MEDRESET Working Papers

No. 32, December 2018

Assessing EU–Mediterranean Policies in the Field of Energy from a Bottom-Up Perspective: The Case of Morocco

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This project is funded by the European Union's Horizon 2020 Programme for Research and Innovation under grant agreement no 693055.

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Abstract

The purpose of this report is to evaluate the effectiveness of EU policies and measures in the energy field in light of the needs and interests of local bottom-up actors in Morocco. The report firstly provides an overview of the Moroccan energy sector. It reviews the most relevant literature to define current and future trends, to identify the major challenges, analyse current national energy policies and assess their social impacts; then it describes the framework of EU energy policies in Morocco. In the second part, the report discusses the needs and interests of local bottom-up actors in the energy field mainly drawing on the recursive multi-stakeholder consultations held by the researchers in the field. In line with MEDRESET research questions, it highlights the most relevant issues brought up by the local respondents and a few EU stakeholders, evaluating their perception of current Moroccan and EU energy policies in the country and reporting their suggestions for improvements.

Introduction

According to the latest World Energy Council's Energy Trilemma Index Tool,[2] Morocco ranks 68th. High external energy dependency is the main reason behind a very poor performance in the area of energy security – and responsible for this low overall rank. The other two dimensions of energy equity and environmental sustainability are similarly below ideal levels. The overall picture is however brighter: the effects of political instability due to the Arab Spring were felt less strongly in Morocco compared to other countries in the Middle East and North Africa (MENA). Its economy is slowly growing and the country is attracting several foreign investments.

Despite the many challenges its energy sector is facing, Morocco has recently showed encouraging results. The international Energy Agency (IEA) confirms that over the last decade the electricity fuel mix has been diversified. Furthermore, throughout the 1990s and 2000s, the government has promoted programmes to expand electricity access to rural areas, including the use of off-grid renewables. In this way, the percentage of the Moroccan population with

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2 This index ranks countries according to their ability to provide sustainable energy considering the three dimensions of energy security, energy equity (accessibility and affordability) and environmental sustainability. This tool proves particularly useful to understand actual performances and future challenges of a country's energy sector. See the Trilemma online tool: https://trilemma.worldenergy.org.

access to electricity rose from 22 per cent in 1996 to 98 per cent in 2012 (El-Katiri 2016: 2). The progress in this field continued with the Global Rural Electrification Project, which envisaged a large use of renewable energy sources (RES) in off-grid local communities.

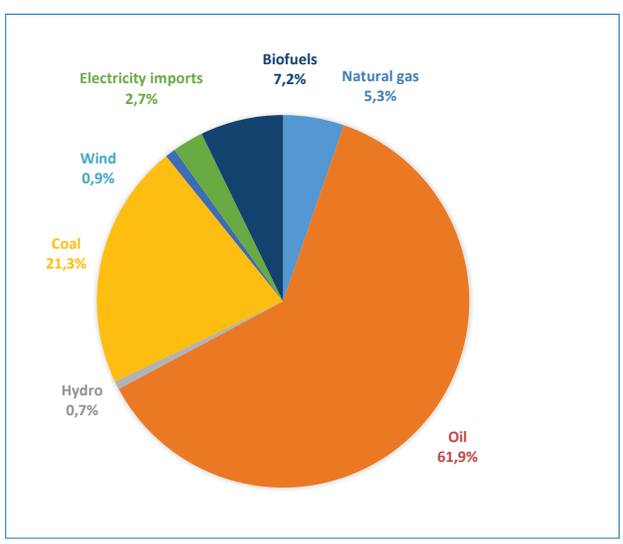
Currently, the overall energy demand is on the rise, and the energy import bill will continue to weigh heavily on the balance of payments, as well as energy subsidies. Not surprisingly, the reforms planned by the government are focused on these two dimensions: the expansion of renewables – in particular the development of wind and solar capacity – and the energy prices system. The EU supports Morocco with targeted investments in energy infrastructures and promotes the reforming of the Moroccan energy market rules and regulation.

1. Overview of the Moroccan Energy Sector

1.1 Current Energy Mix

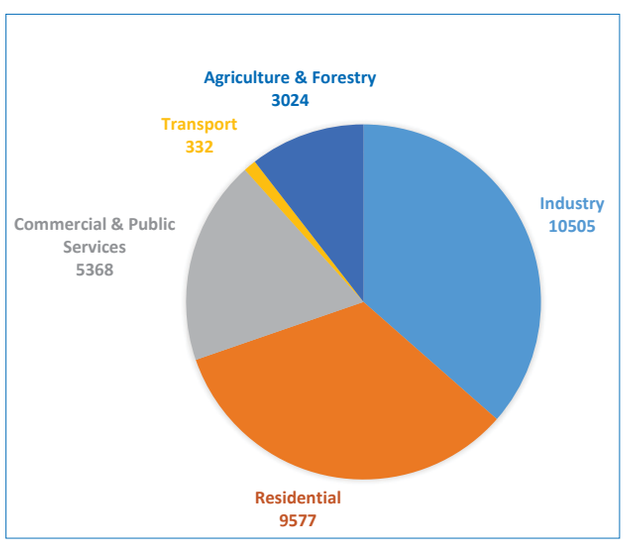
In 2014, Morocco's total primary energy supply was 18.9 million tonnes of oil equivalent (Mtoe), about 60 per cent more than ten years earlier. As shown in Figure 1, the energy mix is dominated by oil (61.9 per cent), followed by coal (21.3 per cent), biofuels (7.2 per cent), natural gas (5.3 per cent), electricity net imports (2.7 per cent) and, to a small extent, hydropower and wind (1.6 per cent combined) (IEA 2016: 15). The largest consumer of energy in Morocco is the transport sector (33.2 per cent), followed by industry (26 per cent) and the residential and commercial sectors (20.4 per cent) (IEA 2016: 47). As it does not possess relevant oil and gas reserves, Morocco depends on imports (mostly of fossil fuel sources) for over 94 per cent of its energy needs (Oxford Business Group 2018), which makes it the largest energy importer in North Africa.

Figure 1 | Total primary energy supply, 2014



Source: IEA (2016: 15).

Figure 2 | Electricity consumption by sector (GW)

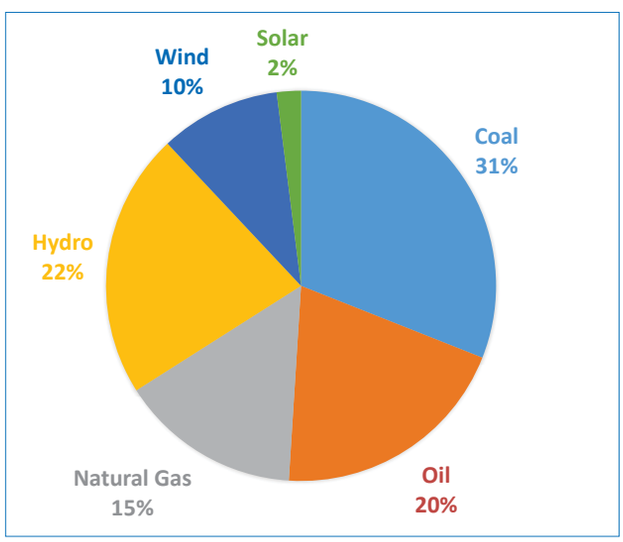


Source: Van Os et al. (2017: 19).

Around a third of the total amount of primary energy consumed is used for electricity generation, which amounted to 33,500 gigawatt hours (GWh) in 2014. Morocco produced 28,000 GWh of electricity itself (the remainder is imported mostly from Spain) with the following mix: coal (31

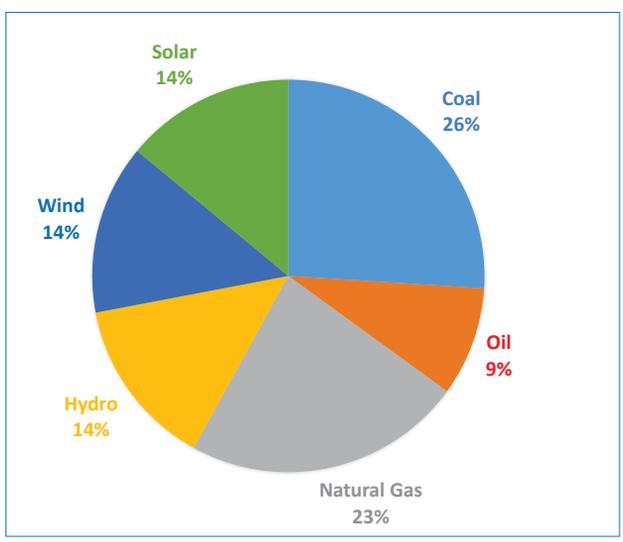
per cent), petroleum products (10 per cent), hydropower (22 per cent), gas (25.8 per cent) and wind power (9.4 per cent) (PAREMA 2017: 12). The largest electricity consumers in Morocco are the industrial and residential sectors, accounting for more than two-thirds of the total energy consumption (20,082 GWh), followed by the commercial and agricultural sectors, which consume 5,368 GWh and 3,024 GWh respectively (see Figure 2). Electricity consumption of the transport sector is almost negligible (Van Os et al. 2017: 19).

Figure 3 | Electricity production by source



Source: Van Os et al. (2017: 18).

Figure 4 | Projected electricity mix to 2020



Source: Res4Med (2016: 13)..

1.2 Future Energy Trends

Total primary energy consumption has increased by about 5 per cent per year since 2004, with per capita annual increases at 3.6 per cent (US Embassy in Morocco 2017). According to a conservative scenario (Khatib 2018: 15), a further increase in total energy consumption is expected to occur, mostly as a result of rising electricity demand, which will reach 52 terawatt hours (TWh) by 2020 and 95 TWh by 2030 (55 per cent and 183 per cent higher than demand in 2014) (Res4Med 2016: 12). The 2020 electricity mix is expected to be as follows: renewables share at around 42 per cent (solar, wind and hydropower will account for 14 per cent each); coal at 26 per cent; natural gas at 23 per cent; and fuel at 9 per cent (Res4Med 2016: 13–14). The Kingdom of Morocco has also set targets for reducing energy consumption by 12 per cent by 2020 and 15 per cent by 2030 through energy efficiency measures (IEA 2016: 8).

Electricity demand growth is expected to be covered mostly by renewables and gas – if the ambitious renewables target is achieved. Specifically:

• Despite recent investments in *exploration* and drilling activities, and despite results suggesting there could still be important undiscovered oil and gas reserves (both offshore and onshore), relevant discoveries have yet to be confirmed and Morocco's hydrocarbon deposits so far remain almost negligible (Amegroud 2015: 4–5). The same holds true for shale reserves, with the additional constraint of environmental concerns (Oxford Business Group 2018). Domestic oil or gas reserves are unlikely to be a factor in the future energy mix, at least in the short run.

• A large part of the additional demand will be met by *imported fossil fuels*. Even if coal is likely to remain a relevant contributor, the share of liquefied natural gas (LNG) imports is likely to increase substantially, as an effect of Morocco's effort to diversify its energy supply (Oxford Business Group 2018). This may happen only if the LNG import terminal in Jorf Lasfar is indeed finalized. In this case, LNG will initially support electricity generation, and later it will be used for the industrial and domestic sectors (Res4Med 2016).

• The share of *renewables* is also expected to considerably increase, as renewable energies are a fundamental part of the government's attempts to bring the total electricity generation capacity from 8,000 up to 14,500 MW by 2020. As shown in Figure 4, solar, wind and hydro will respectively account for 2,000 MW (14 per cent) of this increased capacity, for a total of 42 per cent of production coming from renewables (Res4Med 2016: 13).

1.3 Key Challenges

Overall, Morocco faces two major challenges. The first is its *extremely high rate of dependency* (95 per cent) on imported hydrocarbon energy (predominantly oil), which makes it vulnerable to global price fluctuations and puts a heavy burden on government finances and budget. However, despite remarkable results (such as the inauguration of the first part of the Noor-Ouarzazate CSP plant), and wind prices as low as 30–35 US dollars per MWh, massive investments are still needed – Morocco's first-ever "green bond" was issued last year[3] – especially when considering Morocco's goal of establishing a local renewable industry and becoming a hub for renewable energy (Jenkins 2016).

Morocco's natural gas reserves are at the moment negligible (although there is some potential especially for shale) (Amegroud 2015: 4–5), but in recent years gas imports have increased to satisfy domestic demand and diversify the energy mix. In particular, important investments in LNG facilities and Morocco's role as a transition country for Algerian natural gas which feeds Spain and Portugal through the Maghreb-Europe gas pipeline (Amegroud 2015: 5) can potentially make it a gas transit hub.

The second is the *rise in electricity consumption*, which is already far higher than world average (Oxford Business Group 2018). The drivers of increased demand are a growing urban population, the expansion of the industrial sector and of the economy as a whole (Hochberg 2016: 1), and rural electrification legislation that has successfully made access to electricity virtually universal. The government plans to tackle these issues by differentiating its energy supply sources and by increasing its domestic electricity generation, both of which will require substantial investments for transmission, distribution and storage infrastructure (Schinke and Klawitter 2016: 24).

1.4 Moroccan National Energy Policies

The core of the Moroccan energy policy is its National Energy Strategy, launched in 2009. It includes an ambitious renewable energy plan and covers five key elements: (i) optimizing the fuel mix in the electricity sector, by reducing dependence on oil, increasing the share of gas,

3 "Solar Power Agency Masen Issues Morocco's First Green Bond", in *Reuters*, 7 November, http://reut.rs/2eFtAcC.

solar and wind; (ii) accelerating the development of renewable energies, especially wind, solar and hydropower; (iii) making energy efficiency a national priority, to optimize the increasing energy consumption; (iv) encouraging additional foreign investments in the energy sector to match the volume of needed investments; and (v) promoting greater regional integration with Europe (via Spain) and Algeria (Res4Med 2016: 9). The main policy areas are covered as follows.

1.4.1 Renewables Promotion

Morocco has been investing in renewables since 2009, and major achievements have been the creation of a specific agency for renewables (Moroccan Agency for Sustainable Energy, MASEN), the inauguration of the Noor Plan (solar) and the Integrated Wind Energy Project. Moreover, Morocco has set up a firmer legislative framework, especially with the 2010 Renewable Energy Law (13/09), that promotes renewable energy development and provides a framework for developers and investors in clean energy projects (IEA 2016: 41).

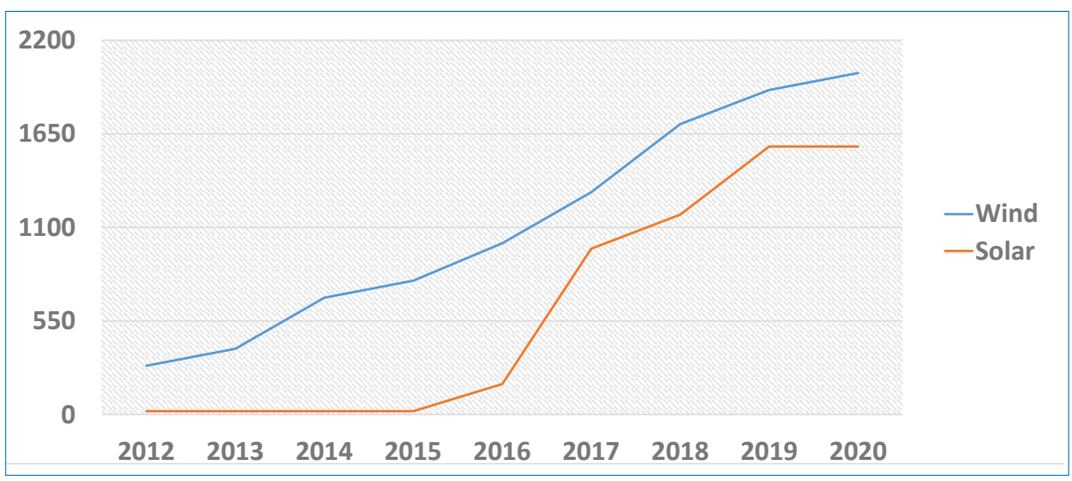
Renewable energies are at the very core of government plans, the target being to achieve a 42 per cent power generation capacity from renewables by 2020, and to raise the bar to 52 per cent by 2030. This policy is in line with Morocco's commitment to the Paris Agreement – particularly to cut CO_2 emissions, as energy consumption is still dominated by fossil energy (Schinke and Klawitter 2016: 24) – but it is also motivated by Morocco's huge potential for solar (over 5 kWh/m2/day) and wind power (5,000 TWh/year) (PAREMA 2017: 21), fundamental assets to decrease energy dependency. Solar and wind installed capacity will indeed increase significantly, as shown in Figures 5 and 6, and especially in Western Sahara.

At present, only two wind farms are operational and their impact (55 MW combined) on total production is rather negligible. However, 40 per cent of the additional wind capacity scheduled under the Integrated Wind Energy Program (850 MW) will be produced in Western Sahara, specifically at Tiskrad (300 MW) and Boujdour (100 MW), where construction will start, respectively, in 2018 and 2020. Even the Noor-Boujdour (100 MW) and the Noor-Laayoune (500 MW) solar plants, which will contribute 30 per cent of the total capacity of the Moroccan Solar Plan, will be constructed in Western Sahara (WSRW 2016). Moroccan officials assure that these projects will also guarantee power supplies to Sahrawi communities, who protest against what they consider to be a plunder of their land (Neslen 2016) and exert pressure to refrain from investments on the territory (Kasraoui 2018). Western Sahara is historically a contested area, with many claiming for independence: the UNSC has recently unanimously backed attempts to renew talks between Morocco and the independent Polisario movement to solve the situation (Markey and Errazzouki 2017).

As concerns solar, Morocco has made substantial investment in concentrated solar power (CSP). In 2015 the first CSP mega-project, the Noor-Ouarzazate power complex, was launched. Its capacity exceeds 500 MW, and has the potential to produce energy for over one million people. The project is also expected to reduce carbon emissions by 760,000 tons per year (World Bank 2015). The plant was built thanks to financing provided by, among others, European financial institutions. The large-scale deployment of CSP technology in Morocco is expected to contribute to reducing technology costs and accelerating CSP deployment in other parts of the world (World Bank 2016). CSP technology is yet not competitive with conventional generation alternatives – despite a phase-out of subsidies – and has not benefitted from the fall in cost of photovoltaics (PV). When set up, the project indeed needed public subsidies and

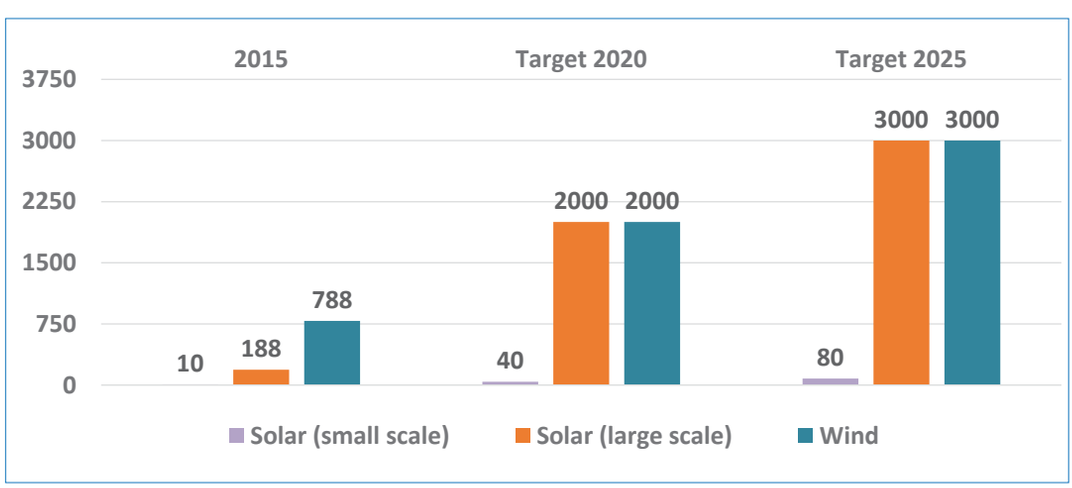
risk mitigation measures to attract investments (GIH 2018: 4–5). The project uses parabolic trough CSP technology, with lower technology risks compared to those for central tower CSP. MASEN made this decision at the time because central tower CSP costs were higher and because photovoltaics were not considered suitable to cover the evening demand peak through storage technologies (GIH 2018: 6). However, while the first three phases of Noor foresee CSP technologies, Noor IV , initiated in April 2017, foresees the use of PV (5 Capitals 2017).

Figure 5 | Solar and wind projected installed capacity to 2020 (MW)



Source: Res4Med (2016: 23, 26).

Figure 6 | Solar and wind projected installed capacity to 2025 (MW)



Source: Res4Med (2016).

As for wind, Morocco has undertaken a broad wind energy programme, called the Integrated Wind Energy Project, developed over a period of ten years with a total investment estimated at around 31.5 billion dirhams (about 3 billion euro). The installed capacity from wind energy is expected to improve from 280 MW in 2010 to 2,000 MW in 2020. The additional 1,720 MW of new wind energy farms are planned as follow: (a) 720 MW under development in Tarfaya (300 MW), Akhfenir (200 MW), Bab El Oued-Laayoune (50 MW), Haouma (50 MW) and Jbel Khalladi (120 MW); (b) 1,000 MW planned in five new sites: Tanger2 (150 MW), El Baida Koudia

in Tetouan (300 MW), Taza (150 MW), Tiskrad Laayoune (300 MW) and Boujdour (100 MW).[4]

1.4.2 Demand Management

Starting from 2014, the Moroccan government has introduced legislation to phase out subsidies for gasoline, diesel and kerosene (liquefied petroleum gas, LPG, is still subsidized). Conversely the electricity prices (including from new plants, i.e., the Noor-Ouarzazate CSP) (IEA 2016) are not representative of actual costs, as they are generally considered below the average costs of production and transmission. Important prices reforms have been carried out in this sense over the 2012–2015 period, as shown in Table 1.

Table 1 | Prices reforms, 2013–2015

	June 2012	September 2013	February 2014	November 2015
Gasoline	Price increase by 20 per cent	Partial indexation mechanism of certain products, with gasoline price increases by 4.8 per cent	Gasoline subsidies eliminated, with prices reviewed twice a month	Full liberalization of fuel gasoline prices
Diesel	Price increase by 14 per cent	Partial indexation mechanism of certain products, with diesel price increases by 8.5 per cent	Per-unit subsidy of diesel reduced during 2014	Full liberalization of diesel prices
Kerosene and other fuel products	Industrial fuel price increase by 27 per cent	Partial indexation mechanism, with fuel price increases by 14.2 per cent	Industrial fuel subsidies eliminated (in June for fuel used for electricity generation), with prices reviewed twice a month	Full liberalization of kerosene prices
Mitigating measures	Direct transfers to electricity company to last four years while measures are taken to ensure the financial viability of the company	Gradual strengthening of the existing social safety nets and social programmes targeting the most vulnerable population groups through improvements in education, health, and assistance to poor widows and the disabled. Supporting public transport		

Source: IMF (2017: 31).

4 See the Invest in Morocco website: *Investment Opportunities: Wind Energy*, http://www.invest.gov.ma/?Id=67&lang=en&RefCat=3&Ref=146.

1.4.3 Regulatory

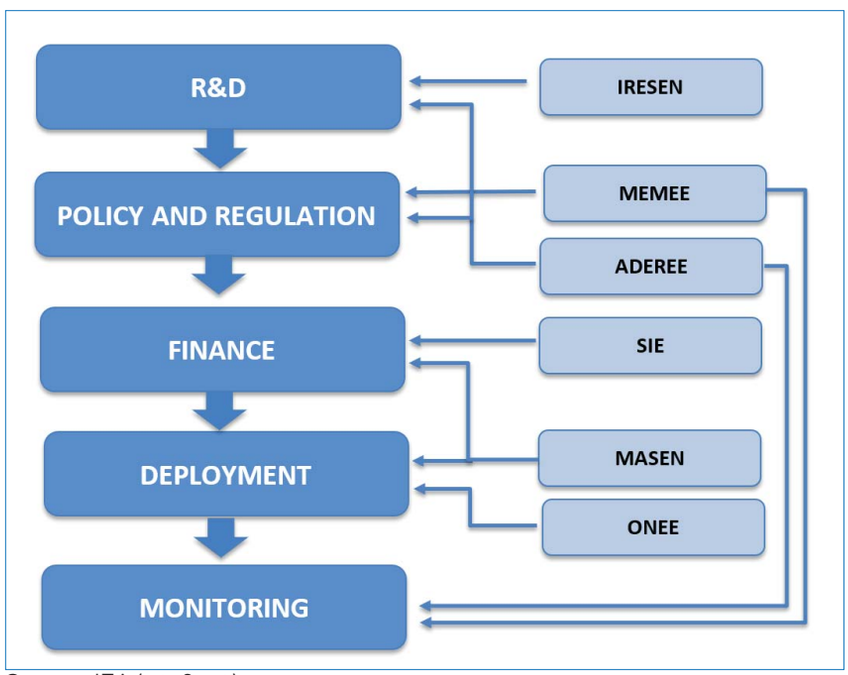
In May 2016, the King of Morocco signed into law an act that sets up the Moroccan National Authority for the Regulation of Electricity (ANRE). However, while the institution is still being developed, the National Office for Electricity and Potable Water (ONEE) remains the decision-maker and regulator of both electricity and gas markets (MedReg 2017b: 90).

Significant progress has been made at the institutional and legislative level (see Figure 7), with the creation of several state agencies for the promotion of RES deployment (MASEN, ADEREE, SIE, IRESEN, ANRE)[5] and the introduction of Law 13/09, aimed at promoting RES production. Furthermore, the business model for RES development in Morocco, consisting in a public–private partnership and financial arrangements that combine domestic and foreign public and private funds, has been considered by the UN Economic Commission for Europe as a positive model for other MENA countries (Laabi 2016).

1.4.4 Gas

Overall, LNG investments will initially support power plants' electricity production, and later will be used for the industrial and domestic sectors. Morocco's ambitious "Gas to Power Project" in Jorf Lasfar (3.9 billion euro) will provide Morocco with a new maritime jetty for the reception of LNG tankers, an LNG regasification unit, two combined cycle gas turbine power plants with a combined capacity of 2,400 MW and a 400-km gas pipeline (Biensan et al. 2017).

Figure 7 | Morocco's renewable energy institutional framework



Source: IEA (2016: 40).

5 Respectively: Moroccan Agency for Sustainable Energy; Moroccan Agency for the Development of Renewable Energy and Energy Efficiency; Energy Investment Company; Research Institute for Solar Energy and New Energies; National Electricity Regulatory Authority.

2. Social Impacts Related to Energy

In order to provide a first insight into a bottom-up understanding of energy-related policies in Morocco, this section will discuss their social impact drawing on an analysis of academic studies and documents by local civil society actors. Objects of concern are several, but five main topics can be considered at the centre of the debate.

2.1 Subsidies

Morocco has a long tradition of fossil fuel subsidies, which started in the 1940s with the introduction of an LPG subsidy scheme, intended as a poverty reduction measure (Verme et al. 2014: 1).

Several goods have been subsidized over the decades and in the last ten years the subsidy system has started to become financially unsustainable (calculated in 2012 as up to 6.6 per cent of GDP) (Verme et al. 2014: 1). Furthermore, fossil fuel subsidies had particularly negative effects on the state budget because they distorted the domestic demand for oil products (World Bank 2018). Therefore, the reform of the subsidy system has become a priority for the Moroccan government.

Fuel subsidies mainly benefitted the higher income strata of the population (El-Katiri and Fattouh 2017: 63). Morocco has indeed initiated important reforms to remove energy subsidies for most fuel products – diesel, gasoline and kerosene – and for electricity. The country has accompanied their removal with some mitigation measures of a general nature – support to school-aged children, subsidized medical expenses for the poor and increased funding for public transportation, as in 2013. Although social programmes targeting vulnerable groups were expanded to cope with energy subsidy reforms, these measures were overly narrow in tackling the problem of energy poverty, as vulnerable electricity consumers were not clearly defined (MedReg 2017b: 94).

Because of reforms, the government managed to cut its spending on subsidies from 56.6 billion Moroccan dirhams (5.8 billion US dollars) in 2012 to 32.7 billion dirhams (3.4 billion US dollars) in 2014, and to save 12.25 billion dirhams (1.2 billion US dollars) in 2015 (Jebari 2016).

A second round of subsidy cuts is scheduled but has been delayed. The government indeed plans to target household primary goods (sugar, white flour and LPG), a move that might have important social implications and even cause riots, as already happened in 1981 and in 1984 when the removal of subsidies proved politically challenging.

This is particularly true today for LPG, and the World Bank considers that the poverty level and inequalities among society are very likely to occur from the removal of the LPG subsidy (Verme and El-Massnaoui 2015: 17). Indeed, LPG is largely used for cooking, heating and lighting in poor or remote households that are not connected to the gas and electricity grids, and has been considered a particularly "sensitive" product by the IMF (2016: 3), being the second most consumed subsidized good in Morocco after flour (Verme et al. 2014: 2). LPG is also used to heat ovens, and is often associated with the production of bread. It has been calculated that, even in the presence of subsidies, the poorest households spend about 10 per cent of their

income on LPG (Verme et al. 2014: 2).

It is believed that removing the subsidy on LPG will have an impact of around 11.8 billion Moroccan dirhams (Verme and El-Massnaoui 2015: 17). It has been estimated that in terms of household welfare, the elimination of subsidies on LPG, electricity and other staple products on which Moroccans are dependant reduces welfare by 3.3 per cent on average, with the impact being more than three times larger for the poorest quintile of society as compared to the richest quintile (Verme and El-Massnaoui 2015: 17). Differently from the increases in the price of gasoline and diesel that had a small direct effects on poverty – for the simple reason that poor people do not typically own vehicles in Morocco – price rises in LPG, bread and flour would increase poverty significantly, according to the World Bank (Verme et al. 2014: 2). Consequences on public health and on the environment are as well likely to occur following the elimination of the subsidy on LPG. In fact, households that cannot afford unsubsidized LPG or kerosene are likely to switch to other less efficient and clean types of fuel, first of all biomass. This switch would represent a step backwards on the so-called "energy ladder" (IEA et al. 2010: 26).

However, despite recent rumours of an "imminent" increase in LPG prices, the government has denied any increase in LPG charges during 2018 (Hallaoui 2017). The government is instead thinking of different possible solutions[6] and is working to define a social register to regulate the distribution of direct aids and trigger the decompensation of raw materials (Mazellier 2018).[7]

The first results of the subsidy reform were thus mainly visible in terms of financial benefits for the government and Morocco's image among its international partners and creditors (Jebari 2016).

2.2 Coal Exploitation

The exploitation of the country's coal deposits goes back to the 1920s. Approximately 240 mine sites are active, but several have been closed over the years. It is estimated that around 200 mines have been abandoned, posing health and environmental concerns to surrounding communities (IDRC 2018). People are frequently reported to continue extracting coal by hand clandestinely, and then sell it to local traders (Naji 2018). The death of miners from clandestine coal mining in Morocco is a frequent occurrence, in particular in the province of Jerada, with the survivors developing serious health problems and in particular lung diseases (AFP 2017).

The debate over coal mainly derives from the closing of mines without adequate compensation or the offer of alternative jobs (Abdennebi and Laessing 2018). The most recent death, in February 2018, sparked important protests, with people asking for alternative jobs.[8] Some small and large associations, such as the Moroccan Association for Human Rights or Amnesty

6 "Vidéo. Le gouvernement va accorder 1000 DH à un million de familles pauvres", in *H24info*, 14 February, https://www.h24info.ma/actu/societe/video-gouvernement-va-accorder-1000-dh-a-million-de-familles-pauvres.
7 This measure, still under construction in the time of writing, aims at building a comprehensive database to collect the economic and social data of citizens and families.
8 "Jerada: Le Conseil provincial organise une rencontre pour 'examiner les contraintes que connaît la région'", in *Huffpost Maghreb*, 30 December 2017, https://www.huffpostmaghreb.com/2017/12/30/jerada-conseil-provincial_n_18917724.html.

International, intervened in the debate (Amnesty 2018), but many protesters are now on trial (Abdennebi and Laessing 2018). For the province of Jerada, institutions at various levels are trying to address the problems, with the government promising economic alternatives and a strong commitment in supporting development programmes in the region for 900 million dirhams (Ministry of Culture 2018) in order to foster local development and improve the living conditions of inhabitants (Naji 2018).

2.3 Gender Perspective

The inclusion of women in the energy transition is largely unconsidered. The Moroccan energy sector is essentially male-driven, and the introduction of participatory procedures in energy transition would give women an opportunity to get involved in associations or projects related to the energy sector and at the same time would contribute to a better understanding of the consumption dynamics. The reasons for a stronger inclusion of women in the sector are many, particularly due to their function within the Moroccan home, dealing with energy consumption and managing domestic affairs. Furthermore women are largely responsible for the education of young people and could play a role in issues of energy efficiency, consumption patterns and energy sobriety – as a more controlled consumption could lead the way to energy savings (Jamea et al. 2017: 10).

Morocco has launched several reforms to promote gender equality (Labani Motlagh 2017: 35–6). The integration of the gender approach into sectorial public policies – energy included – is based on a series of international commitments that Morocco has incorporated into its legislation and national policy in the past decades. Morocco was the first Arab country to submit its Intended Nationally Determined Contributions and included gender in the strategy, placing higher emphasis on rural women (El Hajj 2016: 2, Haddad 2016: 16).

The approach is however far from targeted and satisfactory, although the international legal framework (Sustainable Development Goals 5 and 7 in particular) and the national gender equality reference framework are considered entry points for gender integration in the energy sector (Labani Motlagh 2017: 36).

2.4 Participation of Society in the Energy Transition

Organized civil society and citizens seem to be still too little involved and several associations in the city claim that the energy transition is only possible with the involvement of civil society, as happened in the context of the 4th Desertec Conference held in Rabat on 30–31 October 2013. Desertec was indeed criticized for its top-down approach, considered as not appropriate to engage locally (Calderbank 2013), often considered as "Eurocentric" and not investing sufficiently in transparency, consensus building and participation. The need for a bottom-up and participative "energetic transition" in Morocco is supported for numerous reasons (Jamea et al. 2017), mainly as an opportunity to gain consensus over the transition; to foster energy efficiency; to provide innovative solutions to the specific needs of certain local communities as well as to promote local economic development. Furthermore, the participation of civil society in the energy transition would reinforce the implementation of decentralized production and increase the overall production of renewable energy (Jamea et al. 2017: 17). Another element of debate concerns land expropriation from local communities in order to foster the energy

transition, in particular to build solar plants. According to some, mega-projects are easily prevailing over issues of justice, accountability and collective good (Hamouchene 2016).

2.5 Employment

According to a UN case study on policy reforms to promote renewable energy in Morocco, the overall job creation potential of the renewable energy sector in Morocco is estimated to be over 23,000 jobs in 2020 (UNESCWA 2017: 41).

The construction of NOOR II and III (350 MW) involved approximately 2,000–2,500 direct jobs. Moreover, additional indirect jobs were created in local enterprises that supply materials and equipment. Training needs in renewable energy are estimated at 4,300 technicians, 4,800 skilled workers and 1,300 engineers by 2020. In parallel, training needs in energy efficiency are estimated as 13,600 technicians and 4,000 engineers. The three main training institutes specialized in renewable energy and energy-efficiency are clustered in one body, the IFMEREE (UNESCWA 2017: 42).

The revolution that solar PV is bringing about in the way energy is produced and consumed will benefit local communities, especially in rural areas that lack proper electricity access. According to the UN Economic and Social Commission for Western Asia, this is expected to come with ripple effects on local economics, boosting social development and decreasing migration rates (UNESCWA 2017: 42).

Recent or ongoing projects, such as Noor I, have created employment opportunities and improved social development prospects, receiving consensus in the region. Some negative impacts were however registered, emphasizing the need for a stronger collaboration and as well as totally transparent and shared decision-making among all stakeholders: local authorities, project developers and the communities concerned (Schinke et al. 2015).

The Siemens factory in Morocco provides an encouraging example of employment opportunities deriving from renewables: with an investment of around 100 million euro, producing wind turbines of approximately 63 metres in length, it has created around 700 direct jobs (Siemens 2016).

Apart from these bright prospects, missed employment opportunities remain at the centre of several protests, such as the already cited impacts related to coal mines.

3. EU Energy Policies in Morocco

Since 2008, when Morocco became an "Advanced Status" country for the EU, the goal of regional cooperation has been mainly to reinforce energy infrastructures in Morocco and to fully integrate the two energy markets, including the possibility for Moroccan renewables to be introduced in the EU green energy market (EU-Morocco Association Council 2008: 8–9). Below the main solutions the EU has built to enhance cooperation in the last five years, with a strong focus on RES promotion and investments.

The EU Commission has financed a series of projects in the energy sector through: (a) the Neighbourhood Investment Facility (NIF), i.e., by providing 38 million euro for the construction of the Noor III project in Ouarzazate;[9] (b) the European Neighbourhood Instrument (ENI) (EU Delegation to Morocco 2017).

The European Investment Bank (EIB) has financed renewables projects in Morocco through the FEMIP Trust Fund. The last such financing, in 2016 and 2018, was directed to support the Noor III and Green for Growth Fund projects.[10] The EIB supports the Mediterranean Solar Plan, one of the key initiatives of the Union for the Mediterranean, aimed at developing renewable energy and electricity transmission capacity in the region (EIB 2015). The EIB has also enlarged the membership of the Green for Growth Fund in 2016, whose mission is to promote, in the form of a public–private partnership with a layered risk-return structure, energy efficiency and renewable energy in Mediterranean countries (EIB 2016).

MedReg in collaboration with GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) has decided to put its efforts into supporting the Moroccan Energy Ministry in the establishment of ANRE. Established in 2016, ANRE was intended to become the body in charge of the Moroccan electricity sector by 2017 (MedReg 2017b: 90–94). In the framework of the MedReg–GIZ collaboration, three main challenges were identified as crucial for the newly established Moroccan regulator: accompanying the substantial technological changes that will take place within the Moroccan electricity sector, ensuring competition in a free market, and supporting the integration of Morocco into the Mediterranean regional market (MedReg 2017a: 19).

Maghrenov, started in 2013 under the European Union's Seventh Framework Programme for research, technological development and demonstration (FP7) and bringing together R&D institutes in the Euro-Med area, has among its partners R&D Maroc and IRESEN.[11]

Regarding multilateral cooperation, Morocco is part of the Mediterranean Platforms for Gas and Electricity, launched by the European Commission in 2015, and has been part of the European association of transmission system operators (Med-TSO) since 2012.

Overall, the cooperation goals of EU and Morocco have remained those of 2008. The transmission of electricity from one shore to the other is at the core of their energy cooperation. As a result of this, (i) the Morocco–Spain transmission line, the only electricity connection between Europe and MENA, acquires significant strategic relevance, and (ii) the additional high-voltage direct current (HVDC) lines interconnecting the two Mediterranean shores are needed to realize the Mediterranean Solar Plan – in particular the setting up a trans-Mediterranean super-grid of HVDC cables, able to export 5GW of energy from MENA to Europe by 2020.[12]

9 European Commission website: *EU Neighbourhood Policy: Morocco*, last updated 19 December 2018, https://ec.europa.eu/neighbourhood-enlargement/neighbourhood/countries/morocco_en.
10 EIB website: *Financed projects* (filter active: energy loans from 2010 to 2018 in Morocco), http://www.eib.org/en/projects/loan/list/index.htm?from=2010&region=5&sector=1000&to=2018&country=MA.
11 See Maghrenov website: *Education*, http://maghrenov.eu/p/education.
12 See Medgrid website: *Our Mission*, http://www.medgrid-psm.com/en/project/our-mission; and Desertec website: http://www.desertec.org.

A clear sign of this commitment is the Joint Declaration on sustainable electricity trade between Morocco and the European Internal Energy Market, signed in 2016 during COP22, which aims to identify barriers to trade in renewable electricity between the five signatory countries.[13]

4. Recursive Multi-Stakeholder Consultations – Analysis. A Bottom-up Perspective on the Energy Sector in Morocco

4.1 Methodology

This section examines the outcome of the recursive multi-stakeholder consultations (RMSCs) on the Moroccan energy sector, conducted by the researchers in the field. The study involved the following categories of actors: (i) national institutions and authorities, (ii) private energy companies operating in the country, (iii) scholars and research centres; and (iv) international organizations and NGOs working in Morocco. Some interviews with European stakeholders operating in this field in Morocco have been added to this analysis for the sake of comparison and additional clarity. This carefully selected sample has therefore allowed a fairly good representation of the sector from a variety of points of view. A total of 22 interviews were carried out. Among the interviewees, 14 were males and 8 were females. Interviews were conducted in two different rounds, in order to expand on the information received in the first interviews on subjects that were less covered (social and gender issues, in particular), and to include interviewees who were not available in the period in which the first round was held. Six interviews with local stakeholders and four with European stakeholders were held during the first round, between October and December 2017, while the second round (March–April 2018) included three interviews with local stakeholders and nine with European stakeholders. Details of the interviewees are available in Annex 1, as also referenced in the RMSC quotes (in these citations, "e" after the interviewee number indicates a European stakeholder). Annex 2 reports a sample of the questions posed to the interviewees, which have been divided into three blocs; the first set of questions address the general situation of the country's energy sector, the second social and gender issues, and the third European action, its impact and how and whether to change the EU's approach. A fourth section includes questions asked to European stakeholders, whose responses were partially included in this report.

Interview requests met with a significantly low response rate, particularly from local non-institutional actors. A scarce presence of civil society in the energy sector, its centralization and the difficulty in reaching energy consumers and associations also contributed to the difficulties in delivering a "bottom-up" approach for these RMSCs.

4.2 Core Issues at Stake

This section provides an evaluation of the outcome of the RMSCs, highlighting the five core issues that were raised and described by the respondents: (i) the impact of Moroccan energy dependence; (ii) the role of natural gas; (iii) the reform of governance; (iv) the discrepancy

13 See *Joint Declaration on the Establishment of a Roadmap for Sustainable Electricity Trade Between Morocco and the European Internal Energy Market*, Marrakech, 17 November 2016, https://ec.europa.eu/energy/sites/ener/files/documents/2016_11_13_set_roadmap_joint_declaration-vf.pdf.

between vision and implementation in national energy policies; (v) conflict over resources, energy poverty and other distributional issues; and (vi) gender issues.

4.2.1 The Impact of Moroccan Energy Dependence

When asked to name the main issues for the Moroccan energy sector, the majority of respondents (such as Interviewees 5, 7, 8) cited Moroccan energy dependence/energy security as one of the three main topics (as already recalled, almost 95 per cent of the country's total energy needs are covered by imports), alongside the reform of governance and either the development of renewables or the discrepancy between vision and implementation in national energy policies. The argument was of particular importance mostly for institutional actors, who also remarked on the impact of the growing energy demand on the increase of energy imports (Interviewee 5e). Others (such as Interviewees 3, 4) expressed concern over the impact of price fluctuations on the Moroccan economy, as a result of this dependence. The issue was also expressed (Interviewees 1, 4) as the key driver for the development of energy efficiency plans, of renewable energies and of gas infrastructures, i.e., the three main focuses of the current Moroccan energy policy.

Globally speaking, the significant attention directed by several respondents (such as Interviewees 5, 7, 8) towards energy dependence highlights how security of supply is perceived by and large as the key topic for the Moroccan energy sector. This strong focus on security of supply is thus overshadowing the importance and the wide economic possibilities of renewable energies, still often considered only as one alternative to reduce the impact of dependence and limiting the chances for international cooperation in a sector that is excessively closed and still widely considered as an exclusive national prerogative. These opinions are strengthened by the doubts expressed by a few respondents (Interviewees 1, 2) on the possibility of expansion of renewables (due to concerns over the technologies themselves and the Moroccan energy system, as discussed below), and of reducing imports by improving energy efficiency (due to the impact of the transport sector, and the difficulties in reforming it).

4.2.2 The Role of Natural Gas

Some of the respondents (Interviewees 10e, 5) cited gas as one of the key resources for the country's energy security, because of the role of the resource in covering the growing energy demand of Morocco, alongside renewables and instead of coal. Indeed, the resource is new – it has been in use only since 2005. Several respondents' forecasts (Interviewees 3, 4) are aligned with those of the Moroccan energy minister Abdelkader Amara, who in 2015 expected Moroccan gas consumption to reach five billion cubic metres a year by 2025 (EIU 2015). Yet, a respondent from the research domain (Interviewee 1) expressed doubts over such expectations, highlighting how industrial demand could indeed represent a boost for Moroccan gas demand, but a major increase in consumption would be undermined by the impossibility of promoting domestic consumption, due to insufficient infrastructure for distribution. In addition, two respondents (Interviewees 1, 5) believe that the same governance issues affecting the power sector (described below) would impact the Moroccan gas market as well, preventing its development.

The discussion over gas supply was varied. A few respondents (Interviewees 3, 10e) considered the position of Morocco and its level of consumption as a chance to promote its role as a gas

transit hub between Europe, North Africa and Sub Saharan Africa, citing also the possibilities offered by the construction of the Nigeria–Morocco gas pipeline. The infrastructure was agreed on in December 2016 but no specifications regarding its budget or timeline have been provided yet.[14] Another respondent (Interviewee 8) considers that the Nigeria–Morocco pipeline won't be operational for five to ten years, due to political/security problems in several countries in Africa.

Nonetheless, unstable relations with Algeria, Morocco's main gas supplier, were a cause of concern to some respondents (Interviewees 1, 11e) regarding the increase in the share of gas in the energy mix. Tensions with Algeria are among the reasons why Morocco is investing a lot in renewables. One EU stakeholder (Interviewee 5e) identified the main causes of the ineffective cooperation in political, technical and regulatory aspects, in particular as concerns interconnections with Algeria.

A few respondents (Interviewees 1, 5) also expressed doubts over the construction of a 4.6 billion US dollar LNG facility in Jorf Lasfar, which they consider as either expensive or inadequate to cover the country's energy needs. The project will also include a 2,400 MW plant but it is however still in the early stages of financial planning, and the Moroccan government itself does not expect construction to start before 2019.[15]

Finally, one of the respondents (Interviewee 10e) from the research domain highlighted the role of domestic gas exploitation as significantly promising for the reduction of Moroccan energy dependency. Yet, despite an increase in exploration activities particularly since 2014, no major advancement has been yet made in this regard. According to one EU stakeholder (Interviewee 8e), onshore projects won't be game changers while there are some prospects for offshore discoveries, because the geological conformation offshore Morocco is similar to other countries' offshore areas where massive amounts of gas have already been discovered (such as Mauritania or Ghana).

4.2.3 The Reform of Governance

Various respondents (Interviewees 1, 5, 10e) identified the governance structure as another key element for the Moroccan energy sector. Governance is indeed considered largely inefficient, thus affecting the country in several ways. The main issue is the burden represented by the state-owned energy company ONEE (Office National de l'Electricité et de l'Eau Potable), which several respondents (Interviewees 1, 2, 5) considered overstaffed and run inefficiently due to significant political interference, and by the complicated dynamics among the different institutional actors, such as the solar agency MASEN, whose competencies are often overlapping with those of ONEE. A respondent from the private sector (Interviewee 3) highlighted the impact of the governance issue on the functioning of regional energy markets. The high level of centralization appears to prevent a complete functioning of local infrastructures, due to insufficient management in regional offices, and a proper development of the energy system, whose geographical differences are often not taken into account by the centralized structure

14 "Nigeria and Morocco Sign Gas Pipeline Deal to Link Africa to Europe", in *Reuters*, 3 December, http://reut.rs/2fTPwD8.
15 See Ministry of Energy website: *Grands chatiers: Gaz naturel*, http://www.mem.gov.ma/SitePages/GrandsChantiers/HYDROGazNaturel.aspx.

of ONEE.

According to one respondent from the research domain (Interviewee 1), the governance issue affects the country first and foremost in the definition of energy tariffs. Due to the complicated negotiations among the different institutional actors, also outside the energy sector, as in the case of the Ministry of the Interior and the Ministry of Agriculture, energy prices for consumers have risen slowly, over a period of 6 or 7 years, thus maintaining a level that is too low for the correct functioning of the energy system. Nonetheless, a recent rise in prices occasioned protests in the country, especially in Tanger.

The governance issue also influences the status of subsidies. Several respondents, from the research domain, the institutional level and the private sector (Interviewees 1, 12e, 2), considered fossil fuel subsidies to be no longer relevant in Morocco, after a phase-out process which started in 2013 and which many consider already at an advanced stage in 2017. Yet, other respondents, mostly from the research domain (Interviewees 12e, 5) consider the amount of indirect subsidies still significant and a wide obstacle that prevents renewables from breaking through. These refer to the artificial low level of tariffs, which one respondent estimated (in relation to gas) to be one fifth of the market price (Interviewee 1), and also generally to the extensive funds delivered from the Moroccan government to ONEE to cover its losses. The governance issue thus appears to impact on the speed of change of the Moroccan energy sector, preventing its opening and, according to some respondents (Interviewees 2, 8), discouraging foreign companies from investing. According to other respondents (Interviewees 5, 10e), the opening towards foreign investment is however encouraging if compared to other countries in the MENA area.

Some respondents (Interviewees 1, 11e) consider the creation of an energy agency, announced in 2015, a possible breakthrough to solve the governance issue, as already happened in the country with the telecommunication sector. An independent authority would limit the conflict among institutions by providing a clearer framework for the resolution of controversies, also improving the definition of policies via an increased coordination. Yet, its success appears to depend on its definitive set-up and on the independence of whoever is appointed to lead it – all yet to be defined.

4.2.4 The Discrepancy Between Vision and Implementation in National Energy Policies

Several respondents (Interviewees 1, 2, 5) highlighted a discrepancy between the global vision of the Moroccan government regarding its energy policy, and its implementation – at least partially as a consequence of the governance issue. One respondent (Interviewee 1) from the research domain identified this incoherence in the lack of detail and documentation in the national energy strategy itself, which has laid out distinct objectives for the various sectors, but with no further plan on how to achieve them. Several respondents (Interviewees 11e, 3, 4) across different sectors recognized the ability of Morocco to successfully finalize a series of projects, such as the Ourzazate Power Station, but at the same time the failure in deploying a systematic development of the energy sector and a capillary distribution and generation of electricity. Indeed, several respondents (Interviewees 2, 5) believe that this incapacity in delivering a detailed energy plan is also reflected in the faults in the distribution mechanisms for electricity – widely managed by the government – and in the numerous missing elements in the legislation concerning renewables or the entry of private companies in power generation.

These are considered as reasons why Morocco will miss the renewables target set for 2020. Furthermore, even recognizing important policy moves and huge investments, some consider that an overall vision is lacking. In particular, one institutional respondent (Interviewee 7e) considers that currently investments are set up to satisfy domestic demand, but as Morocco has the ambition to export energy to Europe, where there is already surplus, investments that exceed the demand are perhaps not rational. Furthermore, transmission lines for this energy would be really expensive and one should consider that already at the regional level Morocco is not well interconnected because of political problems.

On the other side, the opinion of respondents (Interviewees 2, 8) from the private sector and the research domain was also that these objectives were hardly ambitious, considering Morocco's potential for solar and wind energy and the current technological progress in energy transition (indeed, Morocco has been one of the countries where tenders for solar and wind have recently registered historic lows).

Generally speaking, regarding the discrepancy between vision and implementation, renewables appeared to be another critical point for many respondents. According to one respondent for example (Interviewee 8e), there are still pieces missing in the framework provided by Regulation 13/09, which allows private investors to participate in Moroccan power generation. In particular, a clear and non-discriminatory access policy to the grid is still lacking, as Regulation 13/09 did not provide this. Another respondent from an environmental NGO added that Law 58/15 – modifying and completing Law 13/09 – allows a low voltage network to be attached to the grid. In principle, this is very important for the development of renewables, but the degree of application of this law is significantly inadequate, to the point that can be considered not implemented at all due to the lack of appropriate infrastructure (Interviewee 6e). The updated law is there, but according to another respondent (Interviewee 8e), is still preventing an involvement of the medium-voltage market – the one with biggest potential for the spread of renewables – as it is not implemented. According to him (Interviewee 8e), the delay in the opening of the medium-voltage market is also due to the already recalled split of responsibilities between the two agencies in charge of renewables (ONEE and MASEN), and to the fact that distribution companies (that comprise mainly ONEE) have been very reluctant in opening the market and losing their medium-voltage clients to the private sector. Even for high voltage there are some problems, with only a very few projects authorized (namely two or three from NAREVA – a company ultimately owned by the king's holding company – and one project called ACWAPOWER with a Saudi developer). These problems, related to the previous "governance" point, are preventing the private-to-private market to spread, thus slowing the promotion of renewables. As ONEE has been put in charge of approving or rejecting connections, the institution has become the bottleneck for the development of private renewables projects. As the approval or disapproval does not follow a clear process, this has further undermined the appeal of the Moroccan energy market to foreign investors, especially for low- and medium-voltage markets where the procedure appears to be particularly slow.

Another critical point concerns the discrepancy between energy efficiency targets and their achievement. A respondent from the research domain (Interviewee 8) emphasized that despite the ambitious strategy outlined in the national programme for energy efficiency, only very recently have regulatory reforms been made. Positive results are in this sense visible from the recent measures on buildings, in particular with an improvement in thermal regulation aiming at alleviating the energy intensity of buildings and reducing heat and air conditioning needs.

4.2.5 Conflict Over Resources, Energy Poverty and Other Distributional Issues

A member of civil society (Interviewee 6) highlighted the role of renewable energies in the tensions occurring in Western Sahara. While the hydrocarbon exploration activities are performed in non-contested areas, the installation and planning of wind turbines by Siemens and Enel are viewed by Morocco as an occasion to increase its grip on Western Sahara, and promote a deeper exploitation of the natural resources in the area. This is evidenced also by the turbines already installed for the machinery extracting and transporting sulphates in the north of Western Sahara. Yet, no respondent perceived relevant changes in Moroccan energetic policies towards Western Sahara; the installation of turbines thus appears to be only an extension of the policy of past decades to the sector of renewable energies.

Energy poverty was presented as a relevant issue by some respondents (such as Interviewees 7, 8, 6e) and was generally indicated as the reason behind the decision to keep LPG subsidies: the resource is largely employed to bake bread, and a low LPG price helps keep the cost low, supporting the poorest strata of the population.

Energy prices in the country were widely debated in the interviews (Interviewees 1, 12e, 5, 8). In particular, the "social" impact of subsidies is considered a central problem, mainly because many (such as Interviewees 6e, 7) note that subsidies have not entirely meet the goal of sustaining the poorer strata of the population and supporting the precarious situation of some Moroccans. Undoubtedly, on the one side many appreciated the possibility, for Moroccan households that consume little, to pay less for electricity– with industries and households that consume more paying a higher rate. Moreover, the subsidy on LPG is considered, as already recalled, socially fundamental. However, on the other side subsidies are considered to benefit the richer income brackets of the Moroccan population much more than the poorer, deviating from the principal goal of subsidies. One respondent (Interviewee 8) considers that the people benefitting most from subsidies in Morocco are those from industry, because they consume much more energy, especially natural gas. Several respondents (Interviewees 4, 7) consider in this sense that a reform of subsidies is necessary, but emphasize the need to find compensation measures for disadvantaged segments of the population and call for a more progressive and sustainable reform to avoid strong impacts at the social level.

According to one respondent (Interviewee 8), unlike other countries, such as Saudi Arabia, Morocco does not have a solid or a robust social category in the middle that can sustain a strong reform on subsidies and in particular LPG. The government is now thinking about how to deal with people who are not ready to pay 100–120 dirhams for a bottle of butane, and is considering giving them one bottle per month. This is only a suggestion at the moment. According to the researcher (Interviewee 8), however, Moroccans right now are certainly not ready at all to pay 3 times the current price of butane.

In general terms then, cutting subsidies is considered a priority, providing there is a "social" solution behind it. Moreover, the researcher (Interviewee 8) highlighted that financial savings by the government could be used to support local and foreign investments and R&D activities regarding renewable energy.

When talking of energy prices, some raised the issue of lack of communication. For example one respondent (Interviewee 8) provided the example of protests, mainly related to privatization

efforts and consequently the rise in electricity prices in certain areas of Morocco. The strongest manifestations took place in Tanger. According to the Interviewee this is symptomatic of the fact that an effective communication strategy is missing and that the government is incapable explaining the changes underway related to the energy transition and receiving any support from the population.

A related point is that inclusion of the population at all levels is missing. According to a respondent from an NGO (Interviewee 7), most Moroccans now must be aware of the availability of new technologies but much remains to be done in terms of awareness campaigns and also help and support for access to funding. There is a general call towards inclusion, but it is still very weak.

The remarkable 98 per cent level of energy access in the country has also been debated, and in particular the fact that some rural areas have nominal access to energy, but in reality this is only the case for small urban centres, while the majority of the widely dispersed population has still no electricity (Interviewee 5). Other areas appear to suffer from frequent blackouts and thus cannot rely on an adequate electricity supply (Interviewee 5).

4.2.6 Gender Issues

Some respondents (such as Interviewees 8, 12) affirmed that the inclusion of women in the energy transition is absent. In particular, one respondent (Interviewee 9) considered that despite a little progress, insufficient steps forward are being taken. Talking about the electrification rate in rural areas for example, the same respondent stated that the calculation only considers the coverage of the electricity grid but on the other side important indicators for a wider consideration of gender differences are not taken into account. Examples of these are the number of people who actually benefit from this rate of electrification, who can pay for electricity, who have access to it, the impact and the results of access to women and men, the impact in terms of income generation, the impact on women's empowerment, the impact on safety, on food security and much more.

Gender differences must be considered in relation to the level of production, distribution and use of energy, factors that are rarely taken into consideration in the context of decision-making processes, added the respondent.

The same interviewee considers women as more sensitive to the health impact linked to energy poverty, the use of different forms of energy and traditional fuels, thus calling for a better inclusion of them within the energy policies, opportunities and laws: even though sectorial policies related to energy are usually considered "socially neutral", the respondent affirms they are not. Access to finance is another point raised through the same interview, with the respondent considering that in the rural areas there is an indirect discrimination regarding the conditions for access to credit, which is not within the reach of women (who are frequently required to have a title to property).

4.3 How Local Stakeholders Assess EU Policies in Morocco

Generally speaking, the impact of EU energy policies in Morocco is perceived as low or non-existent by virtually all respondents. Almost none of them have directly dealt with European

projects or policies or felt they have been clearly influenced by them. Only one respondent from an international institution (Interviewee 11e) reported having worked with MedReg, while none have had any relation with Med-TSO or with the two recently launched platforms for electricity and gas. Surprisingly, even a respondent from an EU institution in Morocco (Interviewee 12e) showed little or no knowledge about key European projects in the area, such as the failed Desertec.

Some respondents (Interviewees 2, 3) from the research domain and the private sector said they have worked on projects directly with individual Member States, specifically Spain and Portugal, while others, from the institutional level (Interviewee 4), reported having carried out the adaptation of EU standards, such as the ISO standards, for the Moroccan market.

Several reasons were indicated for this low impact. Concerning the Moroccan side, a respondent (Interviewee 6e) pointed to the low level of openness of the market and to the lack of dialogue with external actors by Moroccan institutions, particularly ONEE and MASEN. The consideration of Moroccan energy policy as a strictly national prerogative, as discussed earlier, may have boosted this inability of Moroccan institutions to dialogue with their European counterparts. Furthermore, the lack of an independent regulator appears to some respondents (Interviewees 1, 11e) a major element preventing an involvement of the EU in the reform of the Moroccan energy sector. Limited reliability of Moroccan energy institutions was also named (Interviewee 8e) as one of the reasons why both public and private European energy players have faced difficulties in entering the Moroccan energy market. Nevertheless, a few impediments were also named (by Interviewees 12e and 5, among others) regarding the European side: globally speaking, the European neighbourhood policies for Morocco seem to lack a focus on energy, which is instead complementary to other policies (on water, for instance) or part of Mediterranean-wide cooperation platforms and projects – with thus a limited attention to Morocco. A few respondents (Interviewees 1, 2) also complained about a still strong "Desertec" attitude by European energy players, particularly from the private sector: in other words, the respondents perceived that the European side still looks at Morocco as only a potential exporter of energy (i.e., electricity from renewable energies), trying thus to avoid deeper and stronger partnerships and an involvement in the reform of the country's energy sector. Others (Interviewees 5, 10e), on the contrary, suggested that the EU has very limited interests in the Moroccan energy sector in general, and therefore has no will to increase its commitment. Yet, some respondents (Interviewees 3, 4) felt that such a cooperation could be positive for both parties, as Morocco could profit from EU expertise, while Europe's renewables business could be positively expanded in the country. A respondent from the institutions (Interviewee 4) suggested in particular that Morocco could be a bridgehead for the EU in exporting renewable technologies to Sub-Saharan Africa, thanks to privileged relations between the country and several states in the area.

Several respondents (such as Interviewees 1, 5, 8) gave suggestions on how to improve relations between Morocco and the EU in the energy sector. One, from the research domain (Interviewee 1), suggested a general change of attitude from the European side, proposing a two-way partnership where policies should be designed together and mutual benefits highlighted, instead of imposing the European package of energy regulations. Some respondents, from the private sector and the institutions (Interviewees 2, 4), highlighted the potential of EU support in opening the energy market and bringing more flexibility, in particular trying to reduce the role of long-term power purchase agreements the country is actually expanding. Changes

for cooperation were also expressed in terms of capacity building, which a large majority of respondents (such as Interviewees 4, 8, 5e, 8e) believed would be the area where the EU could be most helpful, and in the adaptation of EU standards to the Moroccan framework. As this is already done by Moroccan institutions but with no support from the European side, some respondents (Interviewees 3, 4) believe the process would be more accurate and future energy relations made easier if this was done in cooperation. The respondents named three areas where cooperation could be most fruitful: energy efficiency, renewable energies and, once the Moroccan energy agency is set in place, the regulatory. One respondent (Interviewee 8) emphasized the prevailing bilateral ties in the energy sector rather than a coherent European engagement.

Conclusion and Policy Recommendations

The results of the literature review, the institutional documentation and the RMSC analysis highlighted the following:

(i) *The most significant issues of the Moroccan energy sector are its energy dependence and flaws in its governance system, and solving the latter could be the solution to address the former*. A growing energy demand is in fact not matched by domestic resources, which are largely non-existent. An expansion of renewable capacity could significantly contribute to reducing the pressure of energy imports, both in terms of electricity and natural gas. Yet, achievement of the 2020 and 2030 targets is subject to a governance reform which has yet to happen.

Recommendation: National authorities should clarify roles and avoid overlapping of responsibilities within energy governance and the institutional structure; better define policies and promote effective coordination among bodies, in order to ultimately allow an increased renewable capacity.

(ii) *Indeed, many respondents identified the political interference, the excessive centralization, the overlaps of institutions and the lack of transparency of the Moroccan energy system as the main obstacles in turning the "vision" of the Moroccan energy policy into implementation*. This translates into inadequate tariffs, missing pieces of legislation and a lengthy, unreliable process which undermines the trust of investors, even impeding the participation of private players in parts of the energy sector (such as renewable generation for low- and medium-voltage consumers). The situation could be reversed, though, by the already ongoing creation of an energy agency. Yet, it is not clear when this will happen, and if this will result in a truly independent entity.

Recommendation: In order to spread a quicker penetration of clean technologies and energy, it is necessary to jointly sustain the unbundling of the centralized structure of ONEE and to allow for a wider participation in the renewable energy sector.

(iii) *Conflict over resources and, in general, tensions in Western Sahara are gaining importance, but the role of energy in the issue is limited*. So far, it is restricted to the installation of a few wind turbines by European companies to power the extraction of minerals, and greater involvement is not expected in the near future.

Recommendation: National and European authorities should sustain the international community efforts to allow a win-win solution for all stakeholders and the region as a whole.

(iv) *Communication efforts over the Moroccan and European actions are still very weak*. On the one side citizens are weakly informed and on the other side institutions might lack a complete awareness on the social impacts of their choices. This often provokes misunderstandings and violent reactions, as well as insufficient social responses.

Recommendation: All actors involved in the sector should empower civil society organizations and crucial stakeholders as agents of change for a more effective energy transition.

(v) *The EU's involvement in the Moroccan energy sector is extremely limited, and it could be greater*. Energy projects, policies and, in general, the presence of EU institutions in the Moroccan energy sector are indeed limited, but institutions such as MedReg or the European Commission could positively support the country in the development of an independent energy agency. Yet, the major obstacle to such cooperation is probably the unwillingness of Moroccan institutions to accept external interference in a sector still considered an exclusive national prerogative.

Recommendation: Strengthening the existing cooperation platforms is fundamental in order to valorise regional resources and catch the related opportunities that would benefit their economies and security.

(vi) *The contribution of the EU can however extend to other sectors, where cooperation might be easier*. This is the case for energy efficiency, where increased support on capacity building was frequently suggested as an option, or in the definition of standards suiting the Moroccan energy sector.

Recommendation: Invest additional resources in training and capacity building to develop and consolidate the local energy framework.

(vii) *Renewables, however, are perhaps the area where the involvement of the EU could be most fruitful*, as the potential in the country is high but the expansion of solar and wind capacity is still limited. In this sense, the approach could be a public–private partnership, considering the already existing involvement of European companies in Morocco and the new approach to neighbourhood policies delineated by programmes such as the EU's External Investment Plan.

Recommendation: Policy makers must allow a wider diversification of investment channels, in order to multiply financial resources sustaining the energy transition in the country.

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Annex 1: List of Interviewees

Relevant Stakeholders at the Local Level

Interviewee 1. Academic based in Casablanca with long experience with think tanks and universities on energy markets, male, 23 October 2017, in Casablanca by Lorenzo Colantoni

Interviewee 2. Moroccan private energy company, female representative, 24 October 2017, in Rabat by Lorenzo Colantoni

Interviewee 3. Public Moroccan think tank, female representative, 26 October 2017, in Rabat by Lorenzo Colantoni

Interviewee 4. Institutional national actor, male representative, 25 October 2017, in Rabat by Lorenzo Colantoni

Interviewee 5. Independent consultant and entrepreneur in the energy sector, male representative, 27 October 2017, in Casablanca by Lorenzo Colantoni

Interviewee 6. Transnational civil society organization, female representative, 17 November 2017, in Rome by Lorenzo Colantoni

Interviewee 7. Moroccan civil society organization, female representative, 27 March 2018, via Skype by Margherita Bianchi

Interviewee 8. Researcher based in Tanger and consultant in the energy sector, male representative, 29 March 2018, via Skype by Margherita Bianchi

Interviewee 9. Moroccan independent consultant on gender issues, female representative, 22 March 2018, via phone call by Margherita Bianchi

European Stakeholders

Interviewee 1e. European institution, female representative, 1 March 2018, in Brussels by Lorenzo Colantoni

Interviewee 2e. European institution, male representative, 1 March 2018, in Brussels by Lorenzo Colantoni

Interviewee 3e. European institution, male representative, 1 March 2018, in Brussels by Lorenzo Colantoni

Interviewee 4e. Energy company, based in Italy, female representative, 2 March 2018, in Brussels by Lorenzo Colantoni

Interviewee 5e. Energy association and platform, male representative, 15 March 2018, via phone call by Lorenzo Colantoni and Margherita Bianchi

Interviewee 6e. Environmental affairs NGO, male representative based in Lebanon, 20 March 2018, via Skype by Margherita Bianchi

Interviewee 7e: EU financial institution, female representative, 23 March 2018, via Skype by Lorenzo Colantoni and Margherita Bianchi

Interviewee 8e. European financial institution, male representative, 28 March 2018, via Skype by Margherita Bianchi

Interviewee 9e. European institution, based in Cairo, male representatives, 5 April 2018, via phone call by Margherita Bianchi

Interviewee 10e. Regional platform and think tank, male representative, based in Paris, 4 December 2017, via Skype by Lorenzo Colantoni

Interviewee 11e. Institutional European actor based in Morocco, male representative, 25 October 2017, in Rabat by Lorenzo Colantoni

Interviewee 12e. EU institution, based in Morocco, male representative, 24 October 2017, in Rabat by Lorenzo Colantoni

Interviewee 13e. EU financial institution based in the MENA Region, male representative, 7 December 2017, via phone call by Federico Mascolo

Annex 2: Questionnaire

Sections I, II and III refer to questions directly addressed to local stakeholders in Morocco. Section IV refers to questions posed to European stakeholders, whose answers were in some cases reported within the Moroccan country report.

I. General Overview of the Moroccan Energy Sector

1) What do you think are the major energy issues in Morocco? Specifically:
   a) What sectors and stakeholders (such as domestic households, heavy industry and others) do these issues affect?
   b) What are the most urgent problems to be tackled? What currently prevents these problems being solved?

2) What is your opinion on the Moroccan energy policies? Specifically:
   a) What is your opinion on the functioning of the Moroccan energy market, in terms of liberalization and the role of the regulatory?
   b) How do you judge its RES-oriented strategy? What opportunities are there from this for Moroccans, for the country and for Europe?
   c) Do you think that enough is done to promote renewables, both in terms of technological development and market integration?
   d) What role could the private sector play and does the government sufficiently enable its inclusion in the Moroccan energy market?
   e) Do you feel ambitions are met by good policies and sufficient implementation efforts?

II. Social and Gender Issues

3) What do you think of Moroccan energy demand management policies and their social impacts?
   a) Are they effective, excessively expensive and which sectors and stakeholders do you think they impact the most?
   b) What could be done to protect the most vulnerable consumers?
   c) How could subsidies – especially on LPG – be phased out avoiding strong social impacts?

4) Do you think a more participatory/bottom-up transition could be promoted?
   a) If yes, how?
   b) What advantages could such an approach bring for a more targeted response to local needs?

5) Are women relevant stakeholders in the energy sector and the opportunities related to the energy transition? And vice-versa what could be the impact of energy transition on women?
   a) Do you think the Moroccan energy policy framework allows for a stronger integration of women into the energy sector? What are the gaps between women and men in relation to the sector?
   b) Is there a civil society push towards a greater inclusion of women in the energy sector?
   c) What measures could be put in place to raise social/women's awareness about an efficient usage of energy resources, considering their traditional role within households and in child rearing?

III. European Action, Impact Evaluation and the Way Forward

6) Do you think that the European energy policies in the Mediterranean and in Morocco are effective? Specifically:
   a) Who is benefitting and who has been negatively affected? Who is considered as relevant stakeholder? What is missing?
   b) How could the European Union better cooperate within the Moroccan energy framework? What sectors and actors should the EU focus on? What should be the EU's priorities in the Moroccan energy sector in terms of issues, instruments and stakeholders?
   c) What has been in your opinion the impact of European investments in renewable energies on society?
   d) What do you think has been the impact of platforms such as MedReg and MedTSO?
   e) What is your general perception of European action in the energy sector of the country?
   f) Is the European Union action perceived strongly, or are bilateral ties (both at the public and private level) stronger?

7) How do the policies by other regional and external players impact the Moroccan energy policy? This includes countries such as the US, Algeria, Saudi Arabia, Iran, China and Russia, as well as international institutions such as the World Bank, the Gulf development funds and so on. Are these policies conflicting, competing or converging with the EU's?

IV. From the European Stakeholders

8) Are there specific obstacles for a fruitful European–Moroccan cooperation?

9) According to you, what are the main sectors and tools of cooperation in the country?
   a) Are the platforms/cooperation mechanisms exploited at their fullest?
   b) What margins are there for improving European–Moroccan energy relations?

10) Is your engagement perceived and appreciated locally?
   a) Is your action/are your investments seen as an added value?

MED RESET

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This project is founded by the European Union's Horizon 2020
Programme for Research and Innovation under grant agreement no 693055