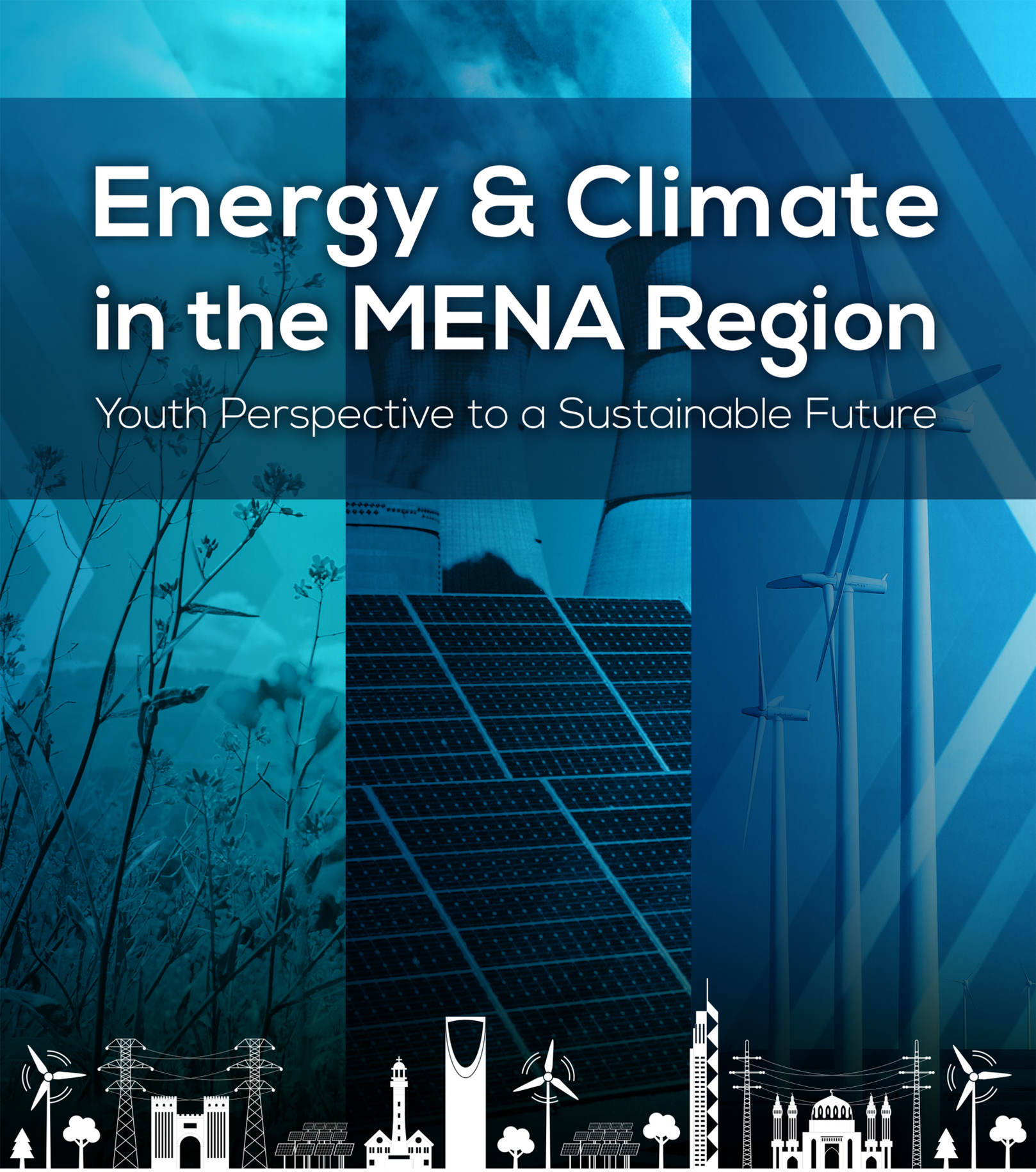
Energy & Climate in the MENA Region

Youth Perspective to a Sustainable Future



A Youth Perspective Position Paper | November 2019

FRIEDRICH EBERT STIFTUNG

GERMANWATCH

Climate and Energy Project
مشروع الطاقة والمناخ

Written by:

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2.0: LIST OF ACRONYMS

Acronym	Description
ACAPS	The Assessment Capacities Project
CDP	Carbon Disclosure Project
CO2	Carbon Dioxide
CSP	Concentrated Solar Power
EE	Energy Efficiency
EIA	U.S. Energy Information Administration
ESCWA	United Nations Economic and Social Commission for West Asia
FES	Friedrich-Ebert-Stiftung
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GIZ	Gesellschaft für Internationale Zusammenarbeit
HNO	Humanitarian Needs Overview
IEA	International Energy Agency
EROI	Energy Return on Investment
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
LCOE	Levelized Cost of Energy
LED	Light-emitting Diode
MENA	Middle East/North Africa
NDC	Nationally Determined Contributions
NGO	Non-governmental Organization
PV	Photovoltaics
RCREEE	Regional Center for Renewable Energy and Energy Efficiency
RE	Renewable Energy
SDG	Sustainable Development Goal
SME	Small and Medium-sized Enterprises
UAE	United Arab Emirates
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
USD	US Dollar
WASH	Water, Sanitation and Hygiene
YER	Yemeni Rial

3.0: FOREWORD

YOUTH CLIMATE AND ENERGY POLICY ADVOCACY IN THE ARAB WORLD – 2019

Rising sea levels and more frequent dangerous weather events are among the immediate impacts of climate change already felt across the world. Sadly, these will only become more severe as global average temperature rises. The Middle East/North Africa (MENA) region is the area of the world where climate impacts are most severe. Limiting global warming and reducing greenhouse gas (GHG) emissions, a priority for the majority of states worldwide, requires that almost all facets of our daily life must be restructured: water, food, buildings, transportation, global trade, etc.

The energy sector is the largest source of global GHG emissions, which cause temperatures to rise and climate change to worsen. In these circumstances, renewable energy (RE) is emerging as an alternative to traditional fossil fuels, with these sorts of technologies rapidly improving and becoming more affordable. Thus, the promotion of RE and energy efficiency (EE) is a crucial aspect of the international climate debate and many countries' national energy policies.

The MENA region is blessed with the huge natural potential for solar and wind energy. Furthermore, this region has another important resource: a young population. To achieve a successful, fair, and complete energy transition, countries need agents of change. These agents should be innovative, globally minded, and motivated to work for the future of their country, world, and themselves. Who else but the youth could better assume the mantle of these champions for transformation? Moreover, a project gathering people from the entire region could enhance energy cooperation and dialogue between MENA countries.

Through a joint effort, the Friedrich-Ebert-Stiftung (FES) and Germanwatch decided to encourage and empower young people from the MENA region to engage in climate and energy policy issues. Thanks to several training programs, young participants from 10 countries (Morocco, Algeria, Tunisia, Egypt, Sudan, Lebanon, Palestine, Jordan, Saudi Arabia and Yemen) were able to learn about energy issues and develop a common policy paper on their visions for their region's energy future. This paper is not only an opportunity for its young authors to present their views, but also a chance for decision

makers to learn firsthand about the energy future their young citizens envision for the region. We would like to sincerely thank our colleagues from the FES Jordan and Egypt offices, as well as everyone who contributed to the project. A very special thanks goes to the young authors and their fantastic work. We hope they will continue in their engagement with this issue, and that it will lay the foundations for a clean energy future for the region.

Regional Dependency on Fossil Fuels:
How to Lead a Transition to Renewable Energy

The MENA region depends heavily on fossil fuels for energy supply and domestic consumption. Currently, the MENA region can be classified into two main categories as shown in Figure 1: net energy exporters (Gulf Cooperation Council Countries [GCC], Iran, Iraq, Algeria and Libya), which have large oil/gas resources and considerable price distortions; and net importers (all countries on the southern and eastern coast of Mediterranean except Algeria and Libya), which depend on energy imports and have fewer price distortions.

For the past fifty years, the MENA region has played a considerable role in the global energy dynamic. It accounts for 16% of the world's total energy production in 2014 (half of which is exported). Energy production has increased by 2.4% annually on average between 1990 and 2014. The region accounted for 37% of crude oil production and 22% of gas supply globally in 2016 (Menichettti, El Gharras, & Karbuz, 2017, p. 21). The energy mix in MENA countries relies greatly on fossil fuels, particularly oil (45%) and natural gas (47%), with a minor share belonging to coal (5%) (Menichettti, El Gharras, & Karbuz, 2017, p. 6). Like other countries, the use of these fossil fuels contributes to climate change. In fact, the estimated increase in energy-related GHG emissions in the region is substantially worse – 47% by 2035 as compared to 2010 in the Middle East alone (Jalilvand, 2012, p. 2). At the same time, MENA countries are themselves rapidly growing energy consumers, as demonstrated by the growth in gross domestic product (GDP), extreme population rise, and pressures of urbanization. As a result, energy demand should increase more than 5% per annum growth (Menichettti, El Gharras, & Karbuz, 2017, p. 2). This situation is likely to increase stress on fossil fuel usage, cause net energy exporters to use their fuel supplies inefficiently, and ultimately strain government finances. On the other hand, it has challenged net energy importers to face the reality of volatile energy prices that threaten their energy security.

As such, this situation underscores the need for suitable energy strategies and effective policies for sustainable energy development in the region. Given that the MENA region holds the world's largest fossil fuel reserves (more than half of the world's proven crude oil and more than a third of its natural gas reserves) (BP, 2013, p. 21), the heavy use of fossil fuels might appear obvious. However, the MENA region also has the greatest untapped potential for RE in the world, as only 1% of the region's primary energy mix is supplied by RE (Jalilvand, 2012, p. 2).

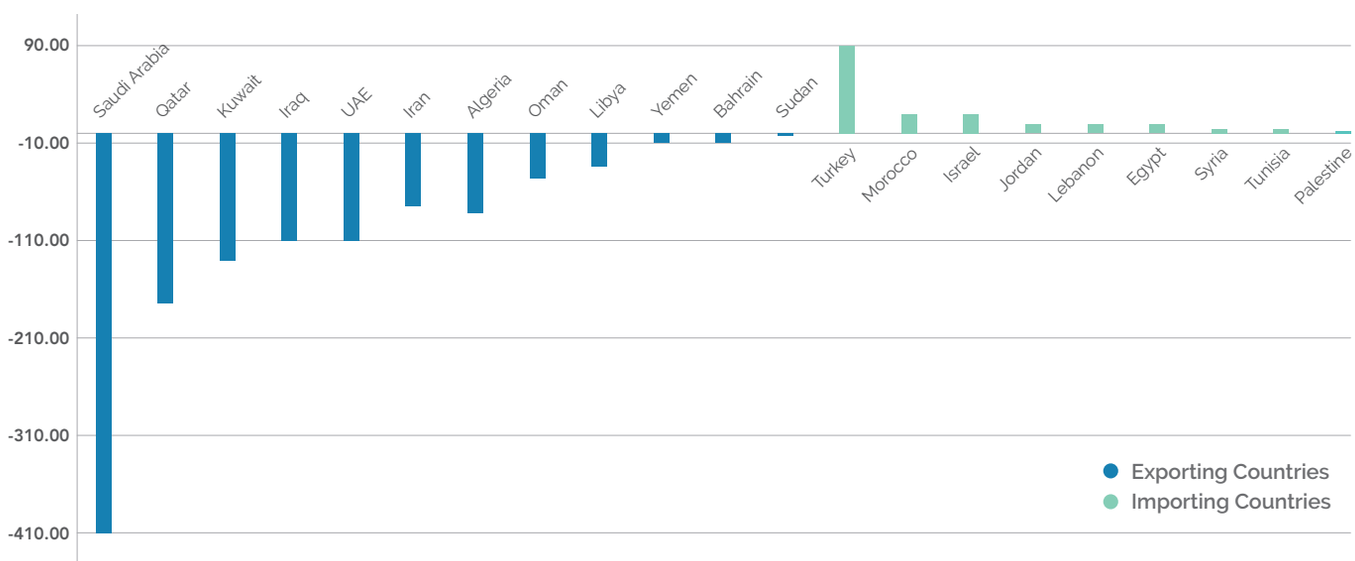


Figure 1: Net energy importing vs. exporting countries, MENA region, 2014 (OME, 2015; IEA 2016)

4.1 Challenges

4.1.1 Fossil Fuel Net Importers:

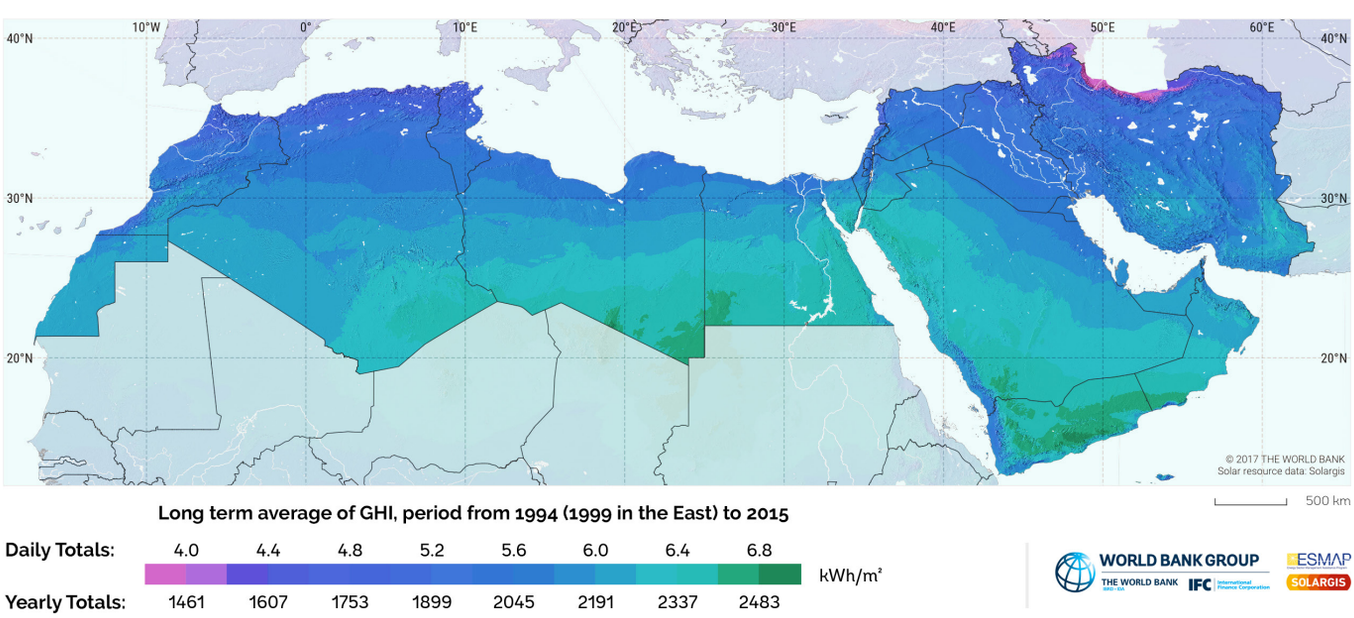
Net energy importers rely on a feasibly continuous supply of fossil fuels from external sources to meet their energy needs. The stability of the supply, however, is affected by a variety of internal and external political conflicts and policies, which lead to fuel insecurity and vulnerability in importer countries. Faced with the prospect of an unstable supply, importers may have to transport their fossils fuels though pipelines or trucks, which are dangerous and/or environmentally harmful. Aside from that, countries that import most of their energy are exposed to currency fluctuations and volatile fuel prices (Van de Graaf & Bond, 2019, p. 36). This vulnerability is not only economic, but also political, as many difficult decisions are made for the sake of supply continuity, which might jeopardize energy security. Even when fossil fuels prices are stable, they still account for huge costs that impact many sectors. These costs represent a burden on the economy, as they affect both citizens and the private sector and slow economic growth. To confront these issues, energy importers have prioritized energy independence to establish a sustainable, autonomous economy.

Additionally, horizontal irradiation levels in the MENA region are very high, as shown in Figure 2. This means that the region has attractive and feasible solar energy generation potential. Furthermore, wind speeds in specific locations across the region are suitable for wind generation projects, as shown in Figure 3. Although many MENA net importing countries are implementing RE projects, the ambition for a greater share of RE in the total energy mix is still insufficient for attaining energy security.

Solar Resource Map:

Global Horizontal Irradiation

Middle East and North Africa



This map is published by the World Bank Group, funded by ESMAP, and prepared by Solargis.

Figure 2: Global Horizontal Irradiation in MENA (WorldBank, 2017b)

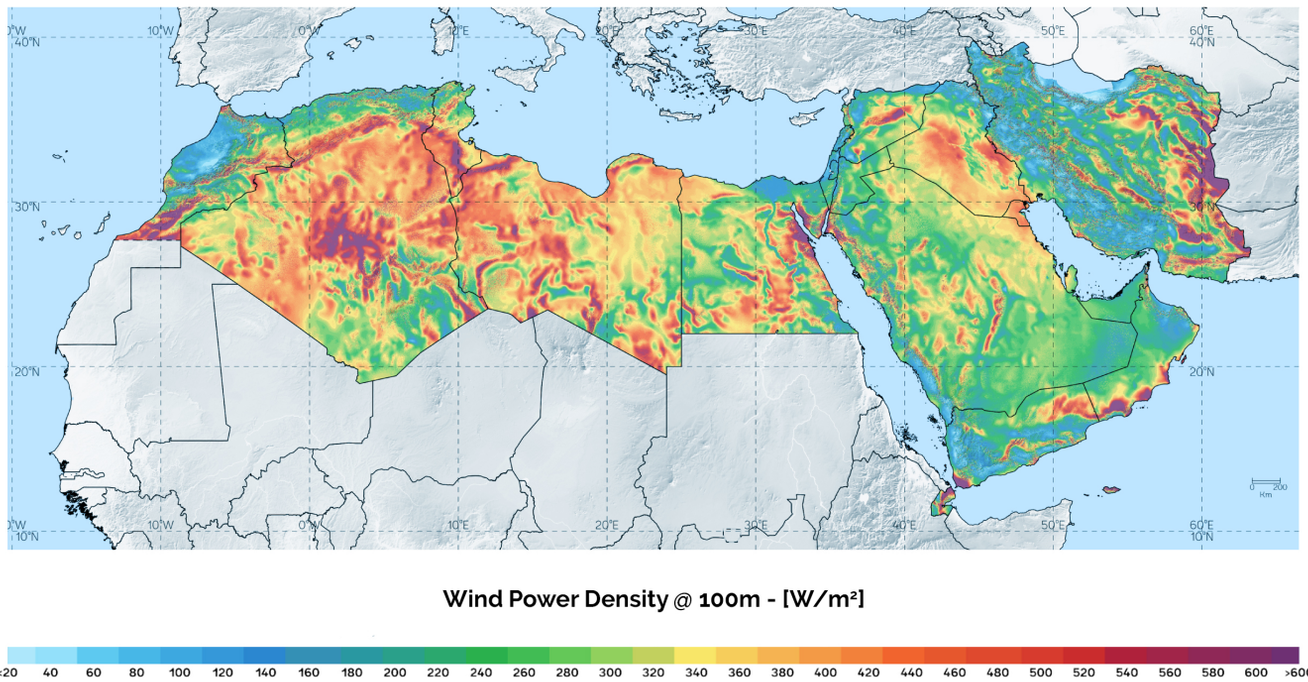


Figure 3: Wind Speed Potential in MENA (WorldBank, n.d.)

Transitioning to domestically generated RE helps achieve energy security, increases economic benefits, and creates more jobs, as it will generate an estimated 14 million additional jobs in the RE sector globally by 2050 (IRENA, 2018, p. 53). Countries adopting this transition can also significantly improve their trade balance (Van de Graaf & Bond, 2019, p. 38), as well as avoid supply disruption and decrease security threats. For example, consider Jordan's gas crisis that occurred when Egyptian gas pipelines were damaged in an attack in 2011. In this case, Jordan was forced to buy more expensive fossil fuel alternatives, like diesel, to generate its electricity. As such, pipelines serve as an easy target to destabilize a region's economy, while RE sources are much safer.

4.1.2 Fossil Fuel Net Exporters:

As major oil and gas exporters, resource rich countries in the MENA region, like Saudi Arabia, the United Arab Emirates (UAE), Iraq, Kuwait, are economically dependent on the oil and gas trade. The same holds true for major natural gas exporters, like Qatar and Algeria, whose resource wealth was a significant part of their GDP in 2014, as shown in Figure 4. These numbers have barely changed in the wake of the 2014-2016 oil price collapse (Stocker, Baffes, Some, Vorisek, & Wheeler, 2018, p. 1). In response, countries like the UAE started to reform/diversify their economy to become less reliant on oil exports (UAE facts and figures, 2018). Net exporters' reliance on oil is likewise reflected in their government budgets. For instance, oil revenues account for 90% of Saudi Arabia's budget. On the one hand, volatility in oil prices can easily be transferred to balance its budget (Fattouh, Poudineh, & West, 2018, p. 19). On the other, the depletion of oil reserves represents a dire challenge to these economies, especially in countries like Bahrain or Oman, where the threat looms in the near future (IMF, 2016, p. 16). As such, these countries must transition to RE quickly to secure sustainable energy sources for future generations.

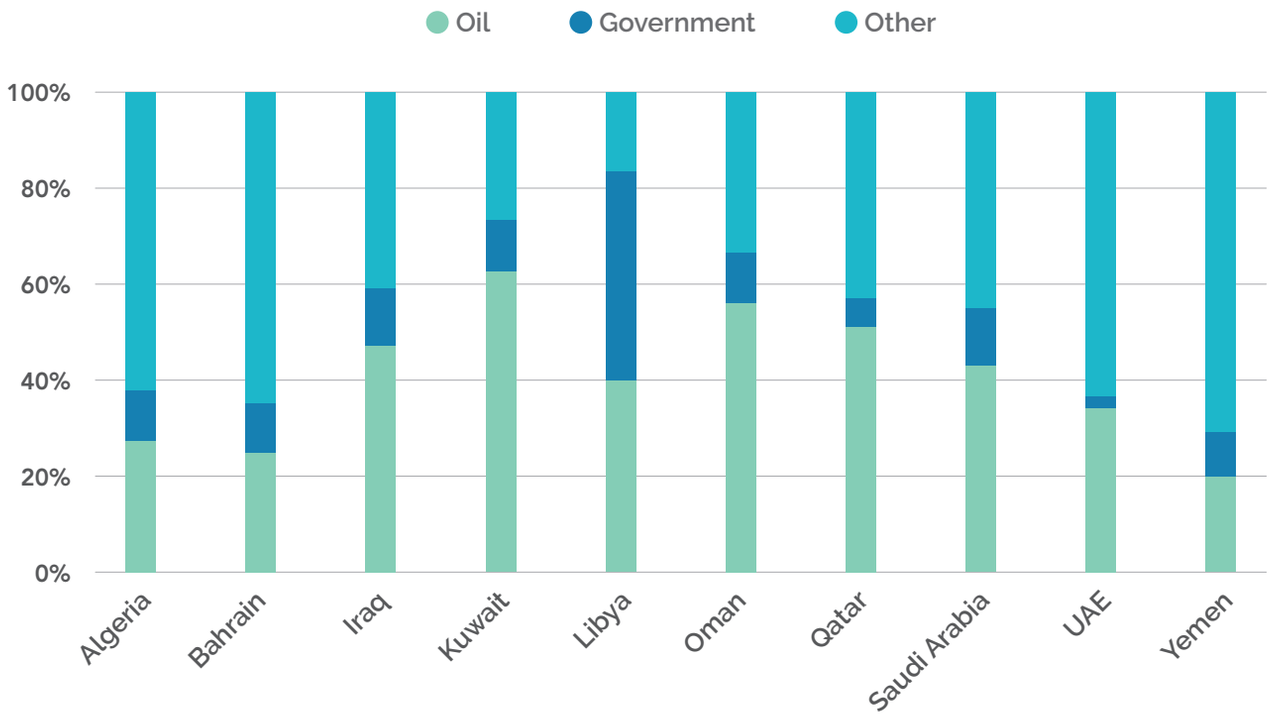


Figure 4: GDP Composition of Arab Oil exporters 2014 (IMF, 2016)

In addition, state subsidies also place a burden on those governments' spending. In 2014, the collapse in oil prices incentivized governments to reform energy subsidies, especially in oil exporting countries, where energy subsidies represented nearly 6% of GDP before the oil price collapse (WorldBank, 2018, p. 7). During this period, a majority of oil exporters introduced subsidy reforms and started to reduce utility subsidies (Krane & Hung, 2016, p. 1; World Bank, 2017a, p. 92). Accordingly, while subsidies represent a major challenge for exporting countries, subsidy reforms can relieve pressure on government budgets. Thus, these reforms helped to restore fiscal space and deter excessive energy consumption (IMF, 2017, p. 19). These challenges reinforce the importance of both a diversified economy and a diversified energy mix that prioritizes RE.

The common misconception that RE investments do not yield high returns can be settled based on the following two points:

- The Energy Return on Investment (EROI) is longer for RE than fossil fuels, but it remains economically viable in terms of Levelized Cost of Energy (LCOE)[1]. Likewise, the EROI will continue to decrease with the development of many new technologies, leading to a drop in costs and an expansion of investments (Bloomberg NEF,2018, p. 56).

- The fossil fuel EROI ratios are usually measured at the extraction stage, when oil, coal, or gas is removed from the ground. These ratios, however, do not take into account the energy required to transform oil, coal, and gas into finished fuels, such as petrol used in cars or electricity used by households, which completely changes the whole equation in favor of renewables (Brockway, Owen, Brand-Correa, and Hardt ,2019, p. 612).

Accordingly, the oil and gas sector should still be utilized in the short term during a transitional stage until RE becomes the primary source of energy in the domestic energy mix.

62 "Report to the United Nations Economic Commission for Europe Executive Committee on the Implementation of the Priorities of the UNECE Reform for Strengthening Some Activities of the Committee," United Nations Economic Commission (UNECE), December 17, 2008.

4.2 Recommendations

1. Implement subsidy reforms to move towards a gradual fossil fuels phase-out, with consideration to current socioeconomic limitations and climate change impact.

2. Deploy more local RE resources according to each MENA country's respective needs, including photovoltaics (PV) installations, concentrating solar power (CSP) and wind turbines, in the following ways:

- Adopt policy reform measures for small-to-medium-scale RE projects allowing households and commercial consumers to install RE systems.

- Provide a safe investment environment for investors, while also customizing policies according to project scale and technology type.

- Finance RE projects through international and local financial institutions, like the World Bank and local banks. The involvement of these institutions would engender long-term sustainable developments.

- Manufacture RE technology components locally, including, but not limited to, PV panels, inverters, wind turbines, CSP mirrors and cables, all of which will create jobs and promote economic growth.

- Encourage small-to-medium-scale RE projects and decentralized electricity generation through incentives, tax exemptions, and public awareness campaigns, similar to the model adopted by Jordan.

3. Decouple fossil fuels from the economic growth model through:

- Horizontal diversification through investing in other sectors (e.g. agriculture, tourism, and industry depending on each country's local resources), reinforcing these sectors with RE, and incorporating special incentives.

- Vertical diversification through including refined products in net exporters' hydrocarbon exports.

4. Develop a clear plan for energy transition, including specific time frames depending on the country's current political and economic context. This plan should incorporate all stakeholders and civil society members along with clear government engagement.

5. Establish better regional cooperation between net exporters and net importers to achieve regional energy security. This can be reinforced by creating a MENA energy trade market, with consideration to compatibility between energy supplies and demand profiles.

The shift towards the knowledge economy and climate change make the global challenge of finding an affordable, secure, and sustainable energy supply (the "energy trilemma") all the more pressing. Nowhere does this apply more than in the MENA region, where efforts to tackle this challenge occur against the backdrop of political and economic transformations (Jalilvand & Westphal, 2018, p. 269).

MENA countries are 50% more energy-intensive than the world average per unit of GDP (Jalilvand & Westphal, 2018, p. 5). This can be attributed to several causes: lack of awareness of the importance of energy conservation; inefficient appliances and equipment (in industries and lighting/heating systems); and lack of EE building codes and other regulations (World Bank, 2016, p. 11). An EE-friendly environment is necessary to tackle waste, and there are two sectors integral to solving this issue: building and transportation. In the building sector, lack of insulation, poor material and construction standards, and technical losses allow for energy inefficiency. In the transportation sector, focus on privately owned motorized vehicles, lack of public transportation, and lack of non-motorized means of travel cause wasteful energy practices. Thus, reforming these two sectors can significantly improve EE.

MENA countries heavily subsidize energy, which leads to overconsumption and inefficiency (El-Katiri & Fattouh, 2015, p. 7). Energy subsidies constitute a heavy fiscal burden on many governments and consequently affect these countries' quality of life, as finances for other public services, such as education, healthcare, and transportation, are squeezed (El-Katiri & Fattouh, 2015, p. 15). Opponents to market reform claim that these energy subsidies benefit poorer classes, however, a closer look proves the contrary (El-Katiri & Fattouh, 2015, p. 4). For example, gasoline subsidies benefit middle and high-income households more than they benefit low-income households, as the latter cannot afford cars (Ibid.). Subsidies are also inequitable because they naturally benefit energy-intensive industries more (Ibid.). As such, a deeper look into the economic and environmental effects of these subsidies is crucial.

Subsidies are not the only obstacle facing energy market reform. Many MENA countries have complete control over their electricity sector supply chain, from generation to transmission to distribution, through state-owned electricity firms. Although transmission is a natural monopoly, generation and distribution have remained under public ownership, which has prevented competition in these sectors (Bacon & Beasant-Jones, 2002, p. 3). Furthermore, improving the efficiency and flexibility of the electrical grid is crucial. This can be done by dealing with non-technical losses in the grid (in other words, theft), a significant problem in the MENA region (Benali, 2019, p. 49), as well as minimizing technical losses through improved technologies. Other ways to improve efficiency is by first installing smart grids, which manage supply and demand, and second by improving infrastructure, which takes care of technical losses. A smart grid is an innovative network that can increase electrical grid reliability, security, and efficiency by employing a variety of technologies, such as communications and intelligent monitoring. GCC countries, for example, already invest heavily in smart grids (Utilities, 2014). When several countries connect their grids together, they can create a super grid, which has similar benefits to the smaller scale smart grids. It can also smooth out supply and demand by allowing countries to export and import electricity from one another.

Free flow of goods and people represent a major contributor to economic growth. In this regard, energy is key, especially considering that the transportation sector consumes 26% of the world's energy (EIA, 2016, p. 63). Investing in the public transportation sector has the potential to curb GHG emissions, fight pollution in cities, decrease energy waste from traffic jams, and increase public spaces. Underdeveloped public transportation systems in the MENA region has led to a reliance on gasoline-powered private vehicles for transportation. Public transportation is not the only solution, however. Electrification and the use of hybrid vehicles in both private and public transportation can coincide with the expansion of public transportation networks.

5.1 Challenges

The two sectors that generate the most carbon dioxide (CO_2) in the MENA region, and that have the greatest potential to control it, are the transportation and building sectors. Conforming existing buildings to EE standards may be a costly and strenuous task (World Bank, 2016, p. 126). Even if new energy efficient legislation is introduced, enforcing the law will still be challenging (Ibid.). Additionally, removing subsidies on energy products is a politically delicate task, since they constitute a major part of the social contracts in a number of MENA countries (El-Katiri & Fattouh, 2015, p. 14). Another challenge relating to the economy as a whole is that oil-rich MENA countries have not yet attempted economic diversification to ensure stability and prosperity (Lee, 2019). Diversification in these countries is imperative, considering that international oil prices tend to fall due to changing energy dynamics (El-Katiri & Fattouh, 2015, p. 15).

With regards to the electricity sector, the region lacks investment in grids (El-Katiri & Fattouh, 2015, p. 5). Small, antiquated grids stunt RE growth and cause considerable technical losses. Theft from the grid also remains a widespread phenomenon (Benali, 2019, p.49). Policy makers in the region tend to see interconnections with neighboring grids as a mechanism for managing emergencies rather than a tool for optimizing the power system (M. Akhonbay, 2018, p.139). Most MENA countries also face institutional challenges in this sector, as the regulator is usually not independent of the government, thereby making the sector susceptible to political influence (Ibid.). As such, RE investors also often cite bureaucracy and corruption as a consistent problem (Ibid.).

There is also a reluctance to use public transportation in the region, as people there tend to view private transportation as the main method of transportation. Furthermore, some, women specifically, avoid using public transportation because of fear for their own safety (Reuters, 2019). Cultural aspects are of course not the sole reason. The lack of investment in the sector and paved walkways have led to a reliance on private transportation. All of this hampers the potential of expanding public transportation systems.

5.2 Recommendations

1. Energy Consumption:

- Incentivize the adoption of EE equipment and appliances by reducing taxes on them (e.g. light-emitting diode [LED] lighting) and introducing appliance labeling.
- Capacity building through training local experts on energy auditing and launching awareness campaigns focused on the importance of energy conservation.
- Remove fossil energy subsidies (except those for poorer classes and the most vulnerable social groups) in a gradual and proven way.
- Transition steadily into RE to reduce generation costs.

2. Grid and Electrical Generation:

- Reform the energy sector and allow private sector companies and individuals to participate in the power generation/distribution market.

- Invest in smart and super grids, which will improve the reliability, affordability, and security of electrical supply.
- Enforce the law to protect the national grid from theft.
- Offer concessional loans aimed at upgrading grid infrastructure.
- Raise awareness on the role of citizens in smart grids and the benefits of utilizing RE as opposed to fossil fuel energy.

3. Transportation and Building:

- Introduce a carbon tax on gasoline vehicles and reduce taxes on electrical and hybrid vehicles.
- Incorporate and deploy electric buses in public transportation.
- Encourage people to start using public transportation by ensuring low ticket prices and raising awareness through media campaigns and school curricula.
- Mandate energy auditing in residential houses, industries, and enterprises.
- Introduce and enforce EE legislation (in building codes, for example).

4. Economy:

- Develop tourism and other promising sectors to diversify the region's economies.
- Enhance transparency and accountability and curb bureaucracy so that the business landscape encourages trustworthy investments in the energy sector.
- Develop frameworks to encourage entrepreneurship and adapt education systems accordingly.

Renewable Energy Deployment and Energy Efficiency Strategies
for Climate Change Mitigation and Adaptation in the MENA Region

According to the United Nations Framework Convention on Climate Change (UNFCCC), climate change refers to a change of climate directly or indirectly attributed to human activity that alters the composition of the global atmosphere, in addition to natural climate variability observed over comparable time periods (IPCC, 2014, p. 525).

Energy production is a crucial component for social and economic growth, yet it presents several different challenges; energy security and energy access are crucial, but most important of all is minimizing energy's contribution to climate change (IPCC, 2014, p. 528).

The graph below shows that electricity, heat generation, and consumption are the main contributors to GHG emissions worldwide and, therefore, the major contributors to climate change.

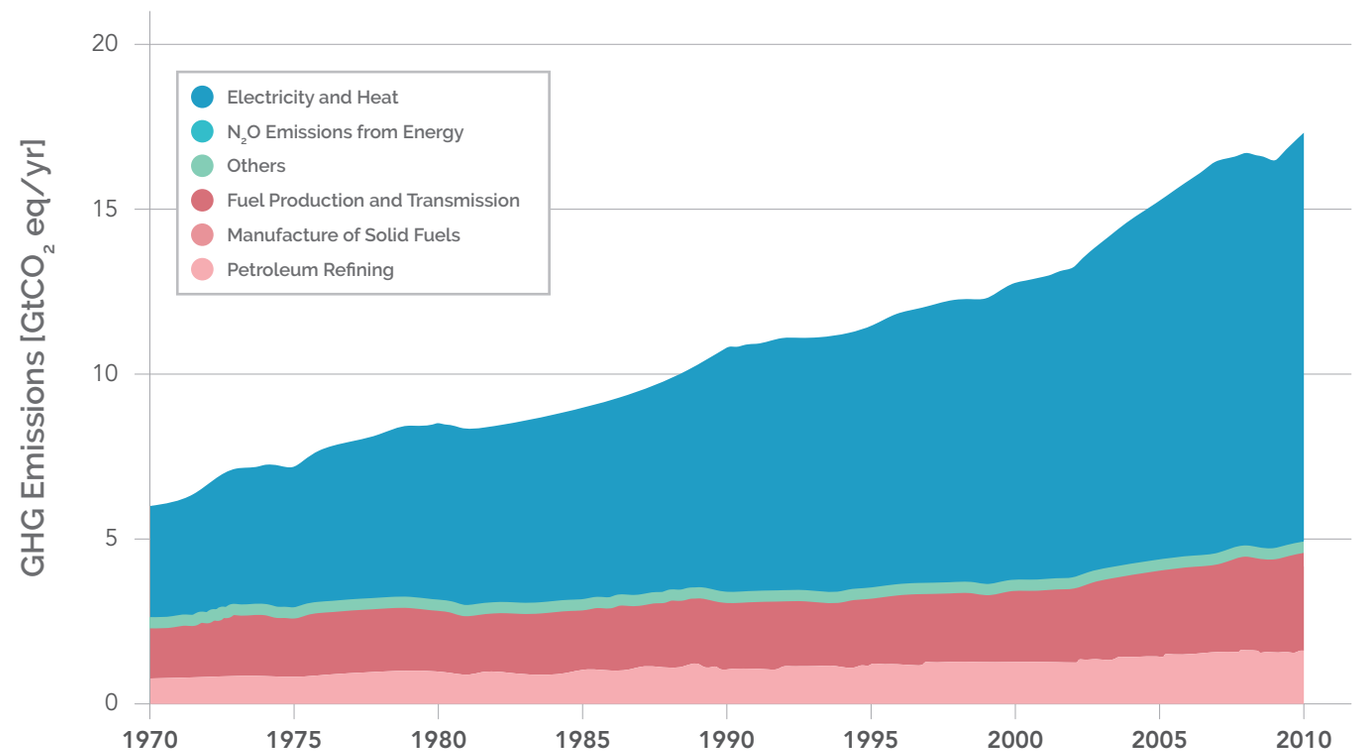


Figure 5: Energy supply sector GHG emissions by subsectors. The table shows average annual growth rates of emissions over decades and the shares of different emission sources (related to absolute emissions) (IPCC, 2014, p. 523).

6.1 Challenges

The main challenge facing the MENA region is reducing GHG emissions to meet the National Determined Contributions (NDCs) targets in accordance with Paris Climate Accord commitments. The MENA region has witness an over 100% increase in CO2 emissions from 2000 to 2010 (Figure 2). Decarbonizing the power and transportation sectors can help control these emissions, as they are the two major contributors to GHG emissions in the region. However, the best way to achieve the desired

amount of decarbonization is by increasing the share of sustainable energy sources. This region faces more hurdles than any other region due to its powerful oil companies that hinder and block a rapid RE transition. Since these companies lose revenue in energy transitions, they have no incentive to initiate this transition themselves, so governments would need to spearhead these efforts. However, this is made difficult in the MENA region due to the fact that most of these companies are state-owned. Regardless, governments must enforce laws for the sake of implementing RE projects (RCREEE, 2018, p. 8).

Some of the top 50 fossil fuel companies in terms of operational/produced GHG emissions are located in the MENA region, including Saudi Aramco (1), National Iranian Oil (3), Abu Dhabi National Oil Company (8), Sonatrach (12), Kuwait Petroleum (13), Qatar Petroleum (15), and Iraq National Oil (18) (CDP, 2017, p. 15).

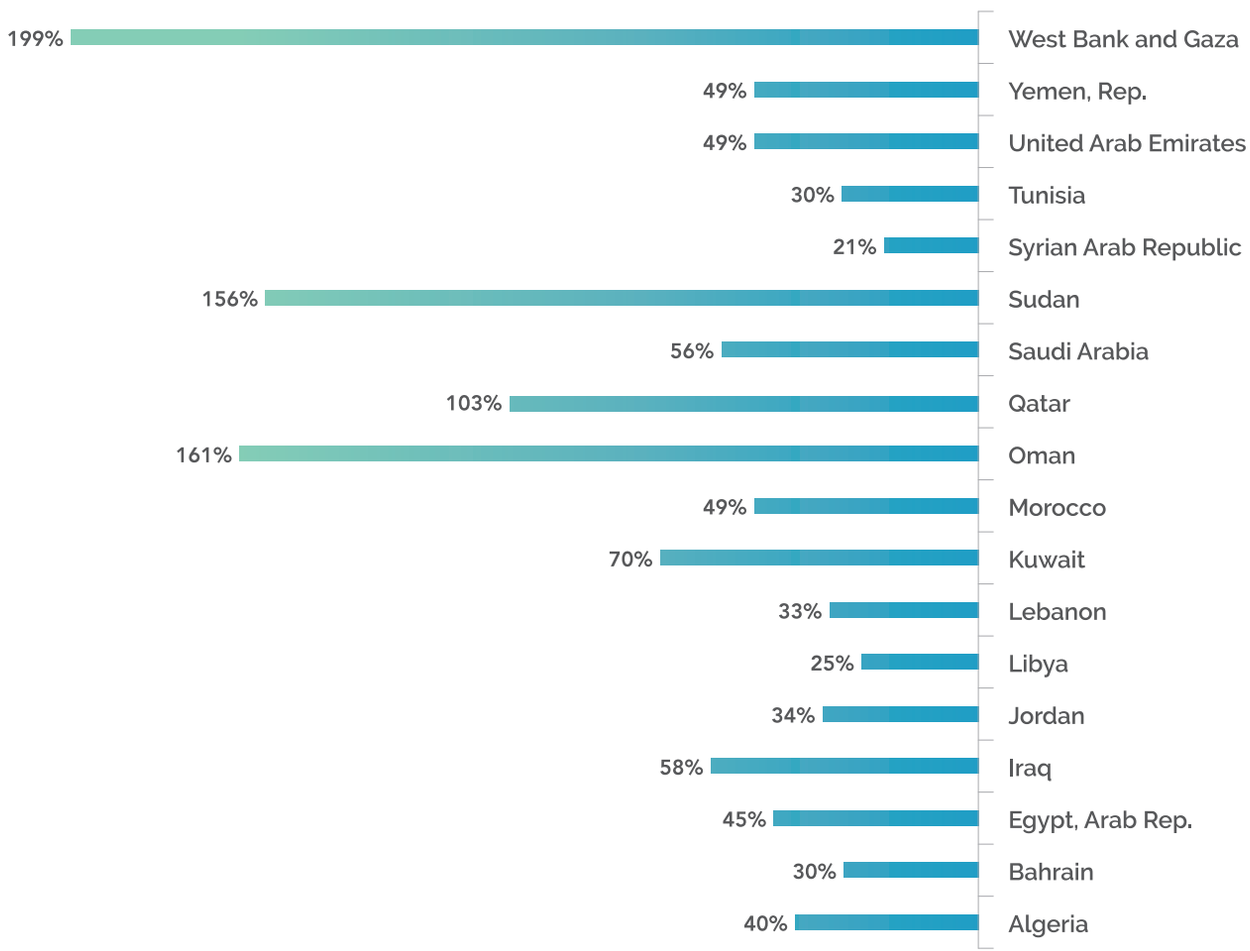


Figure 6: Growth in CO2 emissions from 2000 until 2010 in the ARAB countries (ESCWA, 2013, p. 9).

Another challenge in the region is the lack of financial means to confront the crisis. Even though the MENA region is one of the areas most severely affected by climate change, only 3.6% of global RE investments in 2017 went to Africa and the Middle East combined (Centre/BNEF, 2018). Furthermore, the International Energy Agency (IEA) estimates that the MENA region will constitute a significant share of the increasing global energy demand (RCREEE, 2018, p. 10). The lack of sustainable, reliable, and dedicated funds in the MENA region represents a barrier to stimulating and encouraging sustainable energy markets. This lack of financing is mainly due to the high investment risks, as well as the lack of expertise from local small and medium-sized enterprises (SMEs) and local banks in promoting and assessing the viability of sustainable energy projects (RCREEE, 2018, p. 13).

6.2 Recommendations

1. Encourage widespread and decentralized RE deployment through incentivizing private rooftop solar panels within these countries. Additionally, strengthen the market by encouraging SMEs to revive and develop sustainable energy economies. In most MENA countries, the energy markets still suffer from a high degree of state ownership, monopoly, and vertical integration.

2. Create a balance between climate change mitigation plans through fostering RE deployment plans and supporting EE practices throughout the power production value chain.

3. Join NDC partnerships and initiatives aimed at fostering NDC targets. Until now, only Morocco has proven its commitment to this cause and moved forward with its climate change and energy goals.

4. Establish MENA cooperation for climate change policies and build a real and transparent coalition in the region. This should also be a means for exchanging expertise and transferring technologies between the region's nations.

5. Focus on EE as a main pillar of climate change adaptation and mitigation. For example, supply efficiency will result in a 9% reduction in global CO2 emissions. This includes power plants, petroleum refineries, and oil/gas extraction.

6. Encourage and facilitate the energy transition for oil/gas producers to adapt their business strategies by implementing EE measures and cutting down GHG emission. This can be done by providing them with an adequate framework and business-adapted regulations.

As the use of non-renewable energy and release of carbon emissions into the atmosphere is a primary driver for climate change, our energy culture and relationship with energy is an area of concern. Energy has an unequivocal link to our social habits and cultural expectations. Furthermore, we must link climate change with human rights and development to achieve a human-centered approach, safeguarding the rights of the most vulnerable while sharing the burdens of climate change equitably and fairly (Mary Robinson Foundation for Climate Justice, 2013). With this paradigm in mind, this paper will integrate society, energy, and climate change into a cohesive whole.

Social and Climate Injustice

Social injustice springs from unequal quality of life, access to resources, and application of human rights within and across societies. Vulnerable and economically weak communities that had little to no historical contribution to the mass industrialization of our present day now suffer most from the injustices arising from it (Grist, 2016). Climate change is an ethical and political issue equally related to human rights and gender equality as it is to environmental issues (Bonewit, 2015). Thus, social injustice is connected to climate and environmental justice, both globally (1) and locally (2). In the MENA region, climate and social injustice vary within and across different countries. Developed cities enjoy strong infrastructure, access to energy, and resources, which is not the case for rural regions in the same country. Moreover, social injustice is also an intergenerational issue (3). The lack of sustainable development and abuse of natural resources in the region, especially in the oil-rich countries, jeopardizes the future of younger generations. These three forms of social injustice have a direct impact on climate change and energy scarcity. In order to achieve socially just energy use, MENA decision makers should utilize the following eight principles to set a common ground for fair policies: energy availability; affordability; due process; transparency and accountability; sustainability; intragenerational equity; and intergenerational equity (Ramazan, 2017).

In addition to these injustices, we must also keep in mind the intersectionality of these issues with gender injustice. Women and girls are the most affected by climate change due to the fact that they are more likely to experience poverty and have less socioeconomic power than men. According to the United Nations, 80% of people displaced due to climate change are women (Habtezion, 2016). Women, especially in rural areas, act as the primary caregivers and providers of food, water, and fuel in the household (Halton, 2018). In addition to the gendered division of labor, mobility, and participation in political and economic matters, women in the region have been marginalized from the centers of political decision making (United Nations Economic and Social Commission for Western Asia, 2016). When considering all of these facts, the intersectionality between how social and climate injustices affect the most vulnerable members of society becomes very apparent. As such, to achieve social justice, these vulnerable communities should remain the main focus and center of any policy.

Social Behavior and Energy Culture – Drivers for Mitigating and Adapting to Climate Change

Energy is often viewed as a resource and commodity instead of an essential societal need for everyday life (E. Shove & G. Walker, 2016). In this way, any discussion on energy should go beyond consumption and electricity prices (Steg, L. et.al, 2015). Thus, with regards to energy policies, we must think beyond the data and recognize social behaviors as the underlying dynamics of demand. One way in which we can change the energy culture and understanding of climate change mitigation/adaptation is through education (Higher Education Climate Adaptation Committee [n.d.]). Energy education in the MENA region is almost nonexistent, which explains both the lack of civic activism in energy injustice and awareness of climate change.

Societal resilience to climate change needs to be reinforced by deepening ties with civil society and holding policy-makers accountable through education programs. Education is not only vital for sustainable, harmonious living, but also for helping communities utilize their local knowledge and expertise.

7.1 Challenges

There are obvious tensions between a desire for cheap energy and the need to prevent CO2 emissions, between protecting secure supplies and keeping energy affordable for society (Grimston, 2010). The prevailing socioeconomic inequalities in the MENA region only strengthen climate and energy injustice. As such, these societies are more vulnerable to a range of climate and socioeconomic impacts. The absence of inclusive policies is one of the primary challenges towards achieving just policies in the MENA region. In essence, effective and efficient energy laws and policies will balance economics (finance), politics (energy security), and environment (climate change mitigation), thereby yielding the best results for society overall (Heffron, McCauley & Sovacool, 2015). If one examines the region's energy laws and policies in detail, it is obvious that economic concerns dominate over the others (see Figure 7). This imbalance creates many challenges for societies, which suffer from energy poverty, climate disasters, environmental and health risks, as well as gender disparity.

As for the social aspect, MENA decision makers closely monitor social engagement and carefully restrict civil society freedoms that threaten effective engagement and change (Saleh, 2009). They also often disregard NGOs as advocates for climate change and energy. A sensitive energy culture, one which possesses an awareness of energy consumption and reinforces EE measures and sustainable social behaviors, is largely absent from the region (UNESCO, 2012). However, NGOs could help raise awareness in this regard through their work. Thus, the exclusion of NGOs and civil society in policy making, as well as the lack educational resources for instilling good habits in peoples' daily lives, will make it difficult to change behaviors and empower communities towards sustainability and resiliency when confronting climate change.

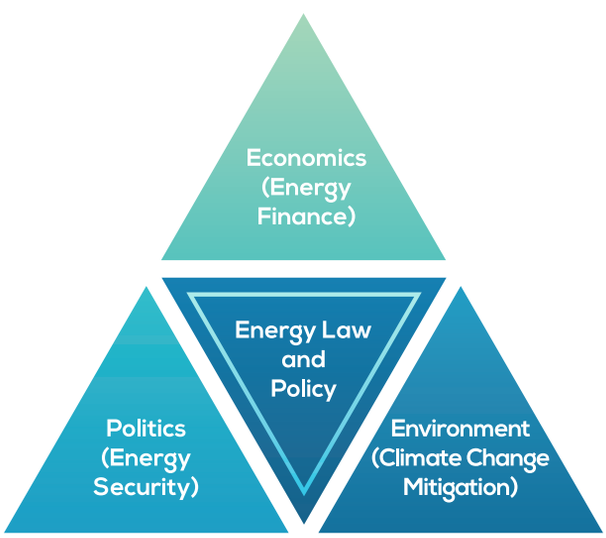


Figure 7: Energy Justice Metric (Heffron, McCauley & Sovacool, 2015).

7.2 Recommendations

1. Establish energy laws and policies that consider energy from a primarily ethical, rather than economic, standpoint and include energy/climate justice as guiding principles.

2. Enable NGOs to effectively engage society in decision making by allowing them access to information, transparency, consultancy, and advocacy.

3. Build regulatory frameworks that empower communities, instill an energy culture through education and awareness, and ensure the general populace's participation, especially women, in all stages of an energy program (design, planning, and implementation), all of which will guarantee a gender-responsive climate action.

4. Reform the education system to foster healthy resources management, environmental responsibility, and energy conservation, which will allow young citizens to learn sustainable habits.

5. Support equal access, control, and distribution of benefits for men and women. Additionally, analyze and understand their levels of vulnerability, resilience, and autonomy when confronted with energy scarcity and climate change.

The 2030 Agenda for Sustainable Development provides a shared blueprint for peace and prosperity for people and the planet, both now and in the future. As we are committed to achieving the sustainable development goals (SDGs), we must enable all countries, especially those facing conflict, to realize them as well. In this context, SDG 7 ("Affordable and Clean Energy") is an enabler that aims to lead the region from fragility to resilience without leaving anyone behind. However, sustainable development is often impacted by the region's conflicts, which deprive nations of the key indicators for successful SDG implementation, such as peace, stability, human rights, and effective governance based on the rule of law. In this regard, we must develop a different model based on new structural conditions in the region.

Energy Access and (in) Security

The MENA region is currently beset by conflicts in Sudan, Palestine, Syria, Yemen, and Libya, which have caused thousands of deaths and displaced millions over the past decade. In these nations, energy access represents the main challenge to recovery. In Sudan, only 56.5% of the population have access to electricity (World Bank, 2017). Since 2007, 1.9 million people in Gaza have lived under a strict blockade with limited access to electricity. On average, they receive 4 to 6 hours of electricity per day (HNO PAL, 2019, p.3), which Israel sometimes cuts in half (J. Heller, N. Al-Mughrabi, 2019). The Syrian Civil War has caused over 5.7 million people to flee the country, and 6.2 million are now internally displaced, including two million registered Syrian refugees in Egypt, Iraq, Jordan, and Lebanon (UNHCR, 2019).

Poverty Rates and Unemployment

Lack of energy access can disrupt socioeconomic development and push millions of people into unemployment and poverty. Palestine for example, suffers from a 52% unemployment rate, one of the highest in the world (UNRWA, 2019, p. 1). Years of blockade forced the majority of self-sufficient Gazans to an alarming level of aid dependency. Similarly, conflicts reduce a country's GDP growth, on average, by 2% per year (World Bank, 2019). The ongoing conflict and humanitarian crisis in Yemen (the worst in the world, according to the UN) has forced close to 80% of Yemen's nearly 30 million people into needing some form of assistance. Over 83% of Syrians live below the poverty line, and over half of the potential workforce do not have access to continuous employment (HNO SYR, 2019, p. 6). All of this endangers one's access to resources, yet the spread and use of new RE technologies could create the chance for new employment opportunities.

Access to Food, Water, Health, and Education Services

Soaring prices and reduced purchasing power have created economic barriers for accessing food, safe water, and sanitation/hygiene facilities – all of which run on energy. The lack of energy access also increases the risk of diseases and other dangerous conditions spreading, such as cholera, malnutrition and other hunger and water, sanitation and hygiene-related (WASH) diseases. For example, over two-thirds of Yemenis require support to meet their basic WASH needs (HNO YMN, 2019, p.35), which contributed to the world's largest ongoing cholera outbreak therein (Sharp, 2019, p.14).

8.1 Challenges

MENA countries currently experiencing conflicts suffer greatly from the impacts of their crises and rely heavily on energy imports to satisfy their socioeconomic needs. Moreover, as temperatures rise in the region, drought, floods, and other extreme weather conditions only exacerbate the conflicts. In

fact, some claim climate change as a catalyst for the conflicts and wars in the region. In this regard, RE can act as an enabler to lead countries towards self-sufficiency and resilience. However, governance during conflicts presents several challenges that directly affect a country's ability to implement policies, thereby complicating the delivery of RE in conflict scenarios. Nevertheless, by addressing these challenges, the countries in crisis can improve their energy security, livability, and stability under SDG7.

It is difficult to install RE in conflict zones due to the damaged infrastructure therein. Furthermore, potential conflict areas preclude the possibility of installing RE, as fighting could break out there at any moment. Additionally, there are no long-term guarantees for their safety, as nobody knows when the conflict will end. Hence, as RE technology is a long-term investment, implementing it in those areas is very risky. Likewise, the "brain drain" phenomenon, especially in conflict areas, also leads to a noticeable lack of skilled technicians and engineers. Thus, as RE technology is new to most conflict areas and advances at a constant and rapid pace, the lack of qualified specialists or technicians hinders the spread of these technologies. The general lack of standards, specifications, associations, and platforms for RE business owners in these countries also means that most systems and equipment do not meet international standards. Moreover, these governments lack the personnel to supervise the transition. These countries and their civil society organizations also need to effectively spread and raise awareness about RE technologies among their people, as most think that RE technologies cannot cover basic electricity needs.

8.2 Recommendations

1. Establish new specialized educational majors, vocational institutes, and technical certified courses for cutting edge RE technologies, which will be a crucial factor in confronting technical and cultural challenges. Likewise, focus on specialized education programs suited for the employment market.

2. Support SMEs, startups, and companies in crisis regions and conflict-prone areas so that they can finance their ambitious RE projects. This will increase competition in markets and create new job opportunities. Some projects could receive financing from outside donors, such as GIZ, World Bank, etc.

3. Develop a common framework for cooperation and integration among MENA states, starting with common legislation on RE product codes and standards among the parties. In this way, these states can standardize quality control and assurance, as well as market surveillance.

4. Support policies that apply to on-grid communities, such as "net metering," "feed-in tariff," and "solar atlas," which will establish an investment climate for private investors and cooperatives in the field of decentralized power generation. This can be achieved by reducing customs fees on RE products and raising customs on other traditional energy products. These products should boost and promote the active market transformation.

5. Expand the use of decentralized energy solutions, not only for short-term needs, but also for long-term developments, as they will help reduce pressure on refugee-hosting communities and fiscal pressures on the state. For example, noticeable progress can be achieved by encouraging farmers to use RE technologies for irrigating their farms instead of traditional diesel pumps. We can also encourage the use of these product, in cooperation with NGOs and donors, to collect emergency water and power health facilities within these conflict areas and crisis-prone countries.

Conclusion:

Youth Climate and Energy Policy Advocacy in the Arab World – 2019

This policy paper has demonstrated how youth from the MENA region envision change for better energy policies that enhance climate and social justice. It also addressed five intersecting factors: fossil fuels; energy economics; climate change; social justice; and conflict regions.

With regards to fossil fuel dependency, energy remains a basic pillar for development. Nevertheless, the detrimental effects of fossil fuel use will lead to accelerated climate change and impact both the economy and civilizational security. Thus, establishing regional cooperation for energy security must also include diversifying energy sources, with an ultimate focus on RE. With regards to energy economics, more than 50% of the MENA countries' GDPs depend on the service industry, which does not produce material goods and increases tax burdens on citizens. RE can help to diversify their economies and alleviate these burdens. Reducing energy consumption, promoting a sustainable Verkehrswende, and engaging in economic diversification are crucial tasks that can be achieved by incorporating and widening RE potential in the region.

With regards to climate change efforts, the rates of temperature rise are alarming. Thus, the paper calls for fast action through encouraging sustainable energy economies, engaging in both climate change adaptation and mitigation measures, as well as joining forces with the global climate change movement through NDCs and wider regional cooperation. Likewise, EE and GHG emission reduction must become a top priority. With regards to social justice and energy-conscious societies, climate justice must include social and gender justice. This means that we must actively support NGOs and civil society and include them in climate and energy policies. Furthermore, the intersectional aspects of social justice must be incorporated into energy policy planning, engaging all parts of society (women, in particular) in the policy process. Education and training here are key to achieving these aims. With regards to renewable energy in conflict areas, we must incorporate the use of decentralized RE in areas without energy security. Governments need to engage in these processes and encourage them with financial incentives. Education, training, and retaining qualified personnel for RE reconstruction needs to become a top priority.

The policy papers focused on the top policy priorities for the region's youth – these are our needs, demands, and visions. We would like to thank both FES and Germanwatch for the training and the outreach provided to us. We also hope that anybody reading these carefully researched and discussed recommendations will begin thinking about how to realize these much-needed changes.

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Friedrich Ebert Stiftung:

Climate & Energy Project MENA

The Friedrich-Ebert-Stiftung (FES) is the oldest political foundation in Germany with a rich tradition in social democracy dating back to its founding in 1925. The work of our political foundation focuses on the core ideas and values of social democracy – freedom, justice and solidarity. As a non-profit institution, we organize our work autonomously and independently. Our regional climate and energy project brings governments together with civil society organizations, provides policy recommendations based on research, and encourages a strong regional agenda for global negotiations. Battling against climate change and promoting of REEE in MENA cities are at the core of this Amman-based project.

FES has initiated this project as part of its strategy to motivate and support climate change adaptation and mitigation efforts. In order to enable a just transition, it is crucial for FES to include young experts and researchers from different backgrounds and countries in this effort. FES is striving to enable the attainment of climate justice, by preparation, inclusion and cooperation in the region.

Germanwatch:

Observing. Analyzing. Acting.

Germanwatch is an independent development and environmental organization advocating for sustainable global development, understood as socially equitable, ecologically sound and economically stable development. Germanwatch's mission is to actively promote North-South equity and the preservation of livelihoods. The organization focuses in particular on the politics and economics of the Global North with their worldwide consequences. Using science-based analyses, Germanwatch informs the public, educates and lobbies, and informs consumers how they can support sustainable development through their own actions. For a global sustainable transition, Germanwatch works closely with organizations around the world. We are interested in sharing best practices and experience on energy transitions. As our neighbor region, MENA countries are key partners for our work. We aim to promote new partnerships between Europe – particularly Germany – and countries in the MENA region to foster energy transitions. We are convinced that both sides in this partnership stand to benefit from increased prosperity, regional stability and reduced climate change impacts.

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