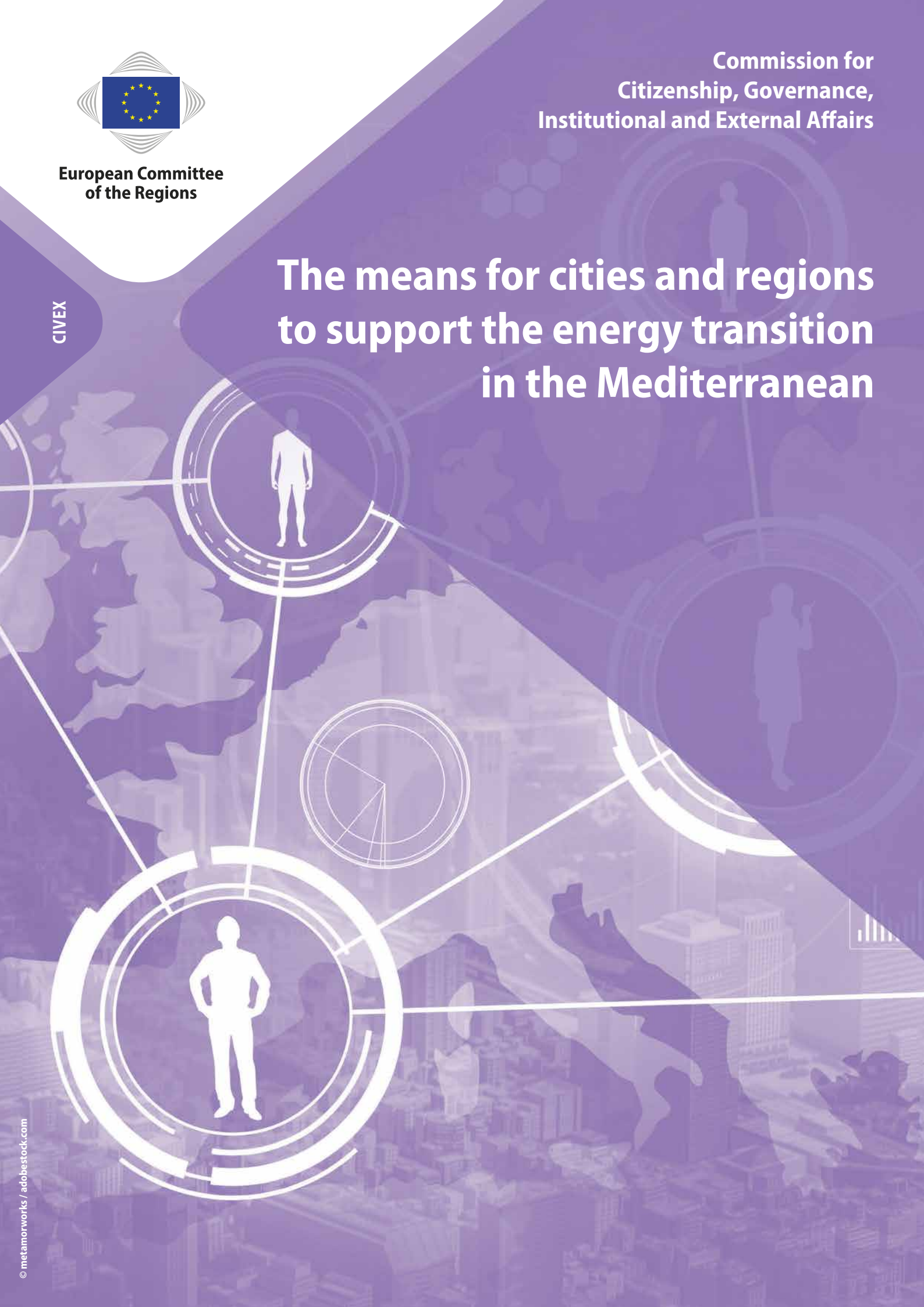
European Committee of the Regions

Commission for Citizenship, Governance, Institutional and External Affairs

CIVEX

The means for cities and regions to support the energy transition in the Mediterranean



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Contents

Acronyms and abbreviations

ACTE – Alliance of Municipalities for Energy Transition
ADEREE – National Agency for Renewable Energy Development
EBRD – European Bank for Reconstruction and Development
EU – European Union
GAM – Greater Amman Municipality
GHG – Greenhouse gas emissions
IBB – Izmir Metropolitan Municipality
LRAs – Local and Regional Authorities
RES – Renewable Energy Sources
UCLG – United Cities and Local Governments
UfM – Union for the Mediterranean

Summary

The Mediterranean region is believed to be warming 20% faster than the global average. At the same time, population and tourism growth, predominantly in coastal urban areas, together with intensive industrialisation, are putting additional pressure on available energy resources. Yet the overall energy mix is still largely based on fossil fuels, while renewable energy sources (RES) meet only a marginal share of the overall demand across the Southern and Eastern Mediterranean, despite the region's untapped potential for its development.[1] Decarbonisation measures will be crucial not only for countering the climate crisis and other environmental externalities pursuant to the objectives outlined in the Paris Agreement, but also for ensuring sustainable, just and inclusive growth across the region.

The objective of this study is to map and analyse possible opportunities to further diversify energy supply in the Southern Neighbourhood countries,[2] above all concerning the role that cities and regions can play in accelerating a just and inclusive energy transition.

This memo consists of:

1. a brief analysis of the current energy mix in the Southern Neighbourhood countries;
2. three case studies of Local and Regional Authorities (LRAs) playing an active role in diversifying their national energy mixes;
3. an outline of the role that cities and regions in the Mediterranean can play in diversifying the energy supply;
4. identified obstacles to diversification and broader opportunities for cooperation at local and regional levels across the region and in support of the UfM's energy priority areas.

As the key recommendations drawn from the three case studies and the challenges the LRAs face in their energy transition that should be integrated into overall urban planning strategies vary significantly from soft actions focused on education and awareness-raising campaigns to technical know-how development, LRAs should monitor the implementation of such actions. In this sense, LRAs

[1] European Centre for Medium-Range Weather Forecasts (ECMWF), Paving the way for a renewable energy transition in the Mediterranean, https://stories.ecmwf.int/paving-the-way-for-a-renewable-energy-transition-in-the-mediterranean/index.html

[2] These include: Egypt, Türkiye, Algeria, Morocco, Syria (membership currently suspended), Tunisia, Albania, Bosnia and Herzegovina, Israel, Jordan, Lebanon, Mauritania, Palestine, Monaco and Montenegro, along with Libya and North Macedonia which are observers.

should deploy adequate resources to monitor the impact of their policies aiming for the green energy transition.

Part 1: Current energy mix in the Southern Neighbourhood countries

The Mediterranean region is believed to be warming 20% faster than the global average,[3] while population and tourism growth, predominantly in coastal urban areas, together with intensive industrialisation, are putting additional pressure on available energy resources. At the same time, the overall energy mix is still largely based on fossil fuels, and renewable energy sources (RES) meet only a marginal share of the overall demand across the Southern and Eastern Mediterranean despite the region's untapped potential for its development.[4] Decarbonisation measures will be crucial not only for countering the climate crisis and other environmental externalities pursuant to the objectives outlined in the Paris Agreement, but also for ensuring sustainable, just and inclusive growth across the region.

As the current energy mix of ARLEM countries varies significantly, and their clustering based either on similar starting points or current energy transition roadmaps would be highly inaccurate, the objective of this part is to briefly present where each of them stands, emphasising each country's strengths and existing foresight on what diversification is possible. Respective visual presentations of each country's current energy mix can be found in the Annex.[5]
Although oil can still be considered an important energy source accounting for 40% of the total energy supply, **Albania** has one of the highest shares of RES deployment in the Mediterranean Basin, at 52%. However, hydropower represents around 74% of Albania's renewable energy supply, making the country highly dependent on annual rainfall, especially for electricity generation. Hence, there is a need for other RES deployment, especially in end-use sectors.[6]

Algeria's total energy supply is almost entirely based on fossil fuels, with oil representing 32% and gas 68%.[7] At the same time, minor progress in RES deployment between 2020 and 2022 can be noticed, particularly in regard to solar energy, with an additional 12 MW installed over this period. Much of its potential, however, is still untapped, since the country's solar potential is one of the highest in the world, estimated at 13.9 TWh per year.[8]

[3] UNEP, Climate change in the Mediterranean, https://www.unep.org/unepmap/resources/factsheets/climate-change
[4] ECMWF, op. cit.
[5] The list does not include Monaco which relies almost entirely on imports of electricity, gas and fuels from France.
[6] IRENA, Energy profile: Albania, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Europe/Albania_Europe_RE_SP.pdf
[7] IRENA, Energy profile: Algeria, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Algeria_Africa_RE_SP.pdf
[8] EcoMENA, Renewable Energy in Algeria, https://www.ecomena.org/renewables-algeria/

Bosnia and Herzegovina's (BIH) energy mix is still coal and oil-dependent (51 and 21% respectively), yet the country has significant RES potential, particularly in hydropower and wind power capacity. Hydropower already provides ca. 30% of the country's total RES supply, and there is room for additional growth. Solar and wind power plants have recently been gaining ground, but still account for only a small percentage of the overall energy mix.[9]

Similarly to Algeria, **Egypt's** total energy supply relies largely on gas and oil resources (58 and 34% respectively).[10] The country's total installed capacity of RES amounts to 3.7 gigawatts (GW), including 2.8 GW of hydropower and around 0.9 GW of solar and wind power. According to the national *Integrated Sustainable Energy Strategy (ISES) to 2035*, the RES deployment target has been set to 42% of the electricity mix by 2035; some 3% is envisaged for nuclear energy, currently being developed.[11]

Israel's energy mix consists of 37% oil, 38% gas, 19% coal and 5% RES, predominately solar (where further scalability is envisaged), with the remainder deriving from individual PV units, wind energy, and biomass generation.[12]

Jordan's energy mix is quite similar, with 49% accounted for by oil, 28% gas, 3% coal and 10% RES, with solar power clearly dominating (68% of total renewable energy supply in 2022), followed by wind.[13] The country plans to produce 50% of its electricity from RES by 2030 through a focus on smart grid development and energy storage projects, which seems feasible given an average of 316 sunny days per year, favourable wind speeds, and areas with low population density, typically in far-off desert terrain.[14]

The energy mix of **Lebanon** is by far the most oil-dependent (95% of its total energy supply). While coal accounts for ca. 2% and renewables for only 3%, there

[9] IRENA, Energy profile: BiH, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Europe/Bosnia-and-Herzegovina_Europe_RE_SP.pdf?rev=e41f1d9f46244df39399f782e1376ce2
[10] IRENA, Energy profile: Egypt, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Egypt_Africa_RE_SP.pdf
[11] Ministry of Electricity and Renewable Energy, Renewable Energy Targets, http://nrea.gov.eg/test/en/About/Strategy
[12] IRENA, Energy profile: Israel, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Middle%20East/Israel_Middle%20East_RE_SP.pdf
[13] IRENA, Energy profile: Jordan, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Middle%20East/Jordan_Middle%20East_RE_SP.pdf
[14] IRENA, Renewables readiness assessment: the Hashemite Kingdom of Jordan, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/Feb/IRENA_RRA_Jordan_Summary_2021_EN.pdf?la=en&hash=DE5015E14770A43E9BFF2DFF8FAE684CED6E8EEB

is significant potential for diversification, particularly when it comes to solar power.[15]

Libya's energy supply comes largely from hydrocarbons (53% from oil and 43% from gas). Although RES account for only 4%, due to the country's location in the heart of the sun belt,[16] "one year of solar radiation on each square kilometre of land produces energy equivalent to 1.5 million barrels of crude oil"; thus solar energy provides great potential for diversification.[17]

The energy mix of **Mauritania** is significantly different, with 73% stemming from oil, and as much as 27% from RES (though almost entirely bioenergy). At the same time, the country has enormous potential for wind and solar-driven energy development, which could have catalytic effects for the diversification of its energy mix.[18]

Montenegro's energy sector can be considered diversified, with 35% of its supply coming from coal, 30% from oil and 35% from RES – mostly hydropower and bioenergy. In order to be able to replace its existing coal plant, the country is planning to launch some additional electricity capacity in the coming years, mostly based on solar PV and wind turbines.[19]

The total energy supply in **Morocco** consists of 54% from oil, 32% coal, 3% gas and 11% RES (mostly bioenergy; wind, solar and hydropower sources combined account for only 38% of total RES supply). However, the government has already prioritised diversification of energy sources through the reduction of dependence on energy imports and increased use of RES, particularly for electricity production.[20]

North Macedonia's energy supply differs significantly in share of particular sources, but it also relies predominately on fossil fuels: 36% oil, 36% coal, and 9% gas, hence RES (mostly bioenergy and hydropower) account for ca. 19% of

[15] IRENA, Energy profile: Lebanon, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Middle%20East/Lebanon_Middle%20East_RE_SP.pdf
[16] IRENA, Energy profile: Libya, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Libya_Africa_RE_SP.pdf
[17] UNDP, Renewables in Libya: Right for the planet and good for business, https://www.undp.org/libya/blog/renewables-libya-right-planet-and-good-business
[18] IRENA, Energy profile: Mauritania, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Mauritania_Africa_RE_SP.pdf
[19] IRENA, Energy profile: Montenegro, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Europe/Montenegro_Europe_RE_SP.pdf
[20] IRENA, Energy profile: Morocco, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Morocco_Africa_RE_SP.pdf

the total energy mix, leaving enormous potential for both wind and solar farm development, given the favourable conditions across the country.[21]

When it comes to **Palestine's*** energy supply, as in numerous previous cases it relies predominantly on hydrocarbons, specifically oil (65%) and coal (24%). Although RES account for 11% of the total share, bioenergy is dominant (77% of total RES supply), leaving only 23% for clean solar sources which prove to have great potential in the country's energy system diversification, particularly in electricity production.[22]

Despite having huge RES potential – with solar and wind energy in first place – there is a country in which the share of RES in the final energy mix is decreasing. The fact is that some of the energy infrastructure has been damaged in **Syria's** civil war. Energy is therefore based mostly on oil (70%) and gas (28%). The RES make up only around 1% of the total energy mix; 84% comes from hydropower, 9% from bioenergy, and ca. 6% from solar.[23]

Tunisia's energy mix largely relies on its growing dependence on gas (50%) and oil (40%) imports. RES, technically responsible for ca. 11% of the current share of the total energy supply (and 90% of this consisting of bioenergy), still have great potential for deployment across the country. Wind and solar power in particular are of interest given the country's favourable conditions.[24]

As for **Türkiye**, although its energy mix is still fossil fuels-dependent (29% oil, 29% coal, 28% gas), and nuclear power plants are currently under construction, RES account for only 15% of the total energy supply (mostly geothermal and hydropower).[25] It is estimated that currently the country is tapping only 3% of its

[21] IRENA, Energy profile: North Macedonia, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Europe/North-Macedonia_Europe_RE_SP.pdf?rev=af786ac719ac4e70af03a867dddfedd6

* This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of the Member States on this issue'

[22] IRENA, Energy profile: State of Palestine, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Middle-East/State-of-Palestine_Middle-East_RE_SP.pdf?rev=334a6c864c714af8a8e9b5effeac3e30

[23] IRENA, Energy profile: Syrian Arab Republic, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Middle-East/Syrian-Arab-Republic_Middle-East_RE_SP.pdf?rev=ac9deb39b58246de9863967f260d5daa.

[24] IRENA, Energy profile: Tunisia, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Tunisia_Africa_RE_SP.pdf

[25] IRENA, Energy profile: Türkiye, https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Eurasia/Turkiye_Eurasia_RE_SP.pdf

solar and 15% of its onshore wind potential, leaving room for improvement in this respect.[26]

[26] IEA, Turkey's success in renewables is helping diversify its energy mix and increase its energy security, https://www.iea.org/news/turkey-s-success-in-renewables-is-helping-diversify-its-energy-mix-and-increase-its-energy-security

Part 2: Case studies of LRAs playing an active role in diversifying their national energy mixes

This subsection provides three case studies where cities and regions have played an active role in the diversification of their energy mixes. Each case presents how different types of RES (solar, bioenergy and wind power) impacted the path towards improving energy self-sufficiency at the local level.

Case study 1: The Greater Amman Municipality (GAM) of Jordan, with a population of 4.2 million, has been actively investing in becoming greener and more self-sufficient over the last few years. One of the GAM's key objectives, as stated in its Green City Action Plan (2021),[27] is to achieve a 25% increase in renewable energy supply by 2035 and thereby enhance the energy self-reliance of the city. As Jordan enjoys around 310 sunny days per year with abundant solar radiation, it is no surprise that most of the efforts of the GAM target a substantial increase in solar energy production. As outlined in the city's Green Action Plan, the GAM's solar strategy has three dimensions: large grid-scale projects; small-scale projects; awareness-raising and promotion.

Building on the 2018 regulation allowing public institutions to build solar power plants up to 10 MW, the Municipality aimed at establishing substantial grid-scale solar farms for a capacity of 80 megawatts. The Shams Al-Asimah project is expected to be carried out through a Public-Private Partnership (PPP) with the company KBW Investments, owner of the land, in the framework of a 10-year leasing agreement. The project cost was estimated to be approximately EUR 110 million. It is anticipated that the Amman municipality will already be making savings in its electricity bill in the inaugural year of implementing the project. With these investments yet to be executed, the GAM aims to enhance its energy security and generate revenues for the municipality in the long term by connecting to the national grid. In parallel, the GAM directed its efforts toward the enhancement of the Ghabawi Landfill Site with financing from the European Bank for Reconstruction and Development (EBRD). The facility generates electricity from biogas extraction, and has a total capacity of 6.4 MW.[28]

Small-scale long-term measures focus on installing solar PVs on GAM-owned municipal buildings (headquarters and Basman district), as well as for street lighting (Badr District). The objectives are to reduce the municipality's energy

27 AECOM (2021). Amman Green City Action Plan. Prepared for the Greater Amman Municipality and European Bank for Reconstruction and Development (EBRD), AECOM Limited, London, https://faolex.fao.org/docs/pdf/jor207655E.pdf

28 Zgheib, N. (2021). EBRD and EU upgrade largest landfill in Jordan. European Bank for Reconstruction and Development (EBRD), https://www.ebrd.com/news/2021/ebrd-and-eu-upgrade-largest-landfill-in-jordan.html

bill and turn away from fossil-fuel energy supply. The installation of solar PVs on the roof of the municipality headquarters has allowed it to cover 16% of the building's electricity needs.

The GAM is also encouraging citizens to take part in the energy transition through the creation of a dedicated section in its administration, the design of guidelines for rooftop solar PV systems to protect the city's skyline, the introduction of permit fee exemption for their installation, and active communication raising awareness of the national subsidy for the installation of residential PVs. Consequently, the municipality received 2,112 applications for permits to install solar PV systems in 2023, underscoring the success of this initiative.

Case study 2: Under its Sustainable Energy Climate Action Plan,[29] **the Izmir Metropolitan Municipality (IBB)** in Türkiye, home to 4.5 million people, has planned a massive deployment of RES on municipality-owned assets. The focus has been put on both solar energy and bioenergy, to minimise the environmental impact of the deployment of renewable energy facilities. In 2020, the IBB committed investments for 15 MW of solar energy on its assets by 2030. In the last four years, 13 solar energy facilities have been installed providing a total of 2.032 MW.

Apart from the deployment of solar energy, the Municipality has undertaken significant initiatives in harnessing electricity from methane derived from waste sites, with three regular waste storage and biogas facilities. Such a strategy has allowed the IBB to improve its sustainable waste management, and reduce Greenhouse Gas (GHG) emissions (preventing the release of methane into the atmosphere), while producing renewable energy and generating income for the municipal budget. Inaugurated in 2019, the Harmandalı Biogas Plant's installed capacity amounts to 39.69 MW, with a current production capacity of 32.34 MWh and a daily processing capacity of 2,000 tons of waste. This amount corresponds to the annual energy use of 190,000 households, while the biogas production is making a significant contribution to the municipal budget (approximately EUR 25 million). The Harmandalı landfill facility is operated by a private company under the control of the Municipality under the Public Procurement Law. The facility also works as an "Education Centre" engaging with schools, universities, and NGOs to raise awareness on waste management and bioenergy.

The Ödemiş Integrated Solid Waste Management Facility, which includes a biomethanization installation, generates methane during storage that is used for

[29] AECOM (2020), Izmir Sustainable Energy Climate Action Plan. Prepared for the City of Izmir, https://mycovenant.eumayors.eu/storage/web/mc_covenant/documents/31/98KaWT7wBZ-ITIW1A7bpSrgh9rZmmGJ6.pdf

energy production. The installed capacity is 20.28 MW, with an active energy production of 7.8 MWh. In addition, the facility's roof hosts a 1 MW installed solar power plant, meeting its internal consumption needs to enhance the net contribution of the facility to the energy transition.

Furthermore, in anticipation of the increasing volume of waste in the coming years, a similar integrated waste management facility with a capacity of 20 MW is planned for the northern region of the IMM.

Case study 3: Wind power plays a significant role in the global effort to transition to sustainable and clean energy, offering a reliable and scalable solution for electricity generation. Morocco is endowed with substantial potential for harnessing wind power, especially in the **Souss-Massa region**, with a population of some 2.7 million. However, investments in wind power are considered extremely capital-intensive, and also have substantial land and infrastructure requirements. Nevertheless, given its significant existing potential, the Souss-Massa Regional Council has embarked on prospecting for potential wind resources within its territories, playing the role of facilitator[30] – responsible for providing feasibility studies, identifying suitable zones, streamlining licensing processes and providing financial incentives. As such, in 2018 it partnered with the National Agency for Renewable Energy Development (ADEREE) financing the installation of two units to measure wind speed in two rural municipalities, Ait Wafka (Tiznit province) and Tamri (Agadir Ida Outanane), to present a feasibility study to potential investors.[31]

In Agadir, the regional capital, the port facilities are ready to become a hub for turbine transport, lowering production costs and making this energy more competitive and the region itself more attractive for wind power investments.[32] Some new projects in this respect are already worth mentioning: the Agadir-Souss cement facilities in the city gained an up-and-running wind farm in 2023 – its development creating at least 1400 temporary jobs in the construction phase and 200 direct jobs since its opening, and facilitating not only energy transition but also further socio-economic growth for neighbouring rural areas.[33]

[30] Climate-chance.org, Souss-Massa: Satisfying new renewable energy demands: https://www.climate-chance.org/wp-content/uploads/2020/04/synthesis-report-2019-local-action-book-case-soussmassa_morocco-p84.pdf p. 84.
[31] AMEE, Souss Massa Draa https://www.amee.ma/fr/cooperation/souss-massa-daraa.
[32] The North Africa Post, Renewable Energies: Morocco among top 5 countries poised to become a global floating offshore wind power giant, https://northafricapost.com/56356-renewable-energies-morocco-among-top-5-countries-poised-to-become-a-global-floating-offshore-wind-power-giant.html.
[33] CemNet (2022), Holcim Maroc inaugurates Agadir plant, https://www.cemnet.com/News/story/172936/holcim-maroc-inaugurates-agadir-plant.html.

Part 3: The role of cities and regions in the Mediterranean in diversifying the energy supply

Cities are critical to the global energy transition as they consume the majority of global primary energy used for the construction and operation of urban buildings, in logistics and urban mobility, and in industry and other activities. In fact, all over the world, cities account for ca. 70% of all GHG emissions, and the numbers are believed to be growing as a result of continuing urbanisation.[34] Meanwhile, by around 2050 the urban coastal population in the countries on the European shore of the Mediterranean is set to stabilise at almost 170 million (140 million in 2005), whereas in the countries on the Eastern and Southern shores, it is expected to double to over 300 million (151 million in 2005).[35] This further indicates the importance of RES deployment and undertaking energy efficiency measures to answer rising energy demands.

Following the example of national pledges stemming from Paris Agreement objectives and other strategies on climate adaptation and mitigation, LRAs can also contribute towards a green and just energy transition. In the end, their engagement is vital to achieving commitments, also given their relevance within national energy systems. However, despite cities' and regions' ambitions, there is a need for coordinating the efforts on both a national and local scale so as to ensure the effective fulfilment of energy and climate goals at both levels.

Once coordination is ensured, cities, towns and villages are uniquely positioned to promote the diversification of energy sources, and to push for RES deployment across the entire urban energy landscape, from buildings to transport, to industry and power. That is because municipal authorities are energy planners and regulators, for example bearing responsibility for urban zoning, building permits and solar ordinances, as well as feasibility studies (as in the Moroccan case study).

As depicted in the case studies from Amman and Izmir, their role in raising the awareness and education of citizens regarding the green transition is of the utmost importance. They also have a financial role to play in their ability to levy local fees, provide low-interest loans, or issue municipal green bonds. Additionally, municipalities are often important owners or operators of energy-generating facilities and related urban infrastructure. The figure below presents the roles that LRAs can have towards ensuring energy transition:

[34] UN statistics, https://unstats.un.org/sdgs/report/2022/goal-11/.
[35] UfM (2011), Towards a Euro-Mediterranean sustainable urban strategy (EMSUS) within the framework of the Union for the Mediterranean, https://ufmsecretariat.org/wp-content/uploads/2013/01/EMSUS-Diagnosis-of-the-Mediterranean-cities-situation.pdf, p. 4.

Figure 1 Roles of municipal governments in the energy transition

Source: own elaboration based on IRENA (2016)

LRAs can become pioneers of change and hence accelerate economic, societal and environmental resilience. The physical and economic density of cities in particular can provide the impetus for technological change and infrastructure investments that support diversification towards low- and zero-carbon economic development and social resilience across numerous sectors and processes:

1. Supply: as producers of renewable energy and promoters of energy infrastructure (public tenders of LRA-owned assets for renewable energy production), LRAs can participate in national efforts to diversify the energy mix. Wherever the legislation allows, LRAs can invest in RES deployment for their own production (solar, wind, bioenergy as in Izmir, among others) and connect to the national grid, considering the medium to long-term gains for public finances and lower bills for citizens, while increasing resilience and fighting energy poverty (especially in rural areas).

2. Demand: LRAs, as consumers, are in the best position to lead by example, especially by implementing energy efficiency measures in the most energy-intensive sectors, namely transport and building (for example by retrofitting public buildings, in urban lighting, or the electrifying of regional and municipal vehicle fleets). The journey towards low-carbon LRAs starts

with the analysing, measuring, and monitoring of their energy consumption to detect improvement opportunities (i.e. the case of GAM).

3. Supporting climate-neutral urban development and planning (LRAs as target setters and planners):
    - Climate-neutral urban strategies including the installation of RES in public offices, guidelines for circular economy, and zero- and low-carbon transit;
    - Helping with technical tasks, and assisting in feasibility study preparations for potential investors;
    - Spatial planning following climate adaptation measures, with a focus on liveability, green spaces reducing urban heat island effects, and the use of data and digital technology to minimise energy consumption;
    - Resilient and energy-efficient infrastructure;
    - Measures to reduce air pollution via technologies and new indicators that are useful for protecting health.36

4. Society: LRAs can promote behavioural changes and raise awareness on RES, waste management and energy efficiency by providing free information (energy information centres), running communication campaigns, and through education programmes on the benefits of the energy transition.

5. Governance: Advocating for favourable Public Procurement Law amendments so that LRAs' active role in the transition can be ensured (as in the case of Izmir). As key facilitators, LRAs are also in a position to drive the energy transition through regulatory tools and incentives. Enacting and enforcing building codes that promote energy efficiency is an important policy to consider. LRAs can also drive the demand towards RES by offering incentives (such as fee exemptions, subsidies, tax relief, or the simplification of administrative procedures). Another way to further a decentralised and citizen-led energy transition is to support the establishment of renewable energy communities, partnering with energy cooperatives and involving citizens.

[36] World Bank (2022), Driving transformational climate action and green recovery in MENA, https://thedocs.worldbank.org/en/doc/6f868d4a875db3ef23ef1dc747fcf2ca-0280012022/original/MENA-Roadmap-Final-01-20.pdf, p. 17.

Part 4: Obstacles to diversification and broader opportunities for cooperation at local and regional level across the region and in support of the UfM's energy priority areas

Obstacles to diversification

Political and institutional framework. A top-down approach to energy transition is prevalent in the region. Governments and national state bodies (including national agencies and state enterprises) determine the value chain of the energy transition, especially decision-making, production and distribution processes. To achieve societal acceptance and understanding of energy transition, national energy authorities and agencies should improve the inclusion of LRAs in the national vision of their energy transition. There is currently a lack of integration of LRAs in the defining of national policies, their role and responsibilities, and finally in ways to better coordinate the different institutional levels and stakeholders. Clear distinction of the roles and responsibilities would contribute to improving planning and decision-making at all levels, including in the LRAs.

Legal environment and regulatory barriers. The regulatory frameworks governing the production and distribution of RES differ greatly from one country to another. While in Morocco, Algeria, Tunisia, Jordan and recently Lebanon, laws have been enacted for LRAs themselves to produce energy and obtain access to the national electricity grid, other countries lack such a framework that would allow them to develop RES projects. In Libya, there is no single energy regulatory body at all.[37] In some countries, the regulatory frameworks constitute a barrier to the development of innovative solutions such as local micro-networks or smart grids, which could be deployed by LRAs, especially municipalities in rural and remote areas. Inadequate and inconsistent national incentive systems, which do not encourage investment in RES, are reported in several countries. Constant changes in legislation are also a driver of uncertainty, while complex permitting processes do not favour LRAs' involvement in renewable energy production. More collaboration between stakeholders is needed.

Land availability. One of the major challenges faced by LRAs in promoting renewable energy production within their territories is the need for land for new facilities and projects in sometimes very dense urban areas. Environmental

[37] https://www.medreg-regulators.org/Portals/_default/Skede/Allegati/Skeda4506-736-2023.3.27/INS-Mediterranean-Energy-Regulatory-Outlook-2022.pdf?IDUNI=1tjs23y4doadoibjzbyvpvbb6995 p. 6.

constraints can also limit the availability of land for the deployment of renewable energy facilities in rural areas (the Moroccan case study can serve as a best practice).

Insufficient social capital and lack of collective action. There are barely any effective and highly organised civil society groups actively advocating for prioritising challenges related to energy transition and raising awareness in society, especially at the local and regional levels. For example, the results of the seventh Arab Barometer [38] survey, which presents opinions on regional perspectives on climate change and the water and environmental challenges, highlight that citizens in the Southern and Eastern Mediterranean are concerned about what affects them most directly (waste management, insufficient freshwater resources), and not about macro-challenges (that is, the need for energy transition and increased water resilience), which demonstrates a lack of understanding on how the climate crisis is affecting them now and how it will affect them in the future if certain bold endeavours are not undertaken. Additionally, the cultural and social norms of local citizens, such as prevailing lifestyles and traditions (such as using fossil fuels to generate electricity, or for heating or cooling), can prove a major barrier to pursuing ambitious steps towards energy transition.

Lack of financial resources. The energy transition is a resource-intensive process, requiring significant capital to develop RES sources and storage, or simply to increase energy efficiency measures. For example, the high initial costs of construction and the maintenance of wind farms are frequently an obstacle. Access to finance is particularly challenging for small-scale projects usually led by LRAs in Southern and Eastern Mediterranean countries, which are not considered sufficiently profitable by local banks. However, a growing spectrum of innovative financing instruments and partnerships is becoming available to finance the energy transition (including the emission of green bonds, credit guarantees, secondary markets, crowdfunding, property tax, international climate finance, and PPPs). Nevertheless, the general lack of awareness and preparedness in LRAs regarding these dedicated instruments needs stressing.

Lack of technical capacity and know-how. Projects tackling RES deployment or energy efficiency measures (both in industrial and residential sectors) tend to require a high level of technical skills for planning, regulatory compliance, data analysis and modelling, project engineering, finance, and funding. LRAs, especially small municipalities, suffer from a lack of internal expertise in managing and implementing energy transition projects. In this context, it is

[38] The survey, fielded between October 2021 and July 2022, included respondents from 12 countries across the Middle East and North Africa: Algeria, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Palestine, Sudan, and Tunisia, see more at: https://www.arabbarometer.org/topics/?topic=environment.

particularly important to train dedicated teams of energy advisors, led by qualified energy managers, or to join forces with the private sector. Similarly, the enforcement of regulations regarding thermal norms and rules through the issuance of building permits is sometimes insufficient due to a lack of support mechanisms for LRAs.

Energy tariffs. Highly subsidised energy prices in several Southern and Eastern Mediterranean countries are resulting in investments in RES or energy efficiency being insufficiently attractive.[39] There is a consensus that reform of energy tariffs should be gradually achieved in these countries to reflect the actual cost of energy, taking into account social considerations.

Opportunities for cooperation at local and regional levels across the region

City-level regional and international cooperation. Cooperation between neighbouring countries, their cities and regions is crucial to help LRAs play their part in the acceleration of the energy transition in the Southern and Eastern Mediterranean region. Many opportunities for LRAs exist in the region, which could contribute to overcoming the above-mentioned obstacles to diversification.[40] The energy transition features among the priorities of the Official Development Assistance (ODA) of EU countries, as well as the EU through the Neighbourhood, Development and International Cooperation Instrument (NDICI-Global Europe). LRAs in the region are considered key players in this transition, and can benefit from cooperation in several areas.

Capacity-building and technical assistance. Considering the needs of LRAs in terms of capacity to design and implement their energy transition strategy, planning and projects, a significant number of actors have been focusing their intervention in these fields. The Covenant of Mayors for the Mediterranean (COM-Med), set up in 2012 with the backing of the EU-funded CES-Med project and currently with the Clima-Med project, is a community where local authorities can receive support and technical assistance to design and implement their Sustainable Energy Access and Climate Action Plans (SEACAPs).[41] Clima-Med is one of the few fully EU-funded projects (EUR 9.4 million for the 2018-2025

[39] Policy Center for the New South (2023), Securing Energy, Reshaping Decarbonisation: Reconciling Mediterranean Energy Transitions with Energy Security and Regional Stability, https://www.policycenter.ma/publications/securing-energy-reshaping-decarbonisation-reconciling-mediterranean-energy-transitions.
[40] Ripoll, S. (2022), Cities and Mediterranean Integration: In Search of a "New" Political Project, https://www.iemed.org/publication/cities-and-mediterranean-integration-in-search-of-a-new-political-project/.
[41] CoM Med, https://www.com-med.org/en/.

budgetary period), with continuity dedicated to supporting LRAs in the field of the energy transition. The MeetMED II (Mitigation Enabling Energy Transition in the Mediterranean region, 2021-2024) project is one of them, mainly dedicated to enhancing energy efficiency with professional training, knowledge exchange missions, and courses delivered to professionals from LRAs. In that regard, the Interreg NEXT MED programme (EUR 253 million, 2021-2029) offers more than EUR 10 million to projects with the specific objective of promoting energy efficiency and reducing GHG emissions by supporting transnational cooperation to increase awareness and cooperation, technology transfer, utilisation of research outcomes and adaptation to local needs and capacities to prepare the ground for the energy transition. LRAs are listed among the main target groups.

Access to finance. The Union for the Mediterranean (UfM) Secretariat acts as a "meta-intermediator" through the creation of a one-stop shop on its website to share information about climate finance for decision-makers. Through its organisation of several rounds of the UfM Energy and Climate Business Forum, the UfM has created a platform to support and showcase LRAs' efforts towards a sustainable energy transition, providing a networking space for financing solutions. COM-Med, together with Clima-Med, is also providing a funding guide for LRAs to implement their SEACAPs. IFIs, together with the EU Member States' national development cooperation agencies, are traditional providers of climate finance targeting LRAs to support their efforts to advance the energy transition.

Networking and exchange of best practices. Networking among LRAs is crucial for accelerating the energy transition by facilitating the exchange of successful strategies and lessons learned. City2city cooperation enhances collaborative problem-solving, policy harmonisation, and capacity building. Additionally, networking increases visibility, attracts investments, fosters innovation, and holds LRAs accountable for their commitments.
Some ARLEM members could be of great help. Bringing together 73 local authorities from all shores of the Mediterranean basin, MedCities is an example of a network with the mission to promote urban sustainable development in the region.[42] The United Cities and Local Governments (UCLG), despite being a global organisation with multiple branches around the world representing and advocating for local and regional governments worldwide, aims within ARLEM specifically to promote their role in sustainable development and governance.[43]
ICLEI – Local Governments for Sustainability is another global network of more than 2,500 local and regional governments committed to sustainable urban

[42] MedCities, https://medcities.org/.
[43] UCLG, https://uclg.org/.

development.[44] Finally, national networks of LRAs can also play a key role in promoting the exchange of best practices. For instance, the Turkish Healthy Cities Association connects cities with similar goals to improve and implement the Healthy Cities movement across the country.[45] In Tunisia, the Alliance of Municipalities for Energy Transition (ACTE) programme aims to support Tunisian municipalities that wish to actively engage in a sustainable energy management approach.[46] It seeks to foster a dynamic in which municipalities play a leading role in energy transition through sustainable energy planning.

[44] ICLEI, https://iclei.org/.
[45] Turkish Healthy Cities Association, https://www.skb.gov.tr/en/.
[46] Alliance of Local Councils for Energy Transition (Programme ACTE), https://www.anme.tn/en/projets/construction/alliance-local-councils-energy-transition-programme-acte.

Part 5: Conclusions and recommendations

Although energy mixes across the Southern and Eastern Mediterranean differ, fossil fuels still largely dominate, while RES meet only a marginal share of the total demand. The green energy transition in the region represents a significant opportunity towards making it more self-sufficient, but also more inclusive given how shocks in energy prices typically hit the most sensitive groups in energy-importing countries. The region's external vulnerability has deepened further as a result of the Russian war in Ukraine.

Despite potential benefits, such a transition faces various challenges. The major obstacles for LRAs include:

- Political and top-down institutional framework;
- Legal environment and regulatory barriers;
- Lack of financial resources and high entry barriers;
- Social capital and (lack of) collective action (i.e. lack of knowledge and understanding, cultural and social norms that act as inhibitors);
- Lack of technical capacity and know-how;
- Energy tariffs.

The section below provides some recommendations that could be helpful for Southern Mediterranean LRAs willing to develop green transition processes.

Recommendations

This section outlines recommendations for a greater contribution by LRAs in supporting the energy transition across the Mediterranean, especially in regard to becoming key drivers of the energy supply diversification and working together across the region.

- **Policy framework**
  Develop local energy transition action plans to define realistic and adapted goals and targets, aligned with broader national and international energy goals, and based on diagnosis, monitoring, and evaluation processes, including municipal energy accounting. LRAs can benefit from the support of the Covenant of Mayors for the Mediterranean, CoM Med, to prepare and implement coherent Sustainable Energy Access and Climate Action Plans (SEACAPs), among other things.

- **Capacity-building and know-how**

Invest in capacity-building programmes and training to enhance in-house skills and understanding of the energy transition, and set up dedicated departments and teams headed by energy managers. Many training schemes already exist at national and international levels.

- **Consider all RES in the diversification process and foster innovation**
  LRAs tend to focus their efforts on solar energy as the main RES in their own energy production. Wind power is considered more capital-intensive than solar panels (even at the domestic level), and requires specific locations, available land and social acceptance. However, small-scale and more affordable wind-power solutions do exist, while LRAs can play the role of facilitators through feasibility studies, and by identifying suitable zones, streamlining licensing processes and providing financial incentives. Bioenergy, especially biogas from municipal waste, provides an effective means of treating and managing organic municipal waste. Offshore RES can be considered in coastal regions. Partner with national agencies, incubators and universities to develop innovative solutions and new technologies, and test and adopt pilot projects.

- **Collaborative Initiatives**
  Establish or engage in national networks and platforms to share experiences, resources and expertise, and lobby for a coordinated approach that takes into account LRAs and promotes a decentralised energy transition.

- **Community Engagement**
  Engage with local communities to raise awareness about the benefits of RES and energy efficiency, including through communication campaigns and "energy info centres"47 to empower citizens with vital information about sustainable energy sources and equipment. Facilitate participatory processes that involve citizens in decision-making related to energy processes to gain community engagement.

- **Enabling Environment**
  Act as a driver of the energy transition by offering incentives in the regulatory, administrative, and financial aspects to promote behavioural change and facilitate private and local investments in RES. This includes assisting with feasibility studies for interested investors (especially in wind-power deployment) as well as subsidies, simplified bureaucratic

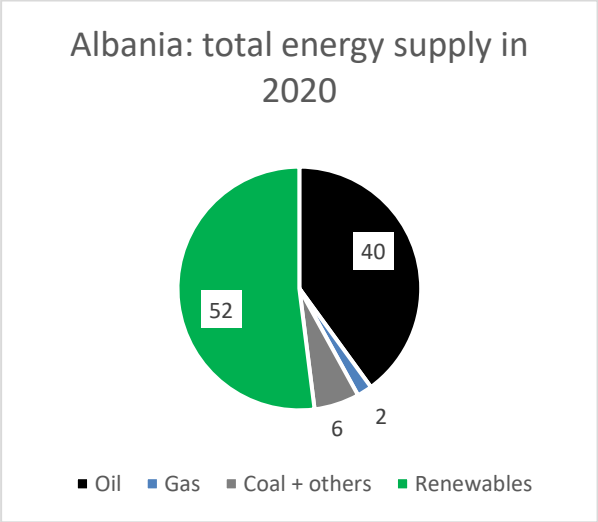
[47] GERES, (2021), Service information énergie-climat (SIEC), https://www.geres.eu/wp-content/uploads/2019/10/Plaquette_SIEC_FR_web_2021.pdf.

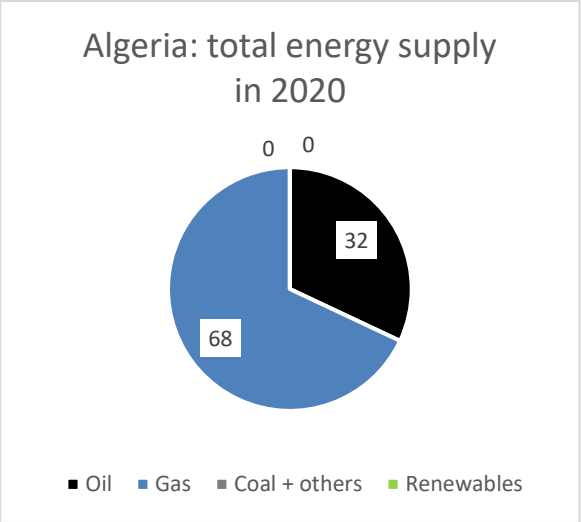
procedures, tax exemptions, and enforcement of green legislation (building codes).

- **International Cooperation**
  Invest in international cooperation across the Mediterranean: opportunities and benefits are multiple and can help overcome important barriers, such as insufficient technical capacity or financial resources, while fostering the exchange of best practices and innovative ideas among peers.

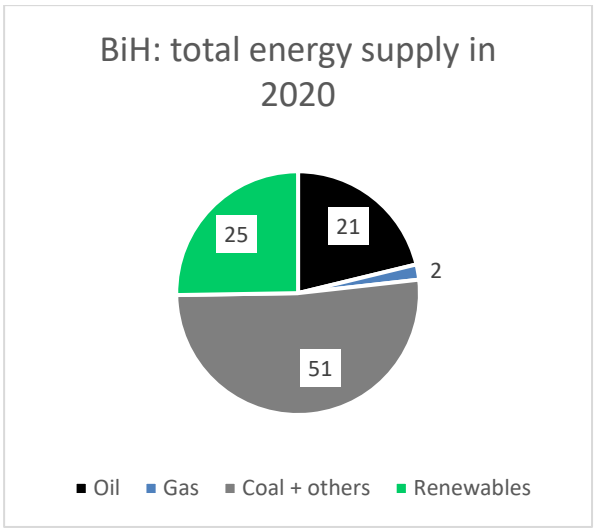
Annex

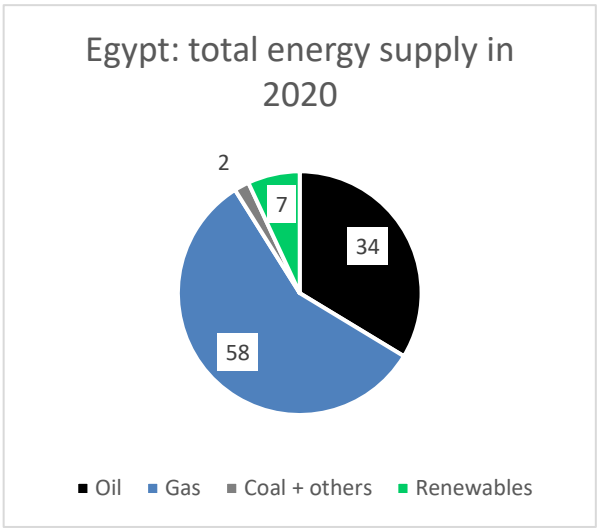
The figures below present total energy supply in ARLEM countries in 2020 in alphabetical order. The data have been collected from IRENA energy profiles[48] last updated in August 2023. The list does not include Monaco, which relies almost entirely on imports of electricity, gas and fuels from France.

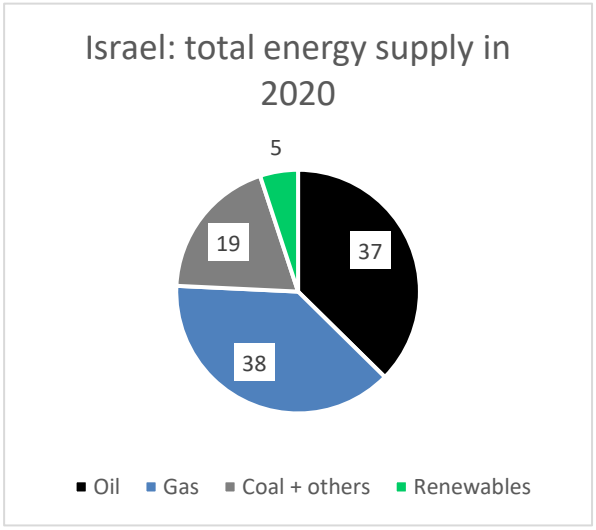


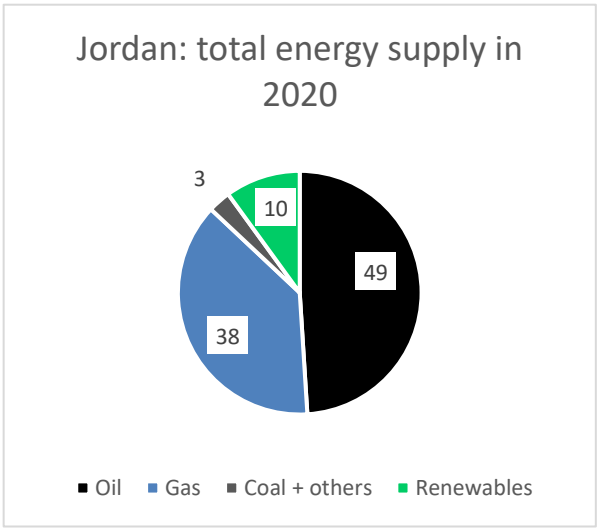


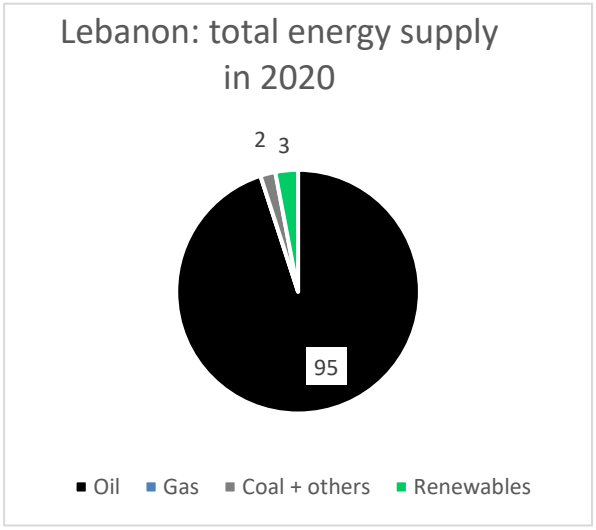
[48] These are based on IRENA statistics, plus data from the following sources: UN SDG Database (original sources: WHO; World Bank; IEA; IRENA; and UNSD); UN World Population Prospects; UNSD Energy Balances; UN COMTRADE; World Bank World Development Indicators; EDGAR; REN21 Global Status Report; IEA-IRENA Joint Policies and Measures Database; IRENA Global Atlas; and World Bank Global Solar Atlas and Global Wind Atlas.

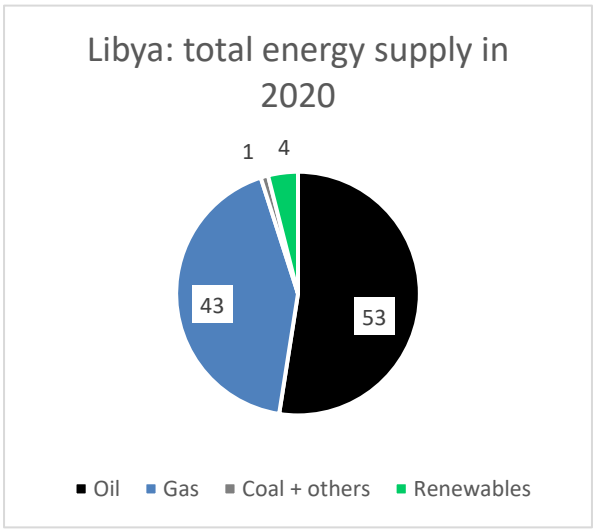

BiH: total energy supply in 2020
21
2
51
25
Oil
Gas
Coal + others
Renewables

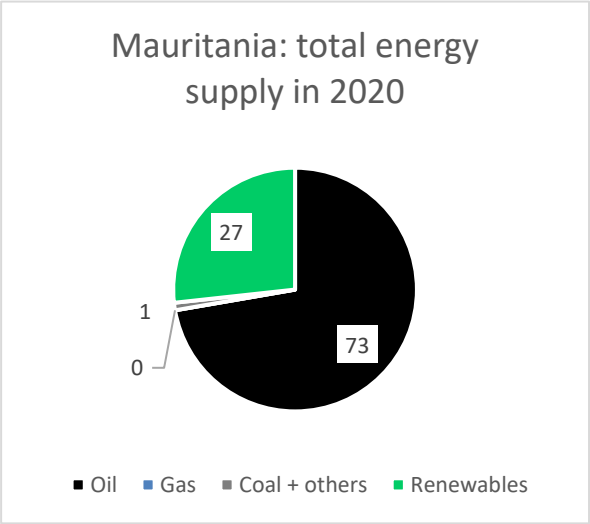

Egypt: total energy supply in 2020
34
58
2
7
Oil
Gas
Coal + others
Renewables

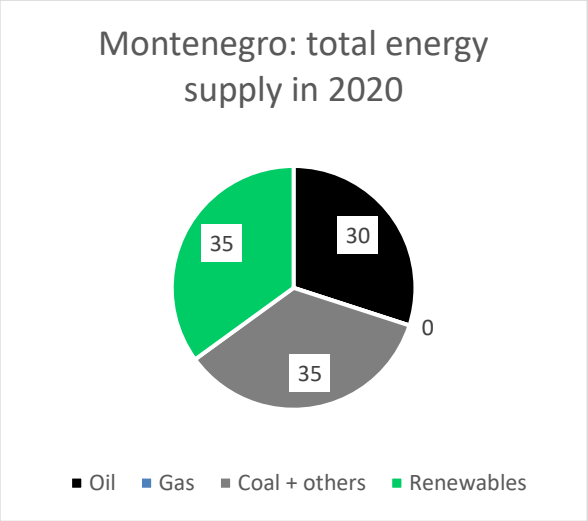

Israel: total energy supply in 2020
37
38
19
5
Oil
Gas
Coal + others
Renewables

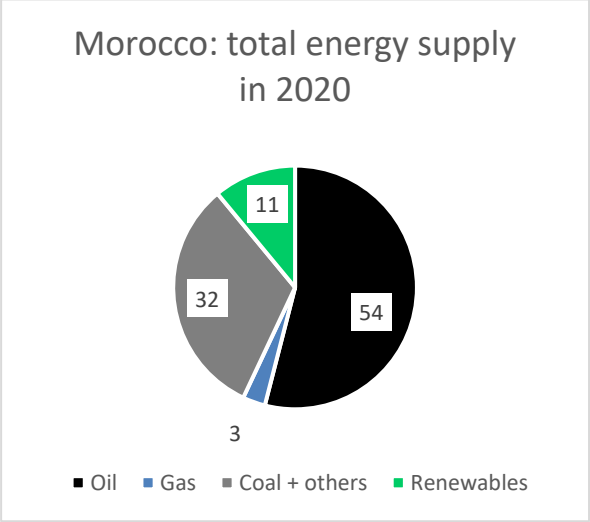

Jordan: total energy supply in 2020
49
38
3
10
Oil
Gas
Coal + others
Renewables

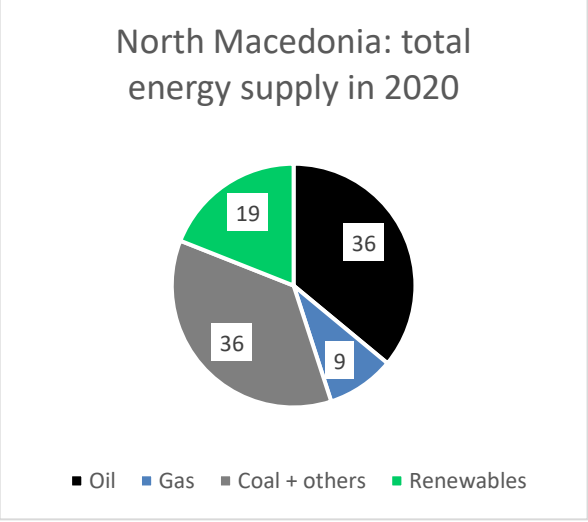

Lebanon: total energy supply in 2020
95
2
3
Oil
Gas
Coal + others
Renewables

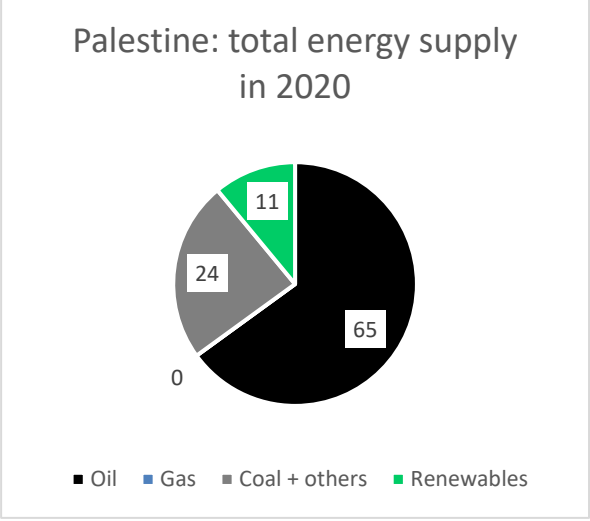

Libya: total energy supply in 2020
53
43
1
4
Oil
Gas
Coal + others
Renewables

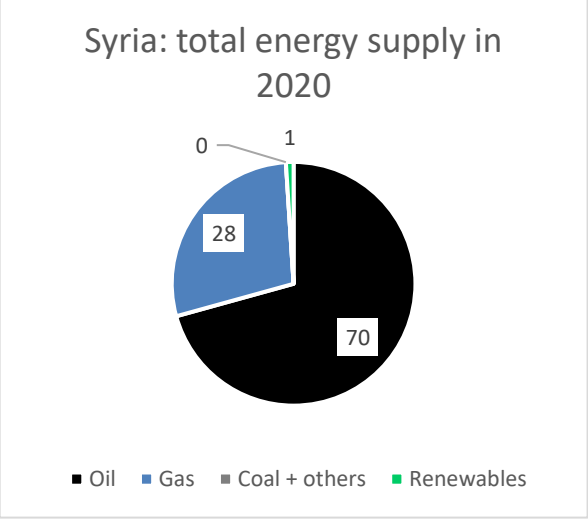

Mauritania: total energy supply in 2020
27
1
0
73
Oil
Gas
Coal + others
Renewables

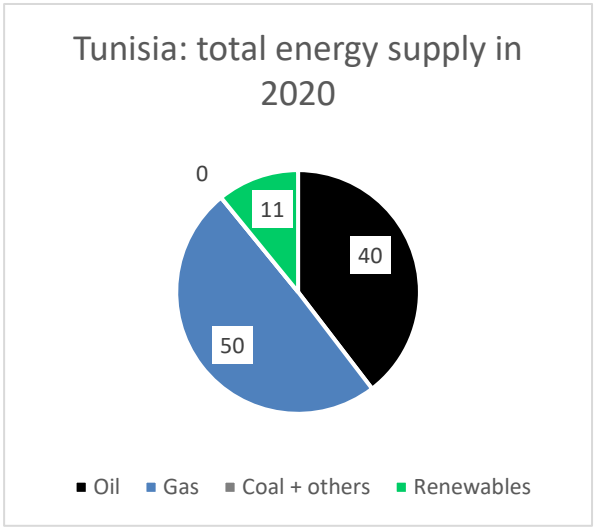

Montenegro: total energy supply in 2020
35
30
0
35
Oil
Gas
Coal + others
Renewables

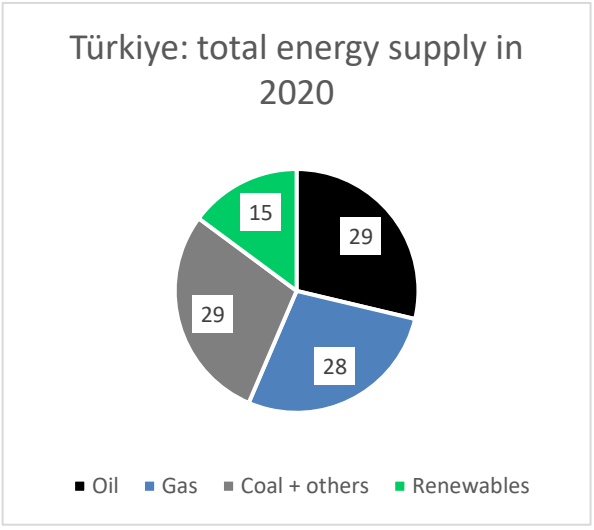

Morocco: total energy supply in 2020
11
32
54
3
Oil
Gas
Coal + others
Renewables


North Macedonia: total energy supply in 2020
19
36
36
9
Oil
Gas
Coal + others
Renewables


Palestine: total energy supply in 2020
11
24
65
0
Oil
Gas
Coal + others
Renewables


Syria: total energy supply in 2020
0
1
28
70
Oil
Gas
Coal + others
Renewables





Source: IRENA Energy Profiles data (from 08/2023)

References

- ACTE (2022), “Alliance des Communes pour la Transition Energétique : Territoires en action pour une transition énergétique durable", Brochure du Programme ACTE, Agence nationale pour la maîtrise de l’énergie (ANME), Septemer 2022, http://www.acte.tn/sites/default/files/2022-09/Dossier%20ACTE%2020220609.pdf.
- AMEE, Souss Massa Draa https://www.amee.ma/fr/cooperation/souss-massa-daraa.
- Azzopardi, B., M.V. Balzan, S. Cherif, E. Doblas-Miranda, M. dos Santos, P. Dobrinski & E. Xoplaki (2020), Climate and Environmental Change in the Mediterranean Basin: Current Situation and Risks for the Future. First Mediterranean Assessment Report, Union for the Mediterranean, PlanBleu, UNEP/MAP, Marseille.
- Ben-Meir, Y., Opfer, K., Akhezzane, I. (2021), “Mobilizing Decentralized, Participatory Energy Transition in Morocco”, Policy Paper, 07/2021, German Watch, https://www.germanwatch.org/sites/default/files/RZ_Policy_Brief_HighAtlasFoundationMorocco_12_S_4c_WEB_ES.pdf.
- CemNet (2022), Holcim Maroc inaugurates Agadir plant, https://www.cemnet.com/News/story/172936/holcim-maroc-inaugurates-agadir-plant.html.
- CEPS (2023), ‘CES-MED. Cleaner energy saving Mediterranean cities’, https://www.ceps.eu/ceps-projects/cleaner-energy-saving-mediterranean-cities-ces-med/.
- Clima-Med (nd), ‘What is Clima-Med?’, https://www.climamed.eu/project/what-is-clima-med/.
- ClimaSouth (nd), ‘Low carbon development for climate resilient societies’, http://www.climasouth.eu/en?refresh=04.
- Climate-chance.org, Souss-Massa: Satisfying new renewable energy demands: https://www.climate-chance.org/wp-content/uploads/2020/04/synthesis-report-2019-local-action-book-case-soussmassa_morocco-p84.pdf.
- Costa, C., Fosse, J., Apprioual, A., (2022), ‘Financing the sustainable development of the Mediterranean: what role for Green and climate finance?’, Eco-Unión & IEMed, DOI http://doi.org/10.5281/zenodo.6391681.
- Döring, M. (2019), "Planification énergétique axée sur la durabilité: ancrer la transition énergétique tunisienne au niveau local". (BICC Policy Brief, 1/2019). Bonn: Bonn International Center for Conversion (BICC). https://nbn-resolving.org/urn:nbn:de:0168-ssoar-62645-8.

- ECMWF, Paving the way for a renewable energy transition in the Mediterranean, https://stories.ecmwf.int/paving-the-way-for-a-renewable-energy-transition-in-the-mediterranean/index.html.
- EcoMENA, Renewable Energy in Algeria, https://www.ecomena.org/renewables-algeria/.
- Escribano, G., & L. Lázaro Touza (2020), 'Balancing geopolitics with Green Deal recovery: in search of a comprehensive Euro-Mediterranean energy script', ARI, nr 95/2021, Elcano Royal Institute.
- Escribano, G., Lázaro Touza, L., Urbasos, I. (2023), "Revamping the Euro-Mediterranean Energy and Climate Space", Elcano Policy Paper, Elcano Royal institute, https://media.realinstitutoelcano.org/wp-content/uploads/2023/07/policy-paper-revamping-the-euro-mediterranean-energy-and-climate-space.pdf.
- European Centre for Medium-Range Weather Forecasts (ECMWF), Paving the way for a renewable energy transition in the Mediterranean, https://stories.ecmwf.int/paving-the-way-for-a-renewable-energy-transition-in-the-mediterranean/index.html.
- European Commission, A Clean Planet for All. A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy (COM/2018/773), 28 November 2018, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52018DC0773.
- European Commission, An EU Strategy to Harness the Potential of Offshore Renewable Energy for a Climate Neutral Future (COM/2020/741), 19 November 2020, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52020DC074.
- European Commission, Launch by United States, the European Union, and Partners of the Global Methane Pledge to Keep 1.5C Within Reach, 2021,https://ec.europa.eu/commission/presscorner/detail/en/statement_21_5766.
- European Commission, Questions and Answers on the EU Taxonomy Complementary Climate Delegated Act Covering Certain Nuclear and Gas Activities, 2 February 2022, https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_712.
- European Commission, REPowerEU: Joint European Action for More Affordable, Secure and Sustainable Energy, 8 March 2022, https://ec.europa.eu/commission/presscorner/detail/en/IP_22_151.
- European Commission, Stepping Up Europe's 2030 Climate Ambition: Investing in a Climate-Neutral Future for the Benefit of Our People (SWD/2020/176), 17 September 2020, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52020SC0176.
- GERES, (2021), Service information énergie-climat (SIEC), https://www.geres.eu/wp-content/uploads/2019/10/Plaquette_SIEC_FR_web_2021.pdf.

- Hasni, T., Malek, R., Zouloueche, N. (2021), "L'Algérie 100% énergies renouvelables, Recommandations pour une stratégie nationale de transition énergétique", Friedrich Ebert Stiftung, January 2021, https://library.fes.de/pdf-files/bueros/algerien/17412.pdf.
- International Energy Agency (2020), "Clean Energy Transitions in North Africa", in IEA Country Reports, https://www.iea.org/reports/clean-energy-transitions-in-north-africa.
- Institute for Global Prosperity (2020), "Transitions to Renewable Energy and Sustainable Prosperity in Lebanon: Why Democratic Infrastructure Supports Innovative Energy Projects", Institute for Global Prosperity, ESCWA, Chatham House, https://www.ucl.ac.uk/bartlett/igp/sites/bartlett/files/renewable_energy_lebanon_2020.pdf.
- IRENA (2016), "Renewable energy in cities," International Renewable Energy Agency, Abu Dhabi, www.irena.org/publications/2016/Oct/Renewable-Energy-in-Cities.
- IRENA (2020), Renewable Energy Outlook: Lebanon, International Renewable Energy Agency, Abu Dhabi, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA_Outlook_Lebanon_2020.pdf.
- IRENA, Renewables readiness assessment: the Hashemite Kingdom of Jordan, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/Feb/IRENA_RRA_Jordan_Summary_2021_EN.pdf?la=en&hash=DE5015E14770A43E9BFF2DFF8FAE684CED6E8EEB.
- Kheddache, N. (2018), La promotion territoriale des énergies renouvelables et de l'efficacité énergétique. Opportunités et défis pour les collectivités locales, [PowerPoint Slides], Rencontre nationale : Les collectivités locales au cœur de la transition énergétique, Ministère de l'Intérieur, des Collectivités locales et de l'Aménagement du territoire, République algérienne démocratique et populaire, https://www.interieur.gov.dz/images/La-promotion-territoriale-des-nergies-renouvelables-et-de-lfficacit-nergtiquee-.pdf.
- Martínez, R., & A. Pérez-Porro (2022), 'Boosting Euro-Mediterranean urban climate action', CIDOB briefings, nr 41-2022, https://www.cidob.org/en/publications/publication_series/cidob_policy_brief/boosting_euro_mediterranean_urban_climate_action.
- Manfron, G., L. Nisini Scacchiafichi & L. Panarello (2023), 'JRC MARS Bulletin – Global outlook - Crop monitoring European neighbourhood – Morocco, Algeria, Tunisia, Libya and Egypt – February 2023', in G. Manfron, M. Van Den Berg & B. Baruth (Eds.), Publications Office of the European Union, Luxembourg, DOI 10.2760/809767, JRC132778.

- MEDENER (2018), "Energy Efficiency and Energy Prices: A Peaceful Solution to the Jigsaw", 6th MEDENER International Conference Report, Mediterranean Association of National Agencies for Energy Management, https://meetmed.org/wp-content/uploads/2018/09/6th-MEDENER-International-Conference-Report.pdf.
- MeetMED (2019a), "meetMED Training on Sustainable Energy Design Toolkit for Public Authorities. Introduction to Energy Policies: The Role of Local Authorities", Agence nationale de Maîtrise de l'Énergie (ANME), https://meetmed.org/wp-content/uploads/2019/05/meetMED-training_Algiers_AGENDA-Final.pdf.
- MeetMED (2019b), "Financing Instruments, Financing Mechanisms, EPC", presented by Rayan Mourtada (Almee), Algiers, https://meetmed.org/wp-content/uploads/2019/05/meetMED_Financing.pdf.
- MeetMED (2019c), "meetMED professional training on Sustainable Energy Design for Public Authorities", Training Report, Algiers, https://meetmed.org/wp-content/uploads/2019/05/meetMED-training-Algiers-conclusions_Final.pdf.
- MeetMED (2020), "Sustainable Energy Design Toolkit for Public Authorities", Training Package, https://meetmed.org/wp-content/uploads/2020/01/meetMED_A21_TrainingPack_Final.pdf.
- MeetMED (2022), "Initiatives and Programmes Supporting Local Authorities for Energy Efficiency and Thermal Comfort of Buildings in the Mediterranean Area", Panorama Report, Final Version, https://meetmed.org/wp-content/uploads/2022/12/Initiatives-and-Programmes-Supporting-Local-Authorities-for-Energy-Efficiency-and-Thermal-Comfort-of-Buildings-in-the-Mediterranean-Area.pdf.
- Ministry of Electricity and Renewable Energy, Renewable Energy Targets, http://nrea.gov.eg/test/en/About/Strategy.
- Mokrani, M.A. (2022), «Transition énergétique en Algérie, au Maroc et en Tunisie», Natural Resource Governance Institute, https://resourcegovernance.org/sites/default/files/documents/la_transition_energetique_en_algerie_au_maroc_en_tunisie.pdf.pdf.
- Observatoire Méditerranéen de l'Energie (2018), Mediterranean Energy Perspectives 2018.
- Oberthür, S., & I. von Homeyer (2023), 'From emissions trading to the European Green Deal: the evolution of the climate policy mix and climate policy integration in the EU', Journal of European Public Policy, vol. 30, nr 3, pp. 445-468.
- OECD (2022), 'Pricing GHG emissions. Country notes. Carbon Pricing in Morocco', https://www.oecd.org/tax/tax-policy/carbon-pricing-morocco.pdf.
- OECD (2021), 'Middle East and North Africa investment policy perspectives, OECD Publishing, Paris, https://doi.org/10.1787/6d84ee94-en.

- OECD (2018), 'Accounting for baseline targets in NDCs: issues and options for guidance', Climate Change Expert Group Paper, nr 2018/2, https://www.oecd.org/environment/cc/Accounting_for_baselines_targets_in_NDCS.pdf.
- OME (2022), Mediterranean Energy Perspectives 2022.
- OME (2023), Mediterranean Energy Perspectives 2023.
- Policy Center for the New South (2023), Securing Energy, Reshaping Decarbonisation: Reconciling Mediterranean Energy Transitions with Energy Security and Regional Stability, https://www.policycenter.ma/publications/securing-energy-reshaping-decarbonisation-reconciling-mediterranean-energy-transitions.
- Ripoll, S. (2022), Cities and Mediterranean Integration: In Search of a "New" Political Project, https://www.iemed.org/publication/cities-and-mediterranean-integration-in-search-of-a-new-political-project/.
- Ruseckas, L. (2022), 'Europe and the Eastern Mediterranean: the potential for hydrogen partnership', Comment, nr 50/2022, SWP.
- Sgaravatti, G., S. Tagliapietra & C. Trasi (2022), 'National energy policy responses to the energy crisis', Dataset, Bruegel.
- The North Africa Post, Renewable Energies: Morocco among top 5 countries poised to become a global floating offshore wind power giant, https://northafricapost.com/56356-renewable-energies-morocco-among-top-5-countries-poised-to-become-a-global-floating-offshore-wind-power-giant.html.
- UfM (2011), Towards a Euro-Mediterranean sustainable urban strategy (EMSUS) within the framework of the Union for the Mediterranean, https://ufmsecretariat.org/wp-content/uploads/2013/01/EMSUS-Diagnosis-of-the-Mediterranean-cities-situation.pdf.
- UNDP, Renewables in Libya: Right for the planet and good for business, https://www.undp.org/libya/blog/renewables-libya-right-planet-and-good-business.
- UNEP, Climate change in the Mediterranean, https://www.unep.org/unepmap/resources/factsheets/climate-change.
- World Bank (2022), Driving transformational climate action and green recovery in MENA, https://thedocs.worldbank.org/en/doc/6f868d4a875db3ef23ef1dc747fcf2ca-0280012022/original/MENA-Roadmap-Final-01-20.pdf.

Case-specific sources

Jordan

- AECOM (2021), Amman Green City Action Plan. Prepared for the Greater Amman Municipality and European Bank for Reconstruction and Development

(EBRD), AECOM Limited, London, https://faolex.fao.org/docs/pdf/jor207655E.pdf.
- The Amman Climate Plan: A Vision for 2050 Amman: https://documents1.worldbank.org/curated/en/816961617187012025/pdf/The-Amman-Climate-Plan-A-Vision-for-2050-Amman.pdf.
- Voluntary Local Review: Amman https://jordan.un.org/en/202229-voluntary-local-review-city-amman-jordan.
- Zgheib, N. (2021). EBRD and EU upgrade largest landfill in Jordan. European Bank for Reconstruction and Development (EBRD), https://www.ebrd.com/news/2021/ebrd-and-eu-upgrade-largest-landfill-in-jordan.html.

Türkiye
- AECOM (2020), Izmir Sustainable Energy Climate Action Plan. Prepared for the City of Izmir, https://mycovenant.eumayors.eu/storage/web/mc_covenant/documents/31/98KaWT7wBZ-ITIW1A7bpSrgh9rZmmGJ6.pdf.
- Railly News (2023), Izmir's Garbage Contributed 846 Million Liras to the Budget, https://www.raillynews.com/2023/12/Izmir%27s-garbage-contributed-846-million-lira-to-the-budget/.

Databases

- Eurostat, https://ec.europa.eu/eurostat/web/energy/database
- IEA, https://www.iea.org/data-and-statistics
- IRENA, https://www.irena.org/Statistics
- OECD, https://data.oecd.org/energy.htm
- UN statistics, https://unstats.un.org/sdgs/report/2022/goal-11/

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