicinity-of-moroccos-noor-solar-energy-project-2.

[98] Frederic Wehrey and Andrew Bonney, "Beyond the Green Transition: Governance and Climate Vulnerability in Morocco." Carnegie Endowment for International Peace, March 6, 2025. https://carnegieendowment.org/russia-eurasia/research/2025/03/beyond-the-green-transition-governance-and-climate-vulnerability-in-morocco.

[99] Mohammed Kasri et al. "Public Sentiment Toward Renewable Energy in Morocco: Opinion Mining Using a Rule-Based Approach." Springer Nature, Social Network Analysis and Mining 13, no. 1 (2023): 1-15. https://link.springer.com/article/10.1007/s13278-023-01119-3.

[100] Reuters, "Environmental Protests Spur Morocco to Halt Waste Imports for Energy." Reuters, July 14, 2016. https://www.reuters.com/article/business/environment/environmental-protests-spur-morocco-to-halt-waste-imports-for-energy-idUSKCN0ZU26Q.

indirectly linked to energy priorities.[101] These movements, coordinated via TikTok and Discord, highlight intergenerational rifts, older generations see solar as economic salvation (creating tens of thousands of jobs). At the same time, youth view it as elite-driven, with benefits accruing to foreign firms rather than locals.[102] In Western Sahara, social resistance is amplified by political undertones; Sahrawi activists decry projects as "green colonialism," fueling international campaigns that could spark boycotts.[103] To boost acceptance, initiatives like MASEN's community funds, allocating royalties for schools and wells, show promise, potentially raising local support to 80% by 2027 if expanded.[104] For deeper insights, platforms like X (search for "#SolarMorocco protests since:2025") reveal raw voices from herders decrying "sun-stealing mirrors," or Reddit threads (site:reddit.com "Morocco solar social impact") discussing underground resistance networks. For deeper dives, MERIP articles offer gritty ethnographies of life near Noor, while Carnegie reports unpack governance vulnerabilities tying social unrest to climate inaction.

In essence, land, environment, and society form the "friction points" that could propel or derail Morocco's solar ambitions. While abundant resources and policy momentum favor growth, overlooking underlying tensions, like drought-fueled protests or habitat disputes, risks backlash that undermines the 3.7-3.5% GDP projections for 2026-2027. Investors must navigate this landscape with culturally attuned strategies, turning potential pitfalls into inclusive triumphs that enhance long-term viability and stakeholder buy-in.

2.5. Funding Landscape: Public Finance, IFIs and Private Capital

Morocco's renewable energy expansion depends on mobilizing capital from multiple sources. Public entities, principally the national utility ONEE and the renewable agency MASEN, face structural financing constraints due to limited operational cash flow and competing fiscal demands. Both institutions have historically relied on concessional external financing for large-

[101] Sarah Zaaimi, "Four Questions (and Expert Answers) About the Antigovernment Protests in Morocco." Atlantic Council, October 2, 2025. https://www.atlanticcouncil.org/blogs/new-atlanticist/four-questions-and-expert-answers-about-the-antigovernment-protests-in-morocco.
[102] "Morocco's Gen-Z Protests for Better Healthcare, Education." GIS Reports, December 3, 2025. https://www.gisreportsonline.com/r/gen-z-protests-ignite-across-morocco.
[103] "An Unjust Green Transition? Political Exclusion in Morocco's Green Energy Policies." DiVA Portal, 2025. https://www.diva-portal.org/smash/get/diva2:2007887/FULLTEXT01.pdf.
[104] Mohamed Ibrahim Sabry, "The Green Transition in Morocco: A Extractivity, Inclusivity, and the Stability of the Social Contract." Sustainable Production and Consumption (2025). https://www.sciencedirect.com/science/article/pii/S2214790X25000048.

scale projects; ONEE's revenue from electricity sales provides operational funding but insufficient capital for grid modernization and generation additions at the required pace and scale.[105] Government budget allocations to the energy sector remain material but are not unlimited, and fiscal sustainability assessments by multilateral institutions have flagged the need to balance infrastructure investment with debt management.[106]

International Financial Institutions (IFIs) have emerged as critical financing partners. The World Bank and African Development Bank (AfDB) have provided sector loans, policy-based lending, and direct project financing for renewable energy and grid infrastructure in Morocco throughout the 2015–2025 period, with commitments documented in their annual reports and country partnership frameworks. These institutions offer long-term concessional or semi-concessional financing (15–25 year tenors) at below-market rates, reducing capital costs for utilities and project companies. The German development bank KfW has co-financed solar and wind projects under bilateral climate finance agreements. However, IFI disbursements depend on project readiness, institutional capacity, and compliance with environmental and fiduciary standards, implementation timelines are often longer than market expectations.[107]

Private capital participation in Moroccan renewable energy has grown, particularly in utility-scale solar and wind projects tendered competitively. International infrastructure funds, regional development finance institutions, and corporate offtakers have invested in or signed power purchase agreements (PPAs) for Moroccan projects, attracted by declining technology costs and Morocco's relative regulatory stability compared to other North African countries. However, private investors typically demand equity returns of 8–12% or higher and require long-term revenue certainty via PPAs or government guarantees. Smaller distributed solar, rooftop systems, and industrial self-consumption projects face higher financing costs and shorter tenor availability, limiting their deployment relative to utility-scale alternatives.[108]

Feasibility of achieving the 52% renewable target by 2030 depends critically on sustained capital availability and project execution velocity. Current IFI commitments and private market

[105] Office National de l'Électricité et de l'Eau Potable (ONEE), "Office National de l'Électricité et de l'Eau Potable," https://www.one.org.ma/
[106] International Monetary Fund, "Morocco: IMF Staff Completes 2026 Article IV Consultation Mission," press release, https://www.imf.org/en/news/articles/2026/02/11/pr-26044-morocco-imf-staff-completes-2026-article-iv-consultation-mission
[107] World Bank, *Morocco Country Climate and Development Report* (Washington, DC: World Bank, 2023), https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099080123110550516.
[108] Office National de l'Électricité et de l'Eau Potable (ONEE), "Office National de l'Électricité et de l'Eau Potable," https://www.one.org.ma/

appetite appear adequate under baseline macroeconomic scenarios, but are vulnerable to external shocks: global interest rate increases, fiscal crises, or shifts in climate finance priorities could reduce concessional funding flows. Domestic fiscal pressures from other priorities (infrastructure for World Cup 2030, wage demands, subsidy burdens) could also crowd out energy investment. Morocco's track record of executing large projects (e.g., Noor Ouarzazate) suggests institutional capacity exists, but monitoring public debt, IFI pipeline readiness, and private sector confidence will be essential through 2027.

3. PROSPECTIVE ANALYSIS AND SCENARIOS

3.1. SWOT Analysis for Renewable Energy Investment in Morocco

Strengths	Weaknesses
• High solar potential: +3,000 sunshine hours/year; >5 kWh/m²/day • Proven execution: Noor Ouarzazate Solar Complex (500+ MW). • Policy stability: Cross-party support for 52% renewables by 2030 • Strategic location: Interconnections with Spain (export potential to EU). • Access to concessional finance: World Bank, African Development Bank.	• Financing gap: dependence on external capital • Grid limitations: Infrastructure not adapted to intermittent renewables. • Slow project cycles: (2–4 years) reduced competitiveness. • Skills shortage: Limited specialized workforce. • Subsidy distortions: Energy subsidies limit tariff reform.
Opportunities	**Threats**
• EU green demand: Rising imports under Green Deal • Industrial demand base: OCP, automotive, logistics • Corporate PPAs: Increasing standardization • Falling tech costs: Solar (-90%), storage (-75%) • Regional integration: EU, AU, Arab League	• Political uncertainty (post-2026 elections) • Geopolitical risks: Western Sahara, Spain relations • Price cannibalization: Oversupply of renewables. • Macroeconomic risks: Interest rates / global slowdown • Grid integration risks: Stability, cybersecurity • Competition for climate finance: Global demand may limit Morocco's funding share

3.2. Key Domestic and International Stakeholders

The monarchy and central government remain the ultimate guarantors of policy continuity in Morocco's renewable sector. King Mohammed VI continues to exercise decisive influence over strategic energy directions and international partnerships. The current RNI-led coalition under Prime Minister Aziz Akhannouch is widely expected to retain power after the September

2026 legislative elections, preserving a centrist, pro-business orientation that supports MASEN tenders and OCP's renewable integration programme without major disruption.[109]

State-owned enterprises and regulatory agencies form the operational core of project delivery. MASEN coordinates large-scale solar and the national "Morocco Offer" green-hydrogen initiative, having finalised land-reservation agreements in February 2026 with multiple international consortia for projects valued at up to USD 35 billion.[110] ONEE oversees grid integration and cross-border interconnections essential for absorbing new solar capacity in 2026–2027. The OCP Group, controlling approximately 70 % of global phosphate reserves, constitutes the principal domestic offtaker: having commissioned 202 MWp of solar in 2025 - 2026, it targets full renewable electricity supply for its operations by 2027, thereby creating structured corporate PPA demand for PV and BESS.[111]

Foreign and international investors are increasingly prominent in the 2026 - 2027 pipeline. The ORNX consortium (Ortus/USA, Acciona/Spain, Nordex/Germany) secured a USD 4.5 billion green-ammonia project in Laayoune in February 2026, incorporating 2 GW of combined solar and wind capacity together with battery storage and electrolysers oriented toward European export markets.[112] Acciona's participation strengthens Spanish industrial linkages and directly utilises Nador West Med infrastructure, scheduled for commissioning in late 2026.

TotalEnergies, France, retains a strategic minority stake in the Xlinks Morocco-UK Power Project, which combines large-scale solar, wind and BESS for potential export to the UK market. After the UK government's decision in mid-2025 not to back the project through a CfD regime, Xlinks has shifted towards a more exploratory, privately driven development phase, with the consortium—including TotalEnergies, Octopus Energy and TAQA—reassessing commercial models and timelines. This keeps Xlinks on the strategic radar as a possible future outlet for Moroccan renewables, but investors should discount it as a long-shot,

[109] African Energy Chamber, "The State of African Energy 2026" (Johannesburg: African Energy Chamber, 2026), https://energychamber.org/wp-content/uploads/The-State-of-African-Energy-2026_Digital_rev3.pdf.
[110] Morocco World News, February 2026, "MASEN Signs Land Agreements for USD 35 Billion Green Hydrogen Projects," https://www.moroccoworldnews.com/2026/02/148765/masen-signs-land-agreements-for-usd-35-billion-green-hydrogen-projects.
[111] OCP Group, "OCP Achieves 202 MWp Solar Milestone and Sets 2027 Renewable Target," press release, 20 December 2025, https://www.ocpgroup.ma/en/media/press-releases/ocp-achieves-202-mwp-solar-milestone.
[112] Reuters, "ORNX Consortium Secures USD 4.5 Billion Green Ammonia Project in Laayoune," Reuters, 18 February 2026, https://www.reuters.com/business/energy/ornx-consortium-secures-usd-45-billion-green-ammonia-project-laayoune-2026-02-18/.

high-uncertainty project rather than a near-term anchor offtake route.[113] Voltalia (France) and EDF Renewables are advancing commercial-and-industrial and utility-scale solar schemes, including hybrid configurations supplying industrial offtakers.[114] [115] Moeve (Spain, formerly Cepsa) partners with TAQA (UAE) on additional green-ammonia facilities at Jorf Lasfar. Chinese investors (United Energy Group and China Three Gorges) contribute to southern hydrogen-linked solar developments. Multilateral institutions (World Bank, IFC, German KfW) provide concessional financing, particularly for port-linked infrastructure and OCP's energy transition. These actors are projected to channel USD 1–2 billion annually in 2026–2027, predominantly through joint ventures with MASEN or OCP.[116]

Local and civil-society stakeholders continue to shape project execution on the ground. Communities adjacent to solar sites and phosphate operations press for employment creation and revenue sharing; MASEN community-fund mechanisms have modestly improved local acceptance, yet tensions persist over land allocation. In Western Sahara, Sahrawi organisations and international NGOs scrutinise hydrogen-project land grants.[117] Youth movements (#GenZ212) and trade unions monitor social equity, linking energy developments to demands for services and youth employment. Port operators (Marsa Maroc at Tanger Med and Nador) and tenants in special economic zones function as proximate offtakers.

For a foreign solar developer, the actor landscape strongly supports sustained renewable momentum. The monarchy's stabilising role, MASEN–OCP coordination, and the entry of European leaders such as TotalEnergies and Acciona through ORNX and Xlinks ensure pipeline delivery and corporate offtake. OCP's energy-intensive operations generate predictable demand, while Nador West Med's 2026 commissioning and Dakhla planning reinforce export infrastructure. The September 2026 elections are unlikely to disrupt the

[113] "Xlinks Consortium Advances Despite UK Funding Withdrawal," Ammonia Energy Association, 5 February 2026, https://www.ammoniaenergy.org/articles/xlinks-consortium-advances-despite-uk-funding-withdrawal/.
[114] Anand Gupta, "117 Megawatts of Solar Sites Were Awarded to Voltalia in Morocco," EQ Mag Pro, April 27, 2022, https://www.eqmagpro.com/117-megawatts-of-solar-sites-were-awarded-to-voltalia-in-morocco-eq-mag-pro/ /
[115] "EDF accélère ses projets d'hydrogène vert, éolien et solaire au Maroc," Portailsudmaroc, June 13, 2025, https://portailsudmaroc.com/actualite/28279/edf-acclre-ses-projets-dhydrogne-vert-olien-et-solaire-au-maroc.
[116] World Bank, "Gateway to Green Energy: Moroccan Ports as Hubs for Hydrogen Fuel Development and Trade" (Washington, DC: World Bank, 2025), 28–32, http://documents.worldbank.org/curated/en/099011426154042653.
[117] Western Sahara Resource Watch, "New Hydrogen Land Deals in Occupied Western Sahara," 25 February 2026, https://wsrw.org/en/new-hydrogen-land-deals-in-occupied-western-sahara.

established energy roadmap, and green-hydrogen pilots commencing in 2026 will accelerate hybrid solar-BESS deployment.

Nevertheless, territorial claims in Western Sahara introduce permitting and reputational considerations for developers operating in Laayoune, while youth-led social pressures may extend local approval timelines if community benefits remain insufficiently addressed. The optimal entry strategy therefore remains structured joint ventures with MASEN or OCP. Such partnerships combine political backing with secure offtake and port synergies, thereby mitigating territorial and social risks while capitalising on Morocco's resource endowment and export orientation. This actor mapping confirms a favourable risk-return profile for European developers targeting stable, high-irradiation markets with clear pathways to European and African demand centres in 2026-2027.

3.3. Energy Market Scenarios for Morocco

3.3.1. Drivers, Uncertainties and Key Assumptions

The evolution of Morocco's solar PV and storage market to 2035 will be shaped by five core drivers, each carrying identifiable uncertainties that will determine whether large-scale foreign investment will accelerate, proceed steadily, or encounter repeated friction points. These drivers emerge directly from the political, infrastructural, and external dynamics analysed in Parts I and II.

1. **Domestic political and institutional continuity** The monarchy's stabilising role, the outcome of the September 2026 legislative elections, and the medium-term succession risk around Crown Prince Moulay Hassan remain the primary guarantors of policy predictability. Uncertainty: low-to-medium; a smooth transition is the baseline, but any prolonged social mobilisation or succession friction could slow permitting and public investment.
2. **Grid modernisation, storage deployment and hosting-capacity expansion** ONEE's high-voltage upgrades, battery integration (beyond current CSP thermal storage), and resolution of southern-corridor bottlenecks will decide how much variable solar can be absorbed without curtailment. Uncertainty: high; delays here were already visible in 2025 preliminary data and mirror Spain's saturation problems.
3. **EU–Morocco energy partnership and cross-border infrastructure** The third Spain interconnection (700 MW, 2026), the planned Portugal link (2030), and the EU's demand

for green molecules will determine export revenues and private-capital inflows. Uncertainty: medium; stronger Green Deal alignment could multiply opportunities, while protectionist shifts in Europe could cap them.

4. **Western Sahara legal and reputational exposure** Continued economic integration of the territory (Foum el Oued, Boujdour plants, OCP green-hydrogen projects) versus UN/CJEU rulings on consent creates compliance risk for European developers. Uncertainty: medium-high; contained status quo is most probable, but any escalation would trigger arbitration or financing blocks.
5. **Funding landscape and global renewable-cost trajectory** IFI concessional finance, Eurobond access (post-2025 investment-grade upgrade), and continued solar LCOE decline (already 0.34 - 0.42 MAD/kWh) will set the risk–return envelope. Uncertainty: low-to-medium; Morocco's macro resilience (debt-to-GDP trending to 65 % by 2027) supports sustained access.

Key assumptions (held constant across all scenarios):

- Morocco maintains its 52 % renewable-capacity target by 2030 (with solar at 4.7 GW) and extends ambition toward 2035.
- Solar PV costs continue their downward trend and battery costs fall 40–50 % by 2030.
- No major global supply-chain disruption (e.g., critical minerals) beyond current China-dependence levels.
- Youth unemployment and rural–urban tensions remain structural but do not escalate into systemic unrest.

3.3.2 Different scenarios

Three coherent scenarios are constructed by combining the above drivers at plausible intensity levels. Each project approximates utility-scale solar + storage capacity additions, cumulative foreign investment potential, and risk profile for a European developer by 2035.

Scenario A – Solar Surge (Optimistic – 25 % probability)

Political continuity is seamless post-2026; grid hosting capacity doubles through accelerated battery tenders and smart-grid rollout; the third interconnection is commissioned on time and a fourth is announced; Western Sahara projects proceed under clear EU-compliant frameworks; and EU green-hydrogen demand triggers dedicated export corridors.

By 2035 it is expected that Solar capacity reaches 12-15 GW (well above the 4.7 GW 2030 benchmark), storage adds 3-4 GW/12-16 GWh, and annual foreign investment averages EUR 1.2-1.5 billion. Risk–return profile is highly attractive (IRR 12-15 % on utility-scale PV + storage); permitting timelines shorten to 12–18 months; land and social acceptance improve via community-benefit funds tied to OCP-style models. Entry via MASEN public-private partnerships or direct C&I off-take is straightforward.

Scenario B – Steady Expansion (Baseline / Most Likely – 55 % probability)
Monarchy and government provide continuity; grid upgrades proceed at current pace (moderate hosting-capacity improvements but persistent southern bottlenecks); interconnections deliver incremental export capacity; Western Sahara risk is managed through "autonomy-plus" economic framing without full international resolution; funding remains available but more selective.

By 2035 the Solar capacity would hit 8-10 GW, storage reaches 2-2.5 GW/8-10 GWh, and cumulative foreign investment totals EUR 6-8 billion (2026-2035). IRR settles at 9-12 %; permitting averages 18-24 months; some curtailment (5-10 %) persists until 2030 but declines thereafter. This scenario aligns with Morocco's historical trajectory (rapid capacity growth from 1 GW solar in 2025 to 4.7 GW by 2030) and allows a European developer to enter via phased MASEN or OCP-adjacent projects with acceptable political-risk premia.

Scenario C – Delayed Transition (Pessimistic – 20 % probability)
Succession frictions or post-election social mobilisation slow public investment; grid upgrades lag, producing chronic curtailment (>15 %); the third interconnection is postponed and EU–Morocco talks stall; Western Sahara legal challenges trigger financing withdrawals or arbitration cases; global interest-rate spikes tighten IFI and private capital.

In 2035 the Solar capacity stalls at 5-6 GW (barely above 2030 target), storage remains under 1.5 GW, and foreign investment halves to EUR 3-4 billion cumulative. IRR falls below 8 %; permitting exceeds 30 months; reputational and compliance risks rise sharply. Large-scale entry becomes unattractive except for niche C&I or hybrid projects backed by sovereign guarantees.

3.4 Second Set of Scenarios (Brief Alternative Outcomes)

Two narrower, high-impact alternative pathways illustrate how single-driver shocks could alter the baseline:

Alternative 1 – Green-Hydrogen Export Accelerator

If EU demand for green ammonia/hydrogen surges (driven by REPowerEU extensions) and the Morocco-Spain-Portugal corridor is upgraded to HVDC, solar + storage deployment accelerates 30-40 % beyond Scenario B, with dedicated 2-3 GW solar-to-X clusters near ports. Investment returns rise 2-3 percentage points; however, water-use conflicts could generate new social-acceptance risks in southern provinces.

Alternative 2 – Regional Contagion Shock

An escalation of Algeria tensions or a prolonged Western Sahara arbitration wave (e.g., new CJEU ruling) triggers cross-border interconnection restrictions and selective EU divestment. Solar pipeline contracts are renegotiated or frozen for 2-3 years; foreign capital shifts to wind or hydro; overall capacity growth slows to Scenario C levels even if domestic grid progress continues. Monitoring indicator: any change in U.S./EU statements on autonomy proposals.

These scenarios provide a forward-looking framework for a European developer. The baseline (Steady Expansion) remains the most probable outcome given Morocco's demonstrated macro resilience, policy continuity under the monarchy, and accelerating solar momentum already visible in 2025-2026 projects (Noor Midelt phases, OCP additions, 700 MW C&I pipeline). The risk–return profile in this scenario supports entry, provided investors build in buffers for permitting and grid delays and maintain close monitoring of the four high-uncertainty drivers identified above.

4. ESTIMATIVE JUDGEMENT AND IMPLICATIONS FOR INVESTORS

4.1. Most Likely Scenario and Investor Risk-Return Profile

The most probable outcome for Morocco's solar and storage market between 2026 and 2035 is the Steady Expansion scenario, with a 55 % probability. This view is based on three key strengths that reinforce one another and are already clear in the country's current path. First, the monarchy's steadying influence makes major policy shifts after the September 2026 legislative elections very unlikely (Section 3.1). Second, the economy itself is on firm ground: real GDP growth is forecast at 3.7 % in 2026 and 3.5 % in 2027, public debt is steadily declining toward 65 % of GDP, and the 2025 investment-grade upgrade has opened the door to easier financing (Section 3.1). Third, real momentum is already visible on the ground, with the Noor Midelt hybrid phases moving ahead, OCP's 202 MW additions now in place, and the 700 MW commercial and industrial pipeline actively advancing (Section 3.2).

Together, these factors more than offset the remaining concerns around grid upgrades and Western Sahara compliance. Under this baseline scenario, investors face real but manageable risks, permitting delays (18–24 months on average), hosting-capacity constraints, and residual social pressures, all of which are already priced into project timelines and have not prevented the successful delivery of flagship initiatives such as the Noor complex (Sections 4.2 and 6.2). At the same time, the return potential remains attractive: expected equity IRR for utility-scale solar PV and storage projects lies in the 9–12 % range (unlevered). This benchmark derives directly from the fundamentals examined in the report, exceptional solar irradiation (>5 kWh/m²/day in southern provinces), competitive MASEN PPA tariffs of 0.34-0.42 MAD/kWh (Sections 3.2 and 4.3), declining battery costs, and strong IFI support combined with the country's investment-grade status (Section 3.1). These returns are clearly better than what investors usually earn on solar projects in Europe. The small extra return is fair , Morocco is an emerging market, but it has already shown it can deliver big projects successfully.

In this baseline scenario, solar capacity should reach 4.7-5.5 GW by 2030 and 8-10 GW by 2035, while battery storage grows to 2.0-2.5 GW with 8-10 GWh of usable capacity. Cumulative foreign investment from 2026 to 2035 is expected to total EUR 6-8 billion, offering average returns of 9-12 %. Permitting should take 18-24 months on average, and curtailment is likely to stay at a manageable 5-10 % in 2030 before easing as the grid improves. What's

more, this growth in solar and storage will support Morocco's overall economy, adding roughly 0.2-0.4 percentage points to annual GDP growth between 2030 and 2035 through new jobs, lower fuel imports, and green-energy exports to Europe, a boost that fits perfectly with the resilient macroeconomic picture outlined in Section 3.1. For a European developer, this Steady Expansion path is the central case around which any entry strategy should be planned.

4.2. Critical Risks to Monitor

Political and Institutional Risks

Short-term monarchy succession considerations linked to Crown Prince Moulay Hassan (23 years old in 2026) represent a latent rather than imminent concern; any health-related development would be managed swiftly by existing Palace mechanisms with minimal expected disruption to MASEN/ONEE tender schedules.

The September 2026 legislative elections are projected to preserve the pro-business coalition orientation; any shift toward tighter localisation or community-benefit rules would remain incremental and consistent with the responsive budgetary adjustments already introduced in the 2026 Finance Bill.

Algeria-related tensions remain contained and have not historically interrupted energy cooperation; the Western Sahara dimension continues to require careful structuring (explicit consent protocols or avoidance of territory-linked offtake) but affects only a minority of the pipeline projects.

Regulatory and Permitting Risks

Multi-agency approval processes (ONEE grid studies, MASEN compliance, land allocation and environmental assessments) routinely extend timelines by 12–18 months , a structural feature already factored into base-case project schedules (Section 4.2).

PPA stability with ONEE/MASEN is underpinned by sovereign backing and IFI involvement; fiscal consolidation toward –3 % of GDP and the 2030 World Cup investment cycle introduce only mild crowding-out pressure on grid-upgrade financing, supported by record international reserves and S&P's investment-grade upgrade.

Social and Environmental Risks

Youth unemployment (35-37%) and intergenerational perceptions remain visible but have been addressed through targeted social spending and community-fund mechanisms (80% local support in MASEN planning); Gen-Z mobilisations have not targeted renewable infrastructure directly.

Land-use frictions with herder communities are manageable through existing royalty and consultation frameworks; climate-driven drought risks are mitigated by the accelerating shift to solar PV + storage, reinforcing rather than undermining energy-security objectives.

Grid, Storage and Interconnection Risks

Hosting-capacity constraints in southern corridors and potential curtailment are acknowledged (Section 3.3) yet Morocco's grid remains far less saturated than Spain's 2025 experience; the third Spain interconnection (target 2026) and planned Portugal link (2030) are on track and will provide additional balancing flexibility.

CONCLUSIONS

The assessment developed in this report suggests that Morocco is well positioned for a genuine transformation of its energy system, with solar power and storage emerging as central pillars rather than marginal add-ons. After examining the country's institutional framework, energy strategy and project pipeline, it appears plausible that over the next decade Morocco will reduce its dependence on imported fossil fuels and consolidate itself as a credible green-energy player in North Africa, provided that current policies and reforms are effectively implemented.

This outlook rests on a combination of factors that are unusual in the regional context: relatively high political predictability, a clear long-term renewable target, and a track record of delivering complex projects such as the Noor complex and OCP's expanding solar portfolio. The upgrade to investment-grade status in 2025 and continued access to concessional and blended finance further support the bankability of large-scale solar and storage assets, especially when anchored by strong industrial offtakers. These elements create a more favourable environment for foreign developers than in many neighbouring markets, particularly when projects are structured through partnerships with MASEN, ONEE or major industrial groups.

At the same time, this trajectory is far from guaranteed. Structural challenges – slow permitting cycles, grid bottlenecks in key corridors, land-use disputes, social expectations around employment, and legal sensitivities in Western Sahara – will continue to shape timelines and project design. Flagship initiatives such as the Xlinks Morocco-UK interconnector, the Nigeria–Morocco gas pipeline with a potential extension towards Spain and Europe, or major port developments like Nador West Med and Dakhla illustrate both the scale of Morocco's ambition and the execution, financing and security risks that can delay or even prevent delivery. These projects should therefore be treated as conditional upside rather than assumed as part of the base case.

For European renewable developers, Morocco thus offers a compelling but execution-risk-heavy opportunity set. The most attractive strategies are likely to be those that combine disciplined risk management – realistic assumptions on permitting and grid connection, careful structuring of territorial exposure, conservative expectations around cross-border offtake – with deep local partnerships and gradual scaling of commitments. Under these conditions, investors can reasonably target competitive returns while contributing to a national energy transition that, if carried through, will lower energy costs for energy-intensive

industries, support emerging green-hydrogen value chains and strengthen Morocco's overall macroeconomic resilience.

The next ten years will therefore be a test not of Morocco's ambition, which is already clear, but of its ability to execute at scale and pace. Success will depend less on the announcement of new targets or mega-projects and more on the patient, incremental work of reinforcing the grid, streamlining permits, securing sustainable financing and maintaining social and territorial legitimacy for the energy transition. If Morocco can deliver on these fronts, it will consolidate its position as one of the most attractive solar and storage markets in the wider Mediterranean basin; if not, the current window of opportunity may narrow as competing destinations and global funding priorities evolve

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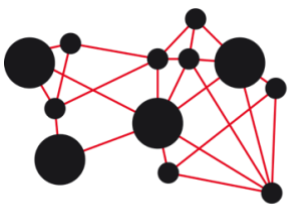

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