

Towards Arab Clean and Renewable Energy Integration

The Role of Arab Financing Funds in Accelerating the Energy Transition

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ABSTRACT

The paper highlights the important role of the development financing funds in accelerating the transition to sustainable and integrated energy systems. Despite the Arab region's vast solar and wind potential, renewable electricity still accounts for less than 8% of total electricity consumption, much lower than the global average of around 20%. This gap reflects persistent structural constraints, particularly inadequate grid infrastructure and high capital costs.

International weather finance needs are estimated to grow significantly, so global needs are projected to exceed USD 5 trillion yearly through 2030 to achieve the 1.5°C pathway. On the other hand, Arab countries together face a climate finance gap of USD 70 to 85 billion, according to the year. In this context, the Arab development funds, which include AFESD, ADFD, Kuwait Fund, Saudi Fund for Development, and the Islamic Development Bank, have emerged as a pivotal factor in the transition towards clean energy through the financing and support provided to countries. Their concessional financing, de-risking tools, co-financing preparations, and capacity constructing programs have facilitated the implementation of main renewable power projects throughout the area, such as Egypt's Benban Solar Park, Morocco's Noor Solar Complex, and Jordan's renewable electricity and performance software.

The research paper shows that promoting regional energy integration, supported by financing mechanisms, can yield significant financial and environmental benefits. The complementarities in solar, wind, hydroelectric and hydrogen energy capabilities among Arab countries provide a basis for creating cross-border renewable energy corridors, shared transmission networks, and joint R&D initiatives. It also presents recommendations aimed toward countrywide governments, Arab development funds, and regional institutions to accelerate the clean energy transition and enhance Arab energy integration by 2030 and 2050.

Box 1: Constraints as a binding barrier to renewable energy integration in Arab countries

With the declines cost of renewable energy production, grid constraints have emerged as a major obstacle to scaling up clean energy in many Arab countries. Limited transmission capacity, weak distribution networks and insufficient system flexibility due to a lack of storage and support services are increasingly limiting the integration of variable renewable energy. Operational challenges, including outdated grid codes, congestion and limited forecasting capacity, are further inhibiting grid absorption, while the financial weakness of public utilities is delaying critical grid investments.

These limitations result in curtailments in renewable energy, project delays, higher system costs and increased investment risk. Dealing with them requires prioritizing transmission and distribution upgrades, grid digitalisation, flexibility solutions and regional interconnections. The Arab Development Fund can play a catalytic role by shifting more funding towards grid and flexibility funds, thereby translating renewable energy expansion into energy security, cost efficiency and regional integration.

Preface

Globally, the energy sector is undergoing a significant transformation as a result of the increasing impact of climate change, international commitments to reduce carbon emissions, and the global push towards achieving net-zero targets by 2050. The Paris Agreement and subsequent Conferences of the Parties (COPs)¹ have prompted countries and development finance funds and institutions to revise traditional energy systems and prioritise investments in clean and renewable sources, such as solar, wind, and green hydrogen. According to the International Renewable Energy Agency (IRENA)², renewables accounted for about 46% of global installed power capacity by the end of 2024, reflecting the rapid pace of the worldwide energy transition, even though fossil fuels still dominate overall energy use. Meanwhile, recent assessments show that average annual climate and energy transition investments reached around USD 1.3 trillion in 2021-2022. However, it needs to increase more than fourfold to reach more than US\$5 trillion annually by 2030 to align with a 1.5°C pathway³.

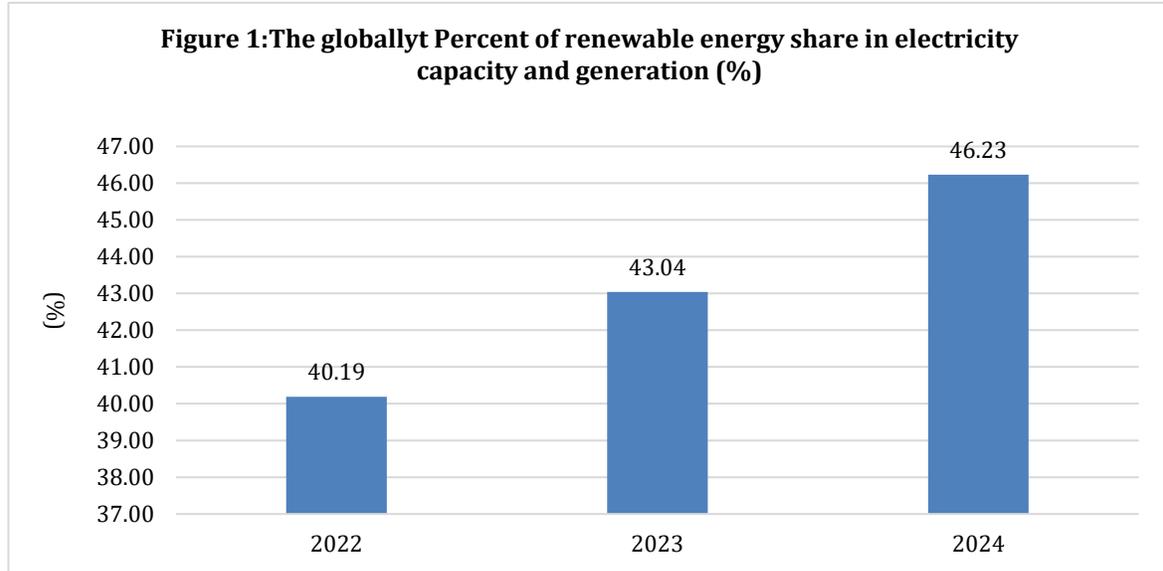
Globally, the percentage of renewable energy in electricity capacity and production increases from around 40.2% in 2022 to more than 46.2% in 2024. This growth reflects improvements in grid infrastructure and system integration, as well as

¹ UN Climate Change, <https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop>

² The International Renewable Energy Agency (IRENA) (2023), RENEWABLE CAPACITY STATISTICS

³ IRENA 2023, WORLD ENERGY TRANSITIONS OUTLOOK 2023, 1.5° C PATHWAY

accelerated investment in solar and wind energy. Despite this progress, fossil fuels still dominate the overall energy mix, particularly in final energy consumption. The trend highlights the need for increased investment and system-wide reforms to align global electricity systems with long-term decarbonization goals (Figure 1).



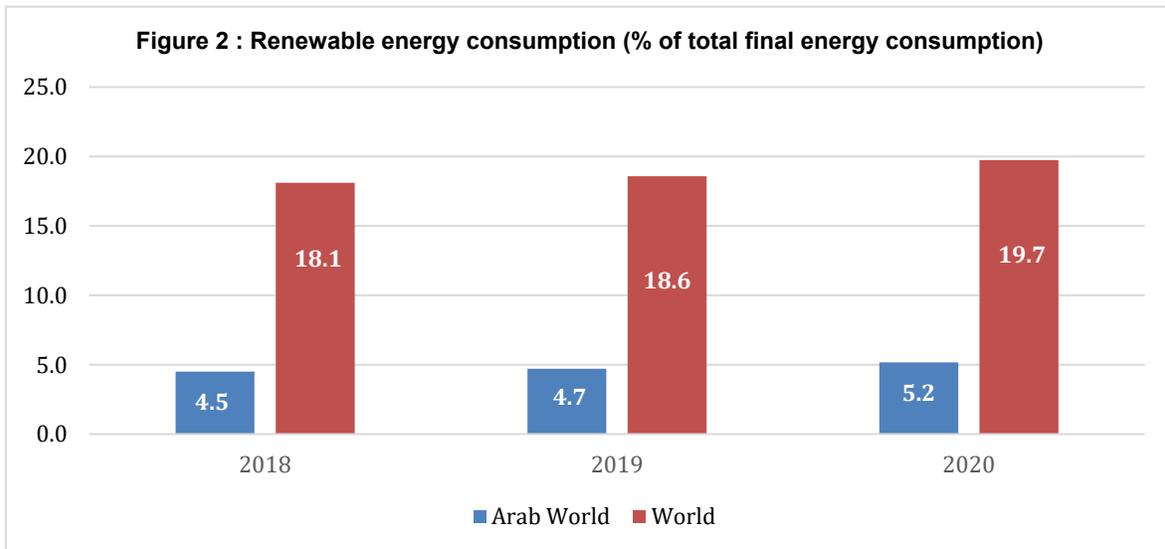
Source: IRENA (2025), Renewable Energy Statistics 2025

Arab countries are considered one of the most climate-vulnerable regions globally, so they are facing challenges like rising temperatures, water scarcity, and environmental issues. Therefore, the transition to sustainable energy systems is crucial to meeting these challenges. The World Bank and other international institutions have identified the Middle East and North Africa (MENA)⁴ as highly climate-exposed regions, facing rising temperatures and increased disaster risk. According to the World Meteorological Organisation's climate in the Arab Region report, the Arab region is warming at twice the global average and is home to 15 of the world's 20 most water-scarce countries. The year 2024 was recorded as the hottest year on record in the region.

Despite the plenty of renewable resources in the Arab countries, particularly solar and wind energy, which are globally competitive in terms of resource quality and cost, the region's utilisation of renewables in its energy mix remains limited compared to its potential. While global renewable power capacity continues to grow rapidly, renewable energy consumption in the Arab region still represents a relatively small fraction of total final energy use, estimated at around 5% in recent

⁴ World Bank Group (2023), Climate and Development in the Middle East and North Africa. <https://www.worldbank.org/en/region/mena/brief/climate-and-development-in-the-middle-east-and-north-africa>

years⁵. Globally, the renewable energy consumption as a percentage of total final energy consumption reached approximately 19.7% (Figure 2).



Arab countries face challenges that hinder the full realisation of their renewable energy potential⁶. These challenges include insufficient financing, infrastructure gaps, regulatory and institutional weaknesses, and limited regional coordination. International reports⁷ highlight a significant global climate finance gap, with annual adaptation and mitigation needs in developing countries surpassing current funding by several hundred billion dollars per year. In this context, the availability, design, and targeting of concessional and blended finance are crucial in determining the speed and inclusivity of the energy transition in Arab countries.

Arab and regional development finance fund and institutions, like the Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund for Arab Economic Development, the Saudi Fund for Development, the Abu Dhabi Fund for Development and the Islamic Development Bank, play an important role in supporting the deployment of renewable energy in Arab countries. Over the past decade, these institutions have funded a variety of initiatives, including grid-connected solar and wind projects, energy efficiency programs, and regulatory capacity building efforts. They often collaborate with global climate and development finance institutions. As the region's need for climate finance grows, these institutions are expected to expand their role significantly. They will not only

⁵ World Bank, World Development Indicators

⁶ The United Nations Environment Programme (UNEP), Adaptation Gap Report 2023.

⁷ The United Nations Environment Programme (UNEP), Adaptation Gap Report 2025

provide financing but also act as key facilitators of blended financing solutions, risk mitigation mechanisms and private sector participation.

Arab countries have a unique opportunity to strengthen regional integration in the energy sector. The distribution of renewable resources in the region is highly complementary. North Africa has world-class solar and wind capacity, the Gulf Cooperation Council (GCC) countries are becoming centres for large-scale green hydrogen production, and the Eastern Mediterranean countries have strong solar capacity. However, these powers are largely underutilised in collective settings. This situation raises legitimate concerns about limited regional coordination and highlights the need for Arab and regional financial institutions to shift from national intervention to a more coherent, cross-border approach to renewable energy integration.

Improving the Arab energy integration can bring significant benefits, such as reducing production costs through economies of scale, improving energy security, reducing carbon footprints and establishing the region as a global exporter of green energy. However, the integration work faces challenges, including fragmented regulations, limited planning coordination and insufficient regional platforms for joint project development.

In this context, the policy paper aims to provide an analytical framework for understanding the role of Arab and regional financial institutions in promoting the transition to renewable energy in the Arab world and identifying concrete avenues for leveraging these institutions to promote regional integration. It examines the current situation of renewable energy in Arab countries, reviews financing models and investment trends, and highlights opportunities for collaboration between countries. It argues that strengthening institutional coordination and scaling up climate-adaptive financing are important steps to align the Arab region with global clean energy trends and promote progress towards Sustainable Development Goals 7, which is affordable and clean energy, and 13, which relates to climate action.

1. Renewable Energy Landscape in the Arab Region

The consumption of renewable energy varies between Arab countries due to differences in energy systems, investments, economic development and access to modern energy technologies. Data from 2018 to 2022 (Table 1) show that Arab countries lag behind the global average in terms of the share of renewable energy in total final energy consumption. While the global average increased from 18% to

20% during this period, the Arab regional average remained at 4 to 5%, highlighting a significant gap in the transformation to clean energy.

1.1 Developments of Energy in Arab Countries

An important observation is the difference between Arab countries with high shares of renewable energy and countries with a low level of adoption. This reflects that the renewable energy consumption as a percentage of total final energy consumption in Somalia was between 94 to 95%, in the Comoros between 39 to 57%, in Djibouti between 23 to 27%, and in Sudan 59 to 62%, which means that these countries have the highest percentages of renewable energy. However, these figures do not indicate an advanced transition to clean energy, but rather a continued reliance on traditional biomass such as wood and charcoal due to limited access to modern electricity infrastructure, highlighting energy poverty rather than progress towards modern renewable energy sources such as solar and wind. These countries often lack robust electricity grid systems, institutional capacity and the investment frameworks needed to scale up modern clean energy solutions (Table 1).

In contrast, high-income economies like Saudi Arabia, Kuwait, Qatar and Oman show almost no consumption of renewable energy, where the share is often less than 0.1%. Despite having significant solar energy potential and expanding renewable power generation capacity, these countries are still heavily dependent on oil and gas in their final energy consumption structure.

The low share of Total Final Energy Consumption (TFEC) is linked to the slow use of renewable energy in sectors such as industry, transport and buildings, where fossil fuels continue to dominate. This highlights a structural challenge: the transition in many Arab countries has been primarily driven by utility-scale electricity generation and has not yet translated into broader consumption patterns.

The middle-income economies such as Jordan, Tunisia, Morocco, Lebanon, Egypt, and Palestine are showing moderate and significant growth in renewable energy. Jordan, for example, increased the renewable energy share from 7.2% to 11.5%, making it one of the fastest-growing markets in the region. Tunisia and Morocco also have higher shares, thanks to their long-standing national strategies promoting solar and wind energy. Egypt and Lebanon are making gradual progress, driven by large-scale wind and solar projects as well as distributed rooftop systems. These countries are in the early stages of transitioning to modern renewable energy technologies (Table 1).

Table (1): Renewable energy consumption (% of total final energy consumption)

Country	2018	2019	2020	2021	2022
Algeria	0.2	0.2	0.1	0.1	..
Bahrain	0	0	0	0	..
Djibouti	24.7	23.4	27.5	26.6	26.9
Comoros	57.7	55.3	50.8	41.2	39.3
Egypt	5	6.2	6.7	6.1	..
Iraq	0.5	0.9	1.1	1.1	..
Jordan	7.2	8.5	10.7	11.5	..
Kuwait	0	0.1	0.1	0.1	..
Lebanon	4.7	5.1	6.3	6.8	..
Libya	2.9	3	3.2	3.1	..
Mauritania	21.6	21.2	20.9	22.1	19.6
Morocco	10.9	10.7	11.1	10.9	..
Oman	0	0	0.1	0.1	..
Qatar	0	0.1	0	0	..
Somalia	94.9	95	95.5	95.4	95.4
Sudan	59.8	59.4	62.6	61	..
Saudi Arabia	0	0	0.1	0.1	..
Syrian	0.9	1	1.1	1.1	..
UAE	0.3	0.7	0.9	1.0	..
Tunisia	11.9	12.2	12.9	11.6	..
Palestine	12.7	13.9	15	15.4	15.4
Yemen, Rep.	2.9	3	3.5	3.7	..
Arab World	4.5	4.7	5.2	..	..
World	18.1	18.6	19.7	..	..

Source: World Bank, World Development Indicators

In conflict-affected countries such as Yemen, Syria and Libya, the share of renewable energy is low, and varies from 1% to 4%. For instance, in Yemen, the growth in renewable energy is primarily due to the widespread use of small solar systems in the home in response to grid failures rather than strategic energy planning. Political instability in Libya and Syria has hindered investment in energy infrastructure, limiting the use of modern renewable energy.

The table (1) highlights three key insights for the region's energy transition. Arab countries lag behind global trends in renewable energy adoption due to high dependence on fuel and slow integration of renewable energy in various regions, and the high share of renewable energy in low-income countries does not mean success but reflects limited energy access. Ultimately, uneven progress between countries underscores the importance of regional cooperation, policy alignment and adequate climate finance to accelerate the deployment of renewable energy.

These trends underscore the need for cross-border cooperation, capacity building and targeted funding from Arab and regional development institutions to bridge the transition gap.

Table (2): Total renewable energy (USD million)

Countries	2021	2022	2023
Algeria	0.1	6.3	7.5
Djibouti	0.3	71.0	0.4
Egypt	150.7	1103.0	234.0
Iraq	1.1	4.5	0.1
Jordan	24.1	54.91	75.85
Lebanon	2.1	23.8	27.5
Libya	5.2		
Mauritania	0.0	12.1	0.5
Morocco	1.3	67.8	298.7
Qatar (2020)	134.1		
Palestine	23.7	20.9	11.2
Sudan	0.3	0.01	0.2
Somalia	145.5	14.0	125.6
Saudi Arabia	117.7		
Syrian		0.6	0.05
UAE		300.3	
Tunisia	20.2	57.6	320.8
Yemen	7.7	130.0	0.9

Source: International Renewable Energy Agency (IRENA) RENEWABLE ENERGY STATISTICS 2025

Table 2 highlights differences in renewable energy investment across Arab countries from 2021 to 2023. Egypt, Morocco and Tunisia have emerged as the most dynamic markets, with significant growth in annual investment driven mainly by large solar and wind tenders, improved regulatory frameworks and strong links with international financial institutions. While countries such as Iraq, Sudan, Yemen and Libya show minimal levels of investment due to domestic challenges, weak network infrastructure and limited access to concessional financing. The fluctuations in countries such as Djibouti, Somalia and Yemen indicate reliance on isolated, donor-funded or humanitarian energy projects rather than sustained national investment programs.

Additionally, the GCC countries host major renewable energy projects. The table outlines the progress in the energy transition in Arab countries and emphasises the importance of coordinated policies and financing mechanisms to promote more balanced and sustainable growth in renewable energy deployment.

Table 3: Public investments in multiple renewables in some Arab Countries (Million USD)

Country	2021	2022	2023
Algeria	..	6.33	7.49
Comoros	0.02	0.19	5.13
Djibouti	0.31	5.24	0.4
Egypt	82.45	362.21	152.25
Iraq	..	4.5	..
Jordan	0.67	53.99	3.33
Lebanon	1.27	21.78	26.17
Libya	4.94	..	..
Morocco	0.72	16.48	83.02
Saudi Arabia	52.35	..	..
Somalia	..	..	19.29
Palestine	0.53	0.41	10.3
Sudan	0.15	0.01	..
Tunisia	0.22	57.25	57.77
Yemen	7.71	..	..

Source: The International Renewable Energy Agency (IRENA), Statistics database

Data show significant differences in public investment in renewable energy across Arab countries. Egypt stands as the largest recipient of public investment, especially in 2022, reflecting its large-scale solar and wind development programs. Morocco and Tunisia also show increasing investment trends supported by stable regulatory frameworks and strong engagement with international and regional financiers. In contrast, many low-income countries, including Sudan, Somalia and Yemen, show sporadic and limited investment flows, often driven by donor-funded or emergency energy interventions rather than sustained national programmes. These patterns highlight the central role of public and concessional financing in shaping renewable energy outcomes, particularly in countries facing fiscal constraints and elevated investment risk (Table 3).

1.2 Infrastructure and Regulatory Frameworks

The development of renewable energy in the Arab countries is closely linked to the maturity of their infrastructure and regulatory systems. In recent years, many Arab countries have implemented support policies to attract renewable energy investments, such as feed-in tariffs and public-private partnership (PPP) models. Competition in countries like Emirates, Saudi Arabia, Jordan and Morocco has led to some of the lowest solar tariffs in the world, reflecting higher quality solar

resources and better regulatory clarity. These mechanisms have facilitated and promoted the development of utility-scale solar and wind projects (IRENA 2019)⁸.

The introduction of the Independent Power Producer (IPP) framework has also accelerated in the region. Countries such as Egypt, Jordan, Oman and Saudi Arabia have established IPP regulations that outline licensing requirements, network access rules, tariff structures and risk sharing mechanisms. These frameworks have played an important role in attracting private sector participation, enabling long-term power purchase agreements (PPAs) and diversifying ownership in the power sector. However, there are disparities in implementation, with some countries lacking transparent tender processes, cost-reflective tariff structures and reliable dispute resolution mechanisms⁹.

The infrastructure is another key factor influencing the expansion of renewable energy. While GCC states have advanced grid infrastructure capable of integrating large-scale renewables, countries in North Africa and the Levant face challenges such as ageing grids, limited transmission capacity, and high technical losses. Grid constraints, coupled with inadequate storage systems, hinder the integration of renewable energy and often result in curtailment of solar and wind generation.

⁸ IRENA (2019), RENEWABLE ENERGY AUCTIONS STATUS AND TRENDS BEYOND PRICE

⁹ International Bank for Reconstruction and Development and The World Bank (2020), BEYOND THE POLITICAL ECONOMY OF ELECTRICITY AND GAS TRADE IN THE MIDDLE EAST AND NORTH AFRICA REGION.

Table (4) : Access to electricity (% of population)

Country Name	2019	2020	2021	2022	2023
Algeria	99.5	99.7	99.8	100	100
Bahrain	100	100	100	100	100
Djibouti	64.7	64.5	65.4	65	65.2
Comoros	83.3	85.6	87.9	89.9	89.8
Egypt	100	100	100	100	100
Iraq	100	100	100	100	100
Jordan	99.9	99.9	99.9	100	100
Kuwait	100	100	100	100	100
Lebanon	100	100	100	100	100
Libya	68.5	69.4	70.2	70	73.2
Mauritania	44.9	45.4	47.7	49	50.3
Morocco	99.6	100	100	100	100
Oman	100	100	100	100	100
Qatar	100	100	100	100	100
Somalia	49.2	49.9	49.3	48.9	50.3
Sudan	57.6	59.7	61.8	63.2	66
Saudi Arabia	100	100	100	100	100
Syrian	89.2	89	88.8	89	88.4
UAE	100	100	100	100	100
Tunisia	100	99.9	99.9	100	100
Palestine	100	100	100	100	100
Yemen	72.8	73.9	74.9	76	83.6
Arab World	89.9	90.2	90.4	90.7	91.6

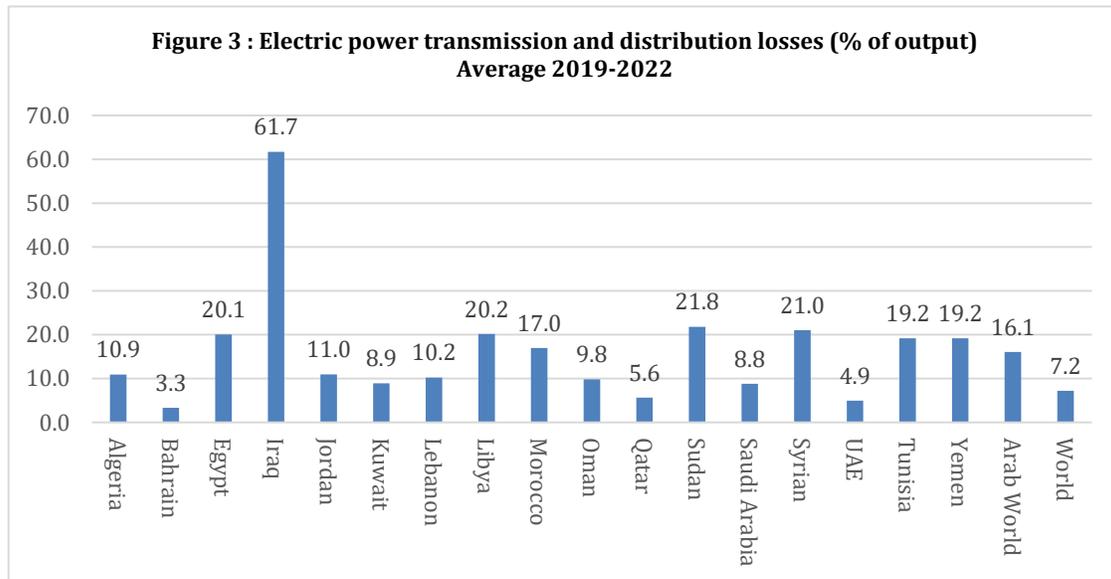
Source: World Bank, World Development Indicators

The access to electricity in the Arab world increased from 89.9% in 2019 to 91.6% in 2023, with most Arab countries achieving near-complete coverage of approximately 100%. However, there are access gaps that persist in some countries, like Djibouti, Comoros, Mauritania, Somalia, Sudan, Libya, Syria, and Yemen. As shown in Figure 2, high access does not guarantee efficiency, as countries with high transmission and distribution losses face constraints in grid reliability and renewable energy integration, unlike GCC countries with more efficient power systems (Table 4).

The differences in power transmission and distribution losses between Arab countries reflect different levels of grid efficiency and infrastructure readiness. Countries such as Iraq, Sudan and Syria exceptionally suffer losses of more than 20%, while Iraq reaches more than 60%, pointing to ageing networks and poor operational performance (Figure 3).

In this content, GCC countries, like Qatar, Bahrain and Oman, show the lowest loss levels in the region, reflecting strong investments in grid modernisation and

advanced power infrastructure. The differences are affecting the renewable energy integration, as systems with higher losses struggle to accommodate variable solar and wind generation, leading to outages and reduced system reliability. Countries with lower losses and more stable grids are better positioned to expand renewable energy deployment and support long-term decarbonisation efforts. The importance of increasing the efficiency to facilitate the development of renewable energy in the Arab countries (Figure 3).



Source: World Bank, World Development Indicators

Regional interconnection initiatives, such as the GCC Interconnection Authority, the Egypt-Saudi Arabia 3 GW HVDC link and the Maghreb Electricity Interconnection, have strategic potential for cross-border exchange of electricity. However, these projects are not utilised optimally due to limitations in market regulations, absence of a power pooling mechanism. Strengthening regional interconnections will increase system resilience, facilitate the integration of variable renewable energy sources and reduce overall system costs¹⁰.

¹⁰ GCC Interconnection Authority (2023). Annual Report

Table 5: Renewable energy share of electricity capacity and generation (%)

Country	2021	2022	2023	2024
Algeria	1.97	2.22	2.16	2.09
Bahrain	0.22	0.49	0.6	0.69
Comoros	18.21	17.18	17.3	17.3
Djibouti	14.24	14.24	39.54	39.54
Egypt	10.5	10.5	11.16	12.67
Iraq	5.29	5.09	4.79	4.71
Jordan	38.24	38.32	37.25	37.96
Kuwait	0.48	0.56	0.56	0.56
Lebanon	14.53	29.46	33.06	33.06
Libya	0.06	0.06	0.07	0.07
Mauritania	19.46	19.65	33.98	36.8
Morocco	33.06	34.28	36.87	38.66
Oman	1.72	6.09	6.23	6.23
Qatar	0.23	7.22	7.22	13.83
Saudi Arabia	0.49	0.93	3.22	5.02
Somalia	17.48	30.24	31.81	31.81
Palestine	52.85	54.72	90.63	90.86
Sudan	48.43	49.16	49.16	49.16
Syrian	15.07	15.29	15.29	15.29
Tunisia	6.76	7.75	11.88	15.17
Emirates	8.32	9.29	13.88	14.26
Yemen	12.87	13.13	13.98	18.78

Source: The International Renewable Energy Agency (IRENA), Statistics database

There is a significant gap between electricity access and the structure of electricity supply in Arab countries. While access to electricity is almost universal in most Arab states, with more than 99% of the population in countries such as Morocco, Egypt, Jordan, the Gulf States and the United Arab Emirates, the share of renewable energy in electricity capacity and production varies widely. Countries such as Palestine, Sudan, Jordan, Morocco and Mauritania record high shares of renewables, reflecting either continued investment in renewable energy or reliance on decentralised solar energy solutions.

In contrast, several high-access countries, notably Kuwait, Bahrain and Algeria, show very low renewable penetration despite full electrification, underscoring the dominance of fossil fuel-based electricity systems. Low-income countries such as Somalia, Djibouti and Yemen show incomplete electricity access as well as relatively high renewable shares, indicating that renewables, particularly off-grid solar, have played a compensating role in expanding basic access. Overall, the comparison shows that universal access does not automatically translate into a clean energy transition and highlights the need for guidelines that go beyond

access expansion towards grid readiness, renewable integration and system-wide decarbonisation.

1.3 Key Challenges Facing Renewable Energy Development in Arab Countries

The transition to renewable energy in the Arab region is hindered by structural and financial challenges, despite some progress in Arab countries. Significant funding gaps remain, with many countries lacking access to affordable long-term capital. The cost of financing renewable energy projects in developing Arab economies can be two to three times higher than in advanced economies. Limited access to concessional financing and the absence of risk-free instruments such as guarantees and mixed financing solutions prevent private sector participation and slow project implementation.

The regulatory risks also affect investor confidence. Political instability, frequent changes in tariff structures, permitting delays and unclear procurement processes increase the development risk. In conflict-affected countries such as Yemen, Libya and Syria, institutional weakness and macroeconomic instability discourage investors from moving forward. Also, in more stable economies, inconsistencies between national energy strategies, electricity market rules and environmental regulations hinder the expansion of renewable energy.

A lack of technical and institutional capacity is a hindrance, and weak institutional coordination between ministries, regulators and transmission operators prevents the systematic development of renewable energy. In many countries, utilities operate under outdated cost recovery mechanisms that discourage private sector-led development.

Additionally, limited regional cooperation and integration in the development of renewable energy is still a persistent challenge. Despite the region's complementarity in solar and wind resources, economic potential in the GCC, and strategic geographic location in the Levant, cross-border renewable energy projects are rare. Also, the absence of integrated regional frameworks for power pools, market linkages or green energy corridors limits opportunities for economies of scale, supply diversification and system flexibility.

Box 2: Why the Arab Energy Transition Remains Power-Sector Driven

Despite significant progress in renewable electricity generation, the energy transition in many Arab countries remains largely confined to the electricity sector. This reflects a combination of structural and policy factors, including the relative ease of implementing utility-scale renewable projects compared to improvements in end-use sectors such as transport, industry and buildings. Persistent fossil fuel subsidies, limited electrification of final energy consumption, weak regulatory incentives for the use of clean energy outside the power sector, and inadequate infrastructure for electric mobility, green hydrogen and industrial decarbonisation have hindered wider regional uptake. As a result, renewable energy deployment has yet to translate into deep economy-wide decarbonisation or significant reductions in fossil fuel dependence, underscoring the need to expand clean energy policies beyond power generation towards end-use and productive sectors.

2. Integrated Framework for Clean Energy Transition and Climate Finance in Arab Countries

The transition to clean and renewable energy in the Arab countries is a complex process that requires a solid understanding of the core concepts, definitions and theoretical approaches driving the global energy transition. This chapter provides an overview of key concepts related to clean and renewable energy systems, climate and green finance, and regional energy integration. It also discusses the theoretical underpinnings that support the importance of cross-border cooperation and appropriate transition frameworks for achieving efficient, equitable, and sustainable energy transitions across the Arab region.

2.1 Clean Energy and Renewable Energy Pathways

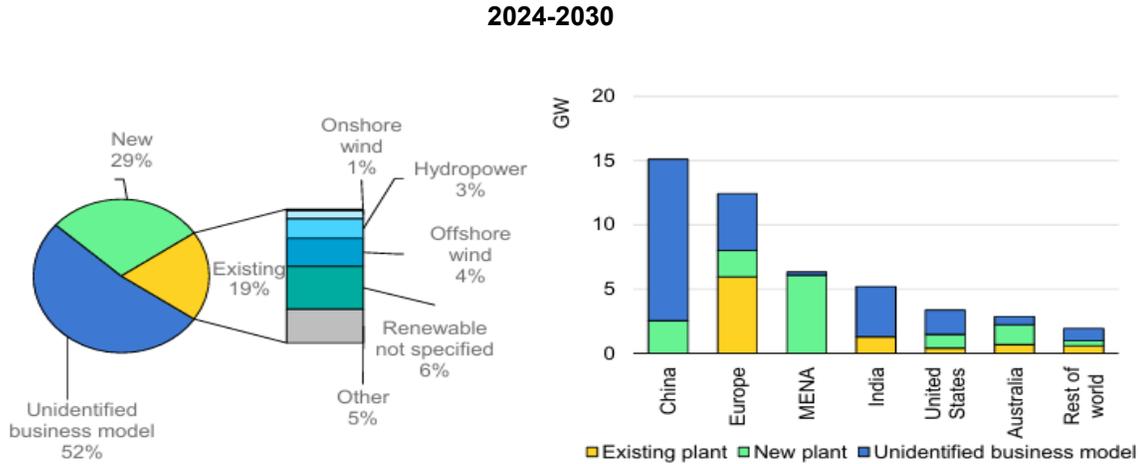
Clean energy refers to energy sources and technologies that produce minimal greenhouse gas emissions throughout their lifecycle. Renewable energy, on the other hand, comes from naturally replenished sources such as solar, wind, hydropower, and geothermal energy. While there is significant overlap between the two concepts, clean energy is a broader category that also includes energy efficiency measures, electrification technologies, and low-carbon solutions like green hydrogen or carbon capture and storage.

According to the International Renewable Energy Agency (IRENA, 2023)¹¹ renewable energy made up nearly 40% of global installed power capacity in 2022,

¹¹ The International Renewable Energy Agency (IRENA) (2023), RENEWABLE CAPACITY STATISTICS

reflecting rapid growth driven by decreasing technology costs and climate commitments. Solar photovoltaic (PV) and onshore wind installations are the main drivers of this expansion, with utility-scale solar costs dropping by almost 90% since 2010, making renewables the most cost-effective form of new electricity generation in many regions (IEA, 2024)¹².

Figure (4) : Electrolyser installations by electricity source, globally and by region



IEA. CC BY 4.0.

Notes: Existing plant = electrolysers using electricity from existing power plants. New = electrolyser projects using electricity from new renewable capacity plants. Unknown business model = electrolyser projects that have not yet identified the source of electricity. MENA = Middle East and North Africa.

Source: INTERNATIONAL ENERGY AGENCY, Renewables 2024 Analysis and forecast to 2030

In the Arab region, solar and wind resources are highly competitive on a global scale. Average solar radiation levels in North Africa and the Arabian Peninsula exceed 2,000–2,400 kWh/m² annually, among the highest worldwide, establishing the region as a potential hub for low-cost renewable energy and green hydrogen production. However, despite these gains, the share of renewable energy in the Arab region's total final energy consumption remains below 8%, well below the global average.

The renewable energy deployment is essential for long-term decarbonisation, and complementary investments in grid modernisation, storage, hydrogen infrastructure and efficiency measures are needed to achieve a wider transition to clean energy.

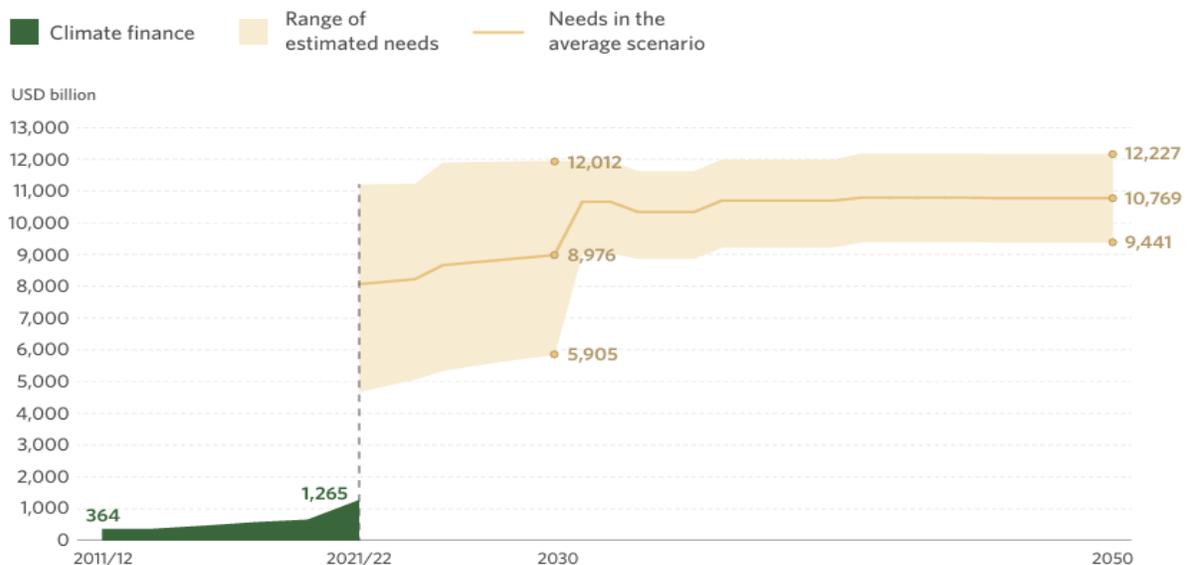
¹² INTERNATIONAL ENERGY AGENCY, Renewables 2024 Analysis and forecast to 2030

2.2 Climate and Green Finance Mechanisms

The climate finance refers to financial flows, both public and private, aimed at mitigation and adaptation activities, while green finance includes investments related to environmental sustainability, such as renewable energy, low-carbon transport, biodiversity and pollution management.

According to the Climate Policy Initiative (CPI, 2023)¹³, the global climate finance landscape has expanded significantly, reaching an estimated US\$1.3 trillion annually by the year 2021–2022. However, to achieve the 1.5°C pathway, at least US\$5 trillion is needed annually by 2030. Developing economies face disproportionately high financing barriers, with capital costs for renewable energy projects reaching up to three times higher than in developed countries.

Figure (5) : Global tracked climate finance and average estimated annual needs through 2050



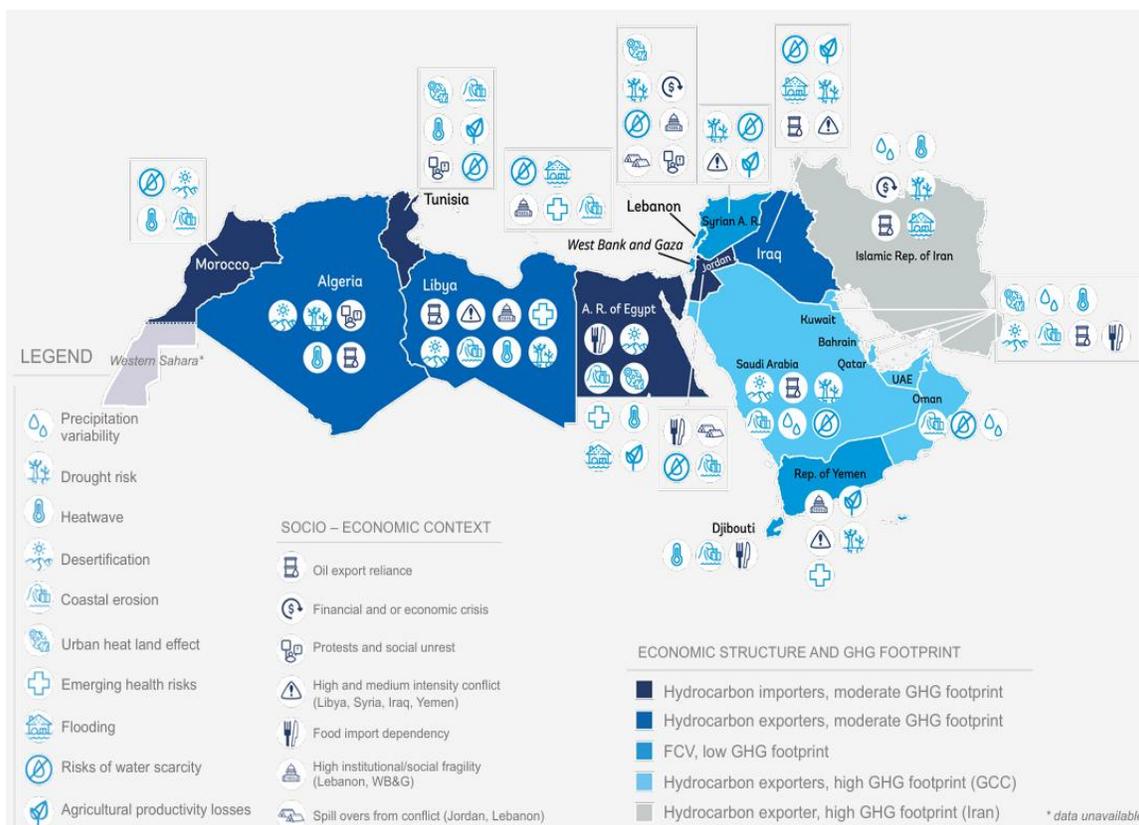
Note: Climate finance needs estimates for 2023-2050 include direct investments in climate-specific physical assets and excludes transition-related unabated fossil fuel finance. Estimates are based on secondary data collected from over 15 sectoral scenarios (see [Methodology document](#) for detail). Climate finance needs for 2023-2050 are expressed in 2022 USD to ensure comparability of estimates from several different scenarios.

Source: Climate Policy Initiative, Global Landscape of Climate Finance 2023

¹³ Climate Policy Initiative, Global Landscape of Climate Finance 2023

In the Arab countries, the regional climate finance gap is estimated to exceed \$70 to \$85 billion annually¹⁴, underscoring the important role of concessional financing, blended financial instruments and sovereign guarantees. Instruments increasingly adopted by development finance funds and institutions include blended finance¹⁵, green bonds and sukuk, guarantee mechanisms and performance-based climate finance.

Figure (6) : Climate change is a threat multiplier in the MENA region



Source: World Bank (2023), Climate Change Roadmap Middle East and North Africa FY21–25

The World Bank estimates¹⁶ that most Arab countries face simultaneous and overlapping climate risks such as drought, extreme heat, water scarcity, agricultural productivity loss and coastal erosion, which directly threaten livelihoods, food security and economic stability. These climate-related pressures are further compounded by structural challenges, including the risk of conflict in

¹⁴ World Bank (2023), Climate Change Roadmap Middle East and North Africa FY21–25

¹⁵ Blended finance refers to the strategic use of public or development funds alongside private capital to mitigate investment risks and mobilise private sector participation in development projects.

¹⁶ World Bank (2023), Climate Change Roadmap Middle East and North Africa FY21–25

countries such as Libya, Syria, Iraq and Yemen, and high levels of institutional weakness in Lebanon and Palestine. Significant dependence on imports of food.

Furthermore, world bank highlights the diversity of economic structures and greenhouse gas footprints in MENA, ranging from hydrocarbon-dependent economies with high emissions, especially in GCC countries, to low-income and climate-vulnerable countries with limited adaptive capacity. This diversity underscores the asymmetric climate finance needs in the region: high-income exporters need to invest heavily in decarbonization and energy diversification, while weak countries require substantial adaptation finance to protect communities, ecosystems and basic services. Taken together, the figure demonstrates why climate change imposes disproportionate financial burdens on Arab economies and why the regional climate-finance gap estimated at USD 70 to 85 billion annually remains so large. It reinforces the critical role of concessional finance, blended finance instruments, sovereign guarantees, and the strategic involvement of Arab and regional development funds in mobilising capital and enabling countries with constrained fiscal space to undertake essential climate-resilience and mitigation investment.

2.3 Regional Energy Integration and Cooperation

Regional energy integration involves the coordinated planning, development, and operation of energy systems across national borders to enhance efficiency, reduce costs, and improve energy security. Integration mechanisms include:

- Electricity interconnections for trading surplus electricity and improving system flexibility.
- Cross-border renewable energy zones to leverage geographic complementarities.
- Regional power pools for centralised dispatch, balancing supply and demand, and reducing reserve margins.
- Shared grid infrastructure, balancing reserves, and harmonised market rules to enable efficient cross-border flows.

Global evidence strongly supports the benefits of regional integration. Studies by the OECD (2020)¹⁷ and IRENA (2022)¹⁸ show that cross-border electricity markets and integrated grids can reduce overall power generation costs by 10 to 30%, primarily through optimised dispatch, reduced reliance on expensive peaking

¹⁷ OECD (2020). Benefits of Cross-Border Electricity Interconnections

¹⁸ IRENA (2022). Planning and Prospects for Cross-Border Renewable Energy Integration

plants, and improved utilisation of renewable resources. The following successful regional integration initiatives include:

1. The European Union's internal electricity market, generating annual welfare gains exceeding €34 billion due to market coupling and cross-border capacity sharing (European Commission, 2020)¹⁹.
2. The Southern African Power Pool (SAPP) is achieving cost savings of more than USD 300 million annually by enabling member states to exchange electricity through competitive day-ahead markets (World Bank, 2021)²⁰.
3. In Southeast Asia, ASEAN's interconnection initiatives are increasing system reliability and are projected to reduce regional carbon emissions by 20–25% (ASEAN Centre for Energy, 2021)²¹.

In the Arab countries, the efforts toward regional energy integration have grown but remain uneven. The Gulf Cooperation Council Interconnection Authority stands out as one of the most advanced power-grid integration models among developing regions. GCC interconnection has reduced blackout risks, enabled reserve sharing, and generated estimated economic savings of USD 1.4 billion since its inception (GCCIA, 2022)²². Egypt–Saudi Arabia high-voltage interconnection project, with a capacity of 3 GW, marks a strategic step toward wider pan-Arab electricity trade, while the historic Maghreb electricity interconnection linking Morocco, Algeria, and Tunisia demonstrates the technical feasibility of regional integration despite political and regulatory hurdles. Yet, significant fragmentation persists due to regulatory misalignment, uneven investment capacity, absence of unified planning frameworks, insufficient grid codes, and geopolitical tensions.

The strategic importance of regional energy integration in the Arab region is crucial due to its uniquely complementary renewable resources:

1. North Africa's high-quality solar irradiation and wind corridors.
2. GCC countries' leadership in large-scale solar deployment and emerging hydrogen production.
3. Arab region countries serving as geographic gateways for electricity exchange and green hydrogen corridors.

This complementarity provides a strong basis for pursuing cross-border energy projects, such as large-scale solar and wind parks, regional hydrogen

¹⁹ European Commission (2020). EU Internal Electricity Market Annual Report

²⁰ World Bank (2021). Performance of the Southern African Power Pool

²¹ ASEAN Centre for Energy (2021). Regional Interconnection Progress Report

²² GCC Interconnection Authority (2022). Annual Report

corridors, and integrated transmission networks, aligning with global decarbonization pathways.

2.4 Policy and Financing Implications for Arab Countries

The results of the energy transition in Arab countries show that progress has primarily been driven by utility-scale renewable energy projects, while use in end-use sectors has been limited. This reflects persistent coordination gaps, infrastructure constraints and funding constraints that cannot be resolved through market mechanisms alone. Fossil fuel pricing structures, limited electrification of end-use energy and insufficient incentives for the use of clean energy in transport, industry and buildings impede broader transition outcomes.

Addressing these challenges requires a shift towards a more integrated energy policy that aligns power sector investments with grid development, electrification strategies and regional interconnections. Public policy should play a stronger role in guiding investment priorities, reducing risk and ensuring system-wide coherence. In this context, the Arab Development Fund has an important role to play in scaling up concessional financing, deploying risk-sharing instruments and prioritising investments in network infrastructure, resilience solutions and cross-border projects. Such an approach will support a more balanced and resilient energy transition that extends beyond power generation to the wider economy.

3. Regional and Global Funds and Initiatives Supporting Renewable Energy in the Arab Region

The renewable energy financing landscape in the Arab region is evolving with the participation of regional, international and multilateral development institutions. These organizations play an important role in mobilizing climate finance, reducing investment risk and helping countries overcome infrastructure, regulatory and financial challenges. Over the past decade, climate-related funding programs have grown significantly, reflecting the growing importance of the energy transition and the region's sensitivity to climate change. This chapter presents an in-depth analysis of key financing mechanisms and initiatives, focusing on the Green Climate Fund (GCF), IRENA, the Abu Dhabi Fund for Development (ADFD), the Arab Fund (AFESD), and major multilateral development banks such as the World Bank, the European Bank for Reconstruction and Development (EBRD) and the African Development Bank (AfDB).

The **Green Climate Fund (GCF)** has emerged as an important climate finance mechanism for developing countries, including many Arab states. Its regional

portfolio includes projects aimed at increasing the deployment of renewable energy, improving climate resilience, expanding access to clean technologies and developing national adaptation plans. In the Arab region, GCF interventions typically consist of concessional financing mixed with grants to support solar and wind energy projects, grid upgrades and off-grid energy systems in fragile and rural areas. Countries such as Morocco, Tunisia, Egypt, Jordan and Sudan have benefited from GCF-supported initiatives focused on improving policy frameworks, strengthening institutional preparedness and reducing the cost of capital of renewable energy investments. The GCF plays an important role by providing long-term concessional financing that helps reduce the cost of capital, addressing a major constraint in many Arab countries with high sovereign risk and limited access to affordable financing.

Mobilizing finance is a major constraint to scaling up renewable energy in developing countries. To solve that, the IRENA/ADFD Project Facility was created with a commitment from the United Arab Emirates to provide USD 350 million in concessional loans over seven funding cycles through the Abu Dhabi Fund for Development (ADFD)²³. These funds support renewable energy projects in developing countries, chosen by the International Renewable Energy Agency (IRENA), to accelerate clean energy deployment and ease financing constraints. Another critical initiative is the IRENA–Abu Dhabi Fund for Development (ADFD) renewable energy facility, which has supported over 30 renewable energy projects globally since 2013, with several located in Arab countries. This program provides highly concessional loans to projects selected through a competitive process, focusing on innovative and scalable technologies like utility-scale solar PV, wind farms, waste-to-energy, and mini-grid systems.

- **The Arab Fund for Economic and Social Development (AFESD)** play a key role in supporting the transition to renewable energy in the Arab region with its broad mandate for financing the power and energy infrastructure sector. The energy sector represents more than 31% of AFESD's loan portfolio, and finances 168 projects in 17 Arab countries, totalling around 3.47 billion Kuwaiti dinars, approximately USD 11.4 billion²⁴. These projects focus on power generation, transmission and distribution, with an emphasis on adopting more efficient and low-emission technologies such as hydropower and renewable energy. AFESD's impact is notable in countries such as Mauritania, where it has supported the construction of a solar power plant in Nouakchott, the modernization of the national electricity system and the development of the Boulouvar wind farm in collaboration with other Arab and international

²³ https://adfd.irena.org/contentimages/FactSheet_English.pdf

²⁴ <https://www.arabfund.org/overview/sustainable-development-goals>

partners. These initiatives highlight AFESD's role in not only expanding generation capacity, but also improving grid infrastructure, increasing system efficiency and promoting the integration of renewable energy sources. To reduce investment risk in renewable energy, AFESD provides concessional loans, cooperates with international financial institutions for co-financing, and finances pilot projects in Arab countries with low incomes and a lack of infrastructure. These initiatives aim to create a favourable institutional and financial environment to increase the deployment of renewable energy throughout the region.

- **The World Bank Group** has expanded its support for renewable energy and green infrastructure in the Middle East and North Africa (MENA) region²⁵. Through its lending and advisory frameworks, including the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA) and the International Finance Corporation (IFC), the World Bank has financed projects such as grid modernization, solar parks, renewable integration studies and guarantees for private sector renewable investment. Projects such as Egypt's Benban Solar Park and Jordan's IPP-based solar and wind projects received support from the IFC and MIGA guarantees, demonstrating how international financial institutions can attract private capital by managing currency, offtaker and regulatory risks. The bank has also supported energy efficiency programs, rooftop solar initiatives and electricity pricing reforms to improve the financial stability of national utilities.
- **The European Bank for Reconstruction and Development (EBRD)** is another important contributor, particularly in North Africa and the Levant. EBRD investments have supported large commercial solar and wind projects, corporate green finance lines and reforms enabling the private sector to enter electricity markets. The bank's approach emphasizes strengthening the regulatory framework, enabling competitive procurement, and supporting the company's climate management in the supply and industrial sectors. EBRD participation in Tunisia, Jordan, Egypt and Morocco has helped to standardize procurement practices and promote bankable IPP projects.
- **The African Development Bank (AfDB)** plays a vital role in sub-Saharan African countries such as Sudan, Somalia, Mauritania, and Djibouti, by prioritising energy access, rural electrification, and grid extension through renewable technologies. AfDB funding supports feasibility studies, hybrid mini-grids, solar irrigation, and cross-border interconnection initiatives in the Sahel region. These efforts are essential in nations with limited electricity access and plentiful but underused renewable resources.

²⁵ <https://www.worldbank.org/en/news/opinion/2024/12/10/bridging-borders-with-energy-mena-s-path-to-regional-energy-integration>

The participation of these institutions highlights the global acceptance that investment capital, risk reduction, regulatory support and technical capacity improvement are needed to accelerate the deployment of renewable energy in the Arab region. Regional integration efforts, consideration of climate resilience and national commitments to decarbonisation affect the distribution of international climate finance and underline the important role of multilateral and regional institutions in shaping the region's energy transition.

Box 3: Why climate finance in the Arab region remains project-based rather than transformational

Despite the growing number of regional and international funds supporting renewable energy in the Arab region, climate finance remains largely project-based rather than system-changing. Most financing mechanisms, whether through the GCF, AFFD, AFESD or multilateral development banks, continue to prioritize individual generation projects, particularly utility-scale solar and wind, over broader structural reforms. This reflects persistent challenges, including weak project pipelines, limited institutional capacity to design bankable programs, fragmented regulatory frameworks and the dominance of state-owned utilities with constrained balance sheets. Furthermore, climate finance has primarily focused on power production, with limited allocation to end-use sectors such as transport, industry, buildings and energy efficiency. As a result, while concessional financing has helped reduce the cost of capital and reduce risk for selected projects, it has still not catalyzed large-scale private investment or delivered economy-wide decarbonisation. Addressing this gap requires a shift from isolated projects to programmatic funding, stronger adaptation to national energy transition strategies and closer integration between climate finance, regulatory reforms and private sector dynamics.

4. The Role of Arab Development Funds in Supporting the Renewable Energy Transition

Arab development funds, such as the Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund for Arab Economic Development, the Saudi Fund for Development, the Abu Dhabi Fund for Development and the Islamic Development Bank, have been important in financing energy, infrastructure and industrial development in the region. In recent years, these funds have focused on supporting renewable energy projects and climate-friendly infrastructure as Arab nations prioritize diversification, energy security and emissions reduction. This chapter presents a comprehensive analysis of these funds' contribution to the transition to renewable energy.

4.1 Qualitative Analysis of Funded Projects

The Arab Development Fund has supported a wide range of renewable energy projects, indicating increasing diversity in technology types and project structures. Funding for these projects mainly falls into three categories:

1. Solar energy (PV) has emerged as a leading technology globally due to low cost, abundant solar radiation in the region and its ease of deployment compared to other technologies.
2. Wind Onshore wind projects have received funding primarily in North Africa and the Middle East, taking advantage of the strong wind corridors in these regions.
3. Hydropower, hydropower financing is still limited and mainly focuses on countries with existing hydropower resources, such as Sudan and Morocco.

In addition, for power generation, the Fund has also supported programs for energy efficiency, hybrid mini-grids and smart metering initiatives, expanding the technical scope of assistance. Projects can also be classified based on functional category:

1. Generation projects include large-scale solar and wind farms, hybrid renewable systems and distributed solar energy programs.
2. Renewable integration requires rehabilitation of transmission and distribution networks, expansion and upgrading of transmission capacity.
3. Smart and flexible systems such as smart grids, load management, grid stability devices and battery storage are also important.

Developing bankable renewable projects requires technical and feasibility studies, including resource assessment, regulatory modelling and project preparation. The Arab Development Fund is increasingly co-financing public-private partnership (PPP)-based renewable energy projects in collaboration with government-led projects and private developers. They often engage in co-financing arrangements with international financial institutions (IFIs) such as the World Bank, IFC, EBRD and AfDB. This approach allows for larger project sizes, risk diversification and alignment with global best practices, ultimately improving project bankability. By blending these approaches, Arab funds can leverage additional capital and improve the overall success of projects.

4.2 Contributions to Investment De-risking

Arab development funds play a vital role in accelerating the transition to sustainable energy sources in the region by addressing investment risks and creating a supportive ecosystem for renewable energy investments. Their contributions highlight the strategic role of Arab development funds in bridging the financing gap, improving the investment climate, and enabling the Arab region to align with global decarbonization pathways. As renewable energy technologies advance and capital requirements increase, the importance of coordinated efforts between Arab funds and global climate institutions will continue to grow.

Additionally, These Development funds play an important role in reducing investment risk, which is a significant barrier to renewable energy deployment in countries with limited fiscal space, political instability or weak regulatory frameworks. Removal of risk is achieved through various mechanisms:

1. **Concessional Finance:** Arab funds often offer long-term concessional loans, which lower the weighted average cost of capital (WACC) of renewable energy projects. This type of financing is particularly beneficial in low-income Arab states, where high country risk premiums make private sector financing very expensive. Concessional loans from AFESD, Kuwait Fund and ADFD have made it possible for many countries to implement renewable energy projects that would otherwise be financially impossible.
2. **Providing guarantees and blended financing:** Blended financing instruments combine concessional loans, grants and guarantees to help Arab funds attract private capital by reducing perceived risk. Partial risk guarantees and policy risk mitigation tools address developers' concerns about currency fluctuations, payment reliability for state-owned utilities, and regulatory uncertainty. This approach has been important in facilitating PPP-based renewable energy projects in some Arab countries.
3. **Offering concessional loans or grants to reduce the cost of capital for renewable energy projects.**
4. **Facilitating partnerships between public and private sector entities to share risks and resources in renewable energy projects.**
5. **Institutional and Regulatory coordination for the integration of clean energy**
6. **Arab countries should move from fragmented national-level renewable energy strategies to coordinated regional planning frameworks. Establishing common platforms for cross-border renewable energy projects, shared transmission arrangements, and regional power pools will help to unlock economies of scale, increase system flexibility and reduce overall production costs.**

7. Conducting risk assessments and feasibility studies to identify potential challenges and develop strategies to mitigate them.
8. Promoting policy reforms and regulatory frameworks that create a conducive environment for renewable energy investments.
9. Collaborating with international financial institutions and development partners to leverage additional funding and expertise for de-risking initiatives.

5. Policy Recommendations and Financing Levers for Advancing Regional Clean Energy Integration

The availability of renewable energy resources, the presence of climate finance mechanisms and the involvement of regional and international institutions are necessary but not sufficient conditions for achieving the transformation of the energy sector in the Arab region. Although significant progress has been made in expanding renewable electricity generation, structural barriers related to grid efficiency, regional coverage, regulatory frameworks and financing design continue to limit economy-wide decarbonisation. The persistence of power sector-driven transitions and project-based climate finance highlights the gap between technical capacity and systemic impact. Solving this gap requires a more integrated and coordinated policy approach that aligns energy planning, climate finance, regulatory reforms and dynamism in the private sector. The following policy recommendations are based on this analytical foundation to outline practical pathways to accelerate a balanced, inclusive and sustainable energy transition in Arab countries.

1. Strengthen regional coordination for the integration of clean energy

Arab countries should move from fragmented national-level renewable energy strategies to coordinated regional planning frameworks. Establishing common platforms for cross-border renewable energy projects, shared transmission arrangements, and regional power pools will help to unlock economies of scale, increase system flexibility and reduce overall production costs.

2. Scale Up Concessional and Blended Finance Mechanisms

Arab and regional development funds should expand the use of concessional financing, blended financing instruments and risk-sharing mechanisms to reduce the cost of capital for renewable energy projects, especially in low- and middle-income and fragile Arab states. Prioritization

of guarantees, first loss installments and co-financing arrangements can require large private investments.

3. Prioritize Grid Modernization and Renewable Integration Infrastructure

Investments should be directed towards transmission and distribution networks, grid digitalisation, storage solutions and system resilience rather than generation capacity alone. Strengthening grid infrastructure is essential to absorb variable renewable energy and enable cross-border electricity trading and regional interconnection.

4. Enhance the Quality and Bankability of Renewable Energy Projects

The Arab Development Fund should extend its support to project preparation facilities, including feasibility studies, regulatory modelling and standardised procurement frameworks. Improving project bankability will reduce development risk, shorten implementation timelines and increase private sector participation.

5. Align Regulatory Frameworks and Market Rules Across Countries

There is a need for comprehensive harmonization of regulatory standards, grid codes, tariff structures and power purchase agreement (PPA) frameworks to facilitate regional energy integration. Transparent and predictable regulatory environments are essential for maintaining long-term investments in renewable energy.

6. Promote Renewable Energy Beyond the Power Sector

Policy efforts should expand the distribution of renewable energy to industry, transport, buildings and green hydrogen value chains, where fossil fuels still dominate final energy consumption. This will strengthen the link between investments in renewable energy, economic diversification and export competitiveness

7. Leverage Arab Development Funds as Regional Integration Catalysts

Arab development funds should clearly shift part of their mandate from purely national interventions to regional and cross-border clean energy initiatives, including renewable energy corridors, regional hydrogen projects and shared infrastructure. Acting as a coordinator and anchor financier can accelerate Arab energy integration.

8. Integrate Climate Resilience and Adaptation into Energy Financing

Investments in renewable energy should systematically include consideration of climate resilience, especially in water-scarce and climate-vulnerable Arab countries. This includes support for flexible grid designs, hybrid systems and decentralized solutions that improve energy security under climate stress.

9. Strengthen Institutional Capacity and Knowledge Sharing

Continued support for institutional capacity building, knowledge exchange and technical assistance is needed. Regional platforms led by Arab institutions can disseminate best practices, standardize project approaches and improve coordination between ministries, regulators, utilities and financiers.

10. Aligning Arab Energy Integration with Global Climate Commitments

Arab clean energy integration strategies should be clearly aligned with SDG 7, which affordable and clean energy. and SDG 13, which relates to climate action, as well as national net-zero and long-term low-emission development strategies, thereby positioning the Arab region as an active contributor to global decarbonization efforts.

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