



2nd MEDREG PRESIDENTS WORKSHOP

“A COHERENT REGULATION
TO ACCELERATE THE ENERGY
TRANSITION UNDER SECURITY
OF SUPPLY CONCERNS”

23 JUNE 2022
MARRAKECH
MOROCCO



MEDREG

WORKSHOP REPORT

MEDREG President's message

The Second MEDREG President's workshop is an occasion for the Mediterranean energy regulators to discuss the means to create coherent regulations to accelerate the energy transition under the growing security of supply concerns.

The current conflicts that are undergoing in Europe have raised the concerns related to the security of supply. Security of supply will be based on two main pillars. The first being the diversification of the origin of energy sources, which can be achieved in the Mediterranean by increasing the connection ports between our members. The second pillar would be to produce power locally within each country using renewable sources to enhance the energy independence of our members.

Furthermore, the energy transition is becoming an unrelenting concern to all countries around the world, especially the Mediterranean countries as our region is one of the most affected by climate change. Efforts to accelerate energy transition encompass several topics spanning from increasing integration of renewable energy in the power sector, to promoting energy efficiency measures and developing the concept of prosumers. Energy transition also covers the development in transmission and distribution networks and the development of demand management schemes. The most important topics within energy transition are currently the security of supply and the plans to increase Renewable Energy integration in our grids.

As regulators, we must start reflecting on how to make sure that the potential of developing countries is fully used. Seeking coherent regulations between both shores of the Mediterranean is essential to utilize the region's potential in terms of renewable energy production and to reach security of supply. Regulators are stronger and more voiced together, thus today's exchanges are crucial to build consensus, foster a common vision and ultimately develop coherent regulatory policies that enable reliable and sustainable energy systems.

"The current international context urges us to reduce dependence on Russian gas, and to accelerate the transition to green energy. The Mediterranean region has a role to play to help its Euro-Mediterranean neighbours strengthening their security of supply. Regulators are stronger and more voiced together, thus today's exchanges are crucial to build consensus, foster a common vision and ultimately develop coherent regulatory policies that enable reliable and sustainable energy systems."



PETRIT AHMETI
MEDREG President and Chairman of the
Albanian Energy Regulatory Authority ERE

ABSTRACT

Back-to-back with MEDREG 33rd General Assembly, MEDREG held their 2nd Presidents Workshop to debate on how to achieve a Coherent Regulation to Accelerate the Energy Transition Under Security of Supply Concerns and to understand the energy strategies and how they can be adopted to ensure the security of supply for the region. The workshop was held in Marrakech, Morocco, kindly hosted by ANRE.

The workshop was initiated with an introduction to the Moroccan Energy strategy in specific, where the keynote speakers discussed the upcoming plans in Morocco from energy and financial perspective. The workshop also featured two panels, one discussing Energy Transition in the Mediterranean Region, while the other discussing Security of Supply. The workshop comes at a time when energy transition remains of utmost global priority while understanding the importance of ensuring a constant supply of energy.

The panels were moderated by MEDREG Vice-Presidents, President Abdellatif Bardach (ANRE, Morocco), and President Karem Mahmoud (GasReg, Egypt). Each panel featured speakers from different backgrounds and role in the energy industry.

Discussions and debates in the first panel circulated on how to achieve a common understanding regarding accelerating the energy transition, showing experiences and best practices from Morocco and others in the region. On the other hand, the discussions during the second panel were focused on the security of supply in the Mediterranean region, including comprehending the missing elements to motivate interregional energy trade with a scope on solving security of supply issues.

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This report has been drafted by the MEDREG Secretariat (Mr. Lamine Zitouni and Mr. Omar Raafat). This report and provides the main takeaways of the Workshop.

DISCLAIMER

This publication was produced with financial support of the European Union. The contents are the sole responsibility of MEDREG and do not necessarily reflect the views of the European Union.

ABOUT MEDREG

MEDREG is the Association of Mediterranean Energy Regulators, bringing together 27 regulators from 22 countries, spanning the European Union, the Balkans, and the MENA region.

Mediterranean regulators work together to promote greater harmonization of the regional energy markets and legislations, seeking progressive market integration in the Euro-Mediterranean basin. Through constant cooperation and information exchange among members, MEDREG aims at fostering consumers' rights, energy efficiency, infrastructure investment, and development, based on secure, safe, cost-effective, and environmentally sustainable energy systems. MEDREG acts as a platform providing information exchange and assistance to its members as well as capacity development activities through webinars, training sessions, and workshops.

For more information, visit www.medreg-regulators.org

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1

MOROCCAN STRATEGY, AND ENERGY TRANSITION AND SECURITY OF SUPPLY IN THE MEDITERRANEAN

1.1. Moroccan Energy Strategy

Morocco is considered among one of the rising countries in renewable energy. With bold and ambitious targets, Morocco aims not to only be among the leaders in renewables in the region, but also a collaborator with numerous countries in the region to help achieve their respective targets.

Morocco currently has a capacity of around 4000 MW of energy generated from renewable energy sources. Between 2020 and 2030, Morocco is planning to further introduce an extra 6000 MW of energy generated from renewables. This 2030 goal would mean that 52% of Morocco's energy mix would be from renewable sources. Morocco more recently pledged to have 80% renewable energy capacities by 2050.

With such ambitious targets, one should not neglect the power of investment since such aspirations require a transparent, coherent and competitive regulation for investor. In other words, setting such goals requires a suitable atmosphere that could be attractive for both the private and public investors, whether in the form of providing subsidies for developing the renewable energy infrastructure, or facilitating the administrative processes.

Besides Morocco's internal strategy, Morocco is considered as an ideal partner to the EU, especially during the current times, where Morocco could play a central role in the energy transition and the security of supply in Mediterranean region. This is all thanks to its geostrategic position as well as clear and promoted regulatory framework set by the Regulator, ANRE; Morocco borders the eastern Atlantic Ocean to the west and the Mediterranean Sea to the north. This, in addition to already existing numerous collaborations and integration projects with many countries in Africa in Energy, Agriculture and others, Morocco can act as an global bridge in a multitude of aspects.

1.2. Energy Transition in the Mediterranean Region

Energy transition refers to structural changes in the energy system to switch from a fossil-based to a zero-carbon system. Many countries have already adopted new strategies and set clean energy objectives in terms of CO₂ reduction and minimization of the use of fossil fuels.

The most prominent and obvious method for a successful transition is increasing the share of renewable energy, however, the incorporation of new capacities of renewable energy sources into an already functioning system has proved to have several technical and political constraints. Therefore, some actions and measures are necessary to facilitate energy transition, where the regulator can intervene to leave a positive impact.

This sub chapter provides an overview of the Energy transition in the Mediterranean region, focusing on the Moroccan perspective as well as showcasing the French case study, that also provides the role of the regulator in that regard.

1.2.1. Moroccan Perspective

Masen is the group responsible for managing renewable energy in Morocco, where the lead development programs of integrated projects. As mentioned previously, between 2020 and 2030, Morocco aims to develop further 6000 MW of renewables, where of those 6000 MW, 2500 MW of solar projects, 1120 MW of Wind Projects, and 350 MW of hydro projects are currently being developed. Further details can be seen in the figure 1 below.



Figure 1 - Renewable Energy Capacities Under Development in Morocco ¹

Masen's mission is divided into three main areas: 1. The integrated development of renewable energy installations at the highest international standards, 2. A contribution to the emergence of national expertise in the field of renewable energy and 3. The support of the local areas Masen operates in follows a sustainable model involving economic, human, and environmental criteria.

Besides the implementation and development of more renewable capacities to further enrich the market with clean energy, it is also important to ensure that those capacities are efficiently integrated to maximize benefits. Often TSOs are looked at from such perspective, but the focus should also be on the DSOs, in terms of investments for further development.

1.2.2 French Case Study

Europe aims to be the first climate-neutral continent. Intermediate climate targets have been set for 2030 in the fit for 55: cross-sectorial package and REPowerEU plane: Alleviating EU's dependence on Russian fossil fuel. The aim set for 2030 is that renewable energy will accumulate up to 40% of the generation consumed by the EU.

France's Solar energy target is to reach at least 35 GW of solar capacity by 2028. By this, France would become competitive in solar. The main limitation is the lack of available land and the strong administrative constraints.

On the other hand, in terms of wind energy, France is planning on developing further offshore capacities where France is expecting to give 20GW by 2035 and 40GW by 2050. Offshore wind energy has proved to be more acceptable compared to onshore ones, however, the depth of the Mediterranean Sea causes some constraints. The key learning points for France are the following:

- For Solar Energy, France must make the most use of the uninhabited regions and areas.
- Regarding offshore Wind Energy, floating technologies can solve the problems that would arise due to the depth of the sea.
- Including grid integration as soon as possible in the new RES capacity deployment process.
- It would be mandatory to simplify the administrative procedures and accelerate the permitting processes.

By the end of 2020, France was generating 117 TWh through renewable sources, most of which is generated through hydraulic, as seen in the figure below.

¹ Source: MASEN, as presented by Ms. Fatima Hamdouch

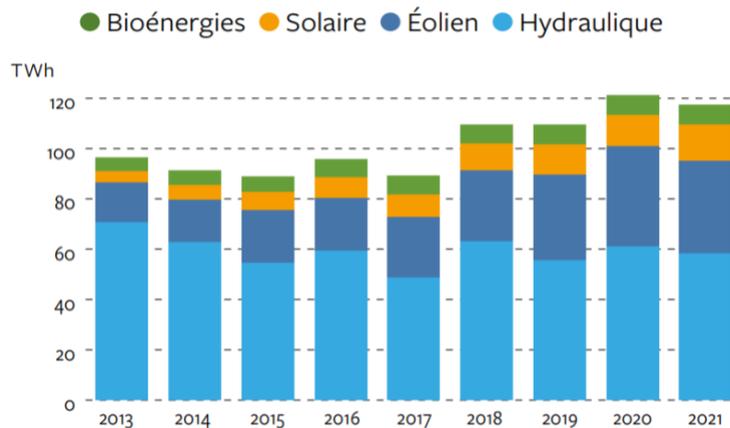


Figure 2 - Annual Renewable Production by Source, France ²

The role of the regulator in that regard is to be a key factor in the energy transition. From a renewable perspective, the French regulator provides expertise in the costs and profitability of renewable energy. Furthermore, they issue an opinion on the specifications and consultation documents for competitive procedures and hold calls for tender and competitive dialogues, and examine bids received in the context of competitive bidding procedures.

1.3 Security of Supply in the Mediterranean Region

In view of the challenges involved in the energy transition and the possibilities of having fully functioning integrated markets and technologies, ensuring security of supply is simultaneously becoming an exponentially more significant topic, especially given the current political situation in the region.

As countries transition to using less carbon-intensive sources of electricity, system operators face several ongoing challenges as the utilization of renewables generally require a higher degree of flexibility from the network to compensate for their intermittency. Possible solutions to ensure security of supply not only encompass transmission grid expansion but also increased cross-border trading options, innovative solutions based on new technologies, or the optimal use of available technologies on the market.

Long term Energy security of supply mainly deals with timely investments to supply energy in line with economic developments and environmental needs. Meanwhile, short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance. Security of supply further deals with market regulations and market policies, as well as a resilient energy value chain through interconnected markets, from supply to transport to distribution to demand and finally to the end consumer.

Furthermore, Regulators are expected to promote and support developments in their energy policies. Regulators should institute favorable conditions for improving security of supply by initiating investments in infrastructure, incentivizing energy efficiency measures, and protecting consumers.

This sub-chapter will provide an overview of security of supply from an Egyptian, Portuguese and Moroccan perspectives.

1.3.1 Egyptian Case Study

Besides the aim of being an energy hub in the Mediterranean region, Egypt is among the countries that have taken solid steps to ensure its security of supply. Firstly, Egypt has invested in the development of a strong internal gas market as per the best international practices. Secondly, Egypt made an outstanding use of the

² Source: CRE, as presented by Ms. Claire Halliche

unprecedented recent gas discoveries, that have not only allowed Egypt to stop imports of natural gas but have transformed Egypt into a net exporter and potential key player in natural gas trade, putting Egypt as among the top LNG players in the region. Furthermore, besides the developments, Egypt's capacities and geographical advantages directly address energy challenges in the Eastern Mediterranean. This provides a quick monetized solution to neighbouring gas countries to exploit their resources and avail it for neighbouring markets, like the European market.

The Egyptian infrastructure that provides Egypt with security in energy supply include a wide scale high pressure grid with a length of 8000 km. Egypt also holds 2 LNG terminals in Idku and Damietta, and an FSRU in the red sea kept to ensure a security of supply. In terms of physical interconnections with neighbouring countries, Egypt has two pipelines, the Arab gas pipeline (exiting Egypt into Jordan) and the EMG gas pipeline (Exiting Egypt into Israel).

Besides the active and rigid infrastructure, Egypt has a strong base of refineries and processing plants. Furthermore, Suez Canal provides a strategic advantage. Lastly, it has an abundance of renewable energy sources, which could truly lead Egypt toward its aspirations to being an energy hub.

1.3.2 Portuguese Case Study

Portugal, like most of the EU countries, is working on having a well-functioning fully integrated energy market; a requirement for that would be to further increase liberalization and unbundling, as well as making sure of the presence of a reinforced internal energy market. Portugal believes that doing so would assist in ensuring the country's security of supply. In that regard, Portugal aims not only to have an energy-efficient carbon-neutral society, but the country also seeks to find new actors and new technologies from a whole system approach. Furthermore, Portugal is investing in hydrogen research too.

Portugal among all the other EU countries is on a mission toward carbon neutrality by 2050. Figure 3 below shows the actual and forecasted primary energy consumption in Portugal by source.

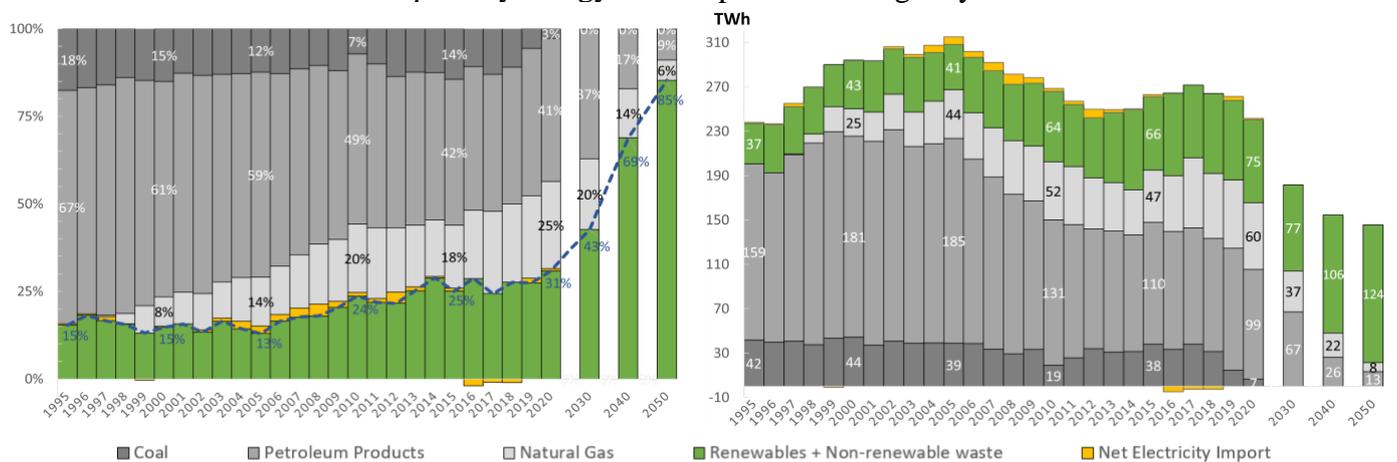


Figure 3 - Actual and Forecasted Energy Consumption by Source, Portugal ³

³ Source: ERSE, as presented by Mr. Pedro Verdelho

From figure 3, one can deduce the following:

- Coal has been eliminated from the Portuguese energy mix since 2021.
- Renewable Energy share will increase from 31% to 85% by 2050
- An increase of 40% in energy efficiency will reduce the overall primary energy consumption from 240 to 145 TWh/year by 2050
- Energy dependence will reduce from 66% to 15% by 2050

Energy transition will be based on a strong commitment bound by energy efficiency and the electrification of the market.

Figure 4 below shows the annual index of all renewables in Portugal. From the figure, it is evident that Portugal has witnessed a regularity in recent consecutive years from Solar and Wind resources, which allows the country to consider that an adequate combination of Solar and Wind Storage could assure Long-term Security of Supply.

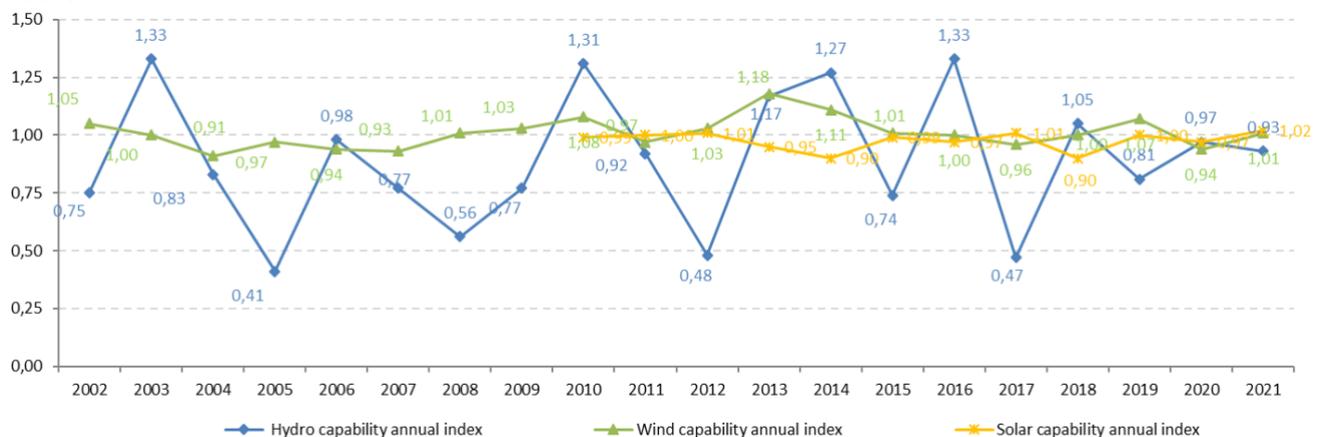


Figure 4 - Annual Index of Renewable Energy Sources, Portugal ⁴

The challenge remains though, where it is necessary to find a solution for storing energy generated making it available when needed for consumption during inconsistencies in wind or when the sun is not present.

An increase in penetration of electricity generation from variable Renewable Energy Sources would impact the overall operation of the power system. To accommodate new forms of power generation, adequate flexibility technologies (e.g., storage, international interconnections, DSR – demand-side response) are necessary to counterbalance any potential variations and keep the supply and demand balances at any given time.

In parallel, increasing RES shares may result in a RES generation surplus during an increasing number of hours throughout the year. In case of insufficient system flexibility, this surplus needs to be reduced.

From this, the term Residual load is born, where the concept of “Residual load” can help to clarify the power system adequacy and the flexibility that needs to be made available. “Residual load” is defined as the **difference** between the **hourly national demand** and the **generation from vRES generation**. It describes the part of the national demand that needs to be met by dispatchable generation units (such as coal, gas, and hydro with dam storage and with or without pumping) or exchanges with neighbouring countries through international interconnections or storage units.

⁴ Source: ERSE, as presented by Mr. Pedro Verdelho

1.3.3 Moroccan Case Study

Nowadays, the energy sector is in a process of rethinking its conception to meet with the energy transition objectives including energy efficiency mechanisms and decarbonization of the energy generation by increasing the share of the RES in the mix. In addition, the natural gas and LNG have a crucial role in replacing coal and oil in the energy to reduce the carbon emission and ensure more flexibility to the energy system.

In Morocco, the government fixed an ambitious objective in terms of RES integration, with 80% in the energy mix by 2050. To achieve this objective, two main pillars in the energy strategy have been identified, the first pillar reflects the actual mechanism and market design to promote the integration of RES, meanwhile the second pillar is the identified measures and actions to be implemented in the future.

The market design allows the integration of the RES through IPP that sell their production to the public entity and then to the final consumers. Otherwise, the producers can directly sell through “B2B” mechanism.

On the regulatory aspects, ANRE has developed the grid code in collaboration with the Ministry and the operators of the market, which will facilitate the integration of the RES and the development of the cross-border interconnections.

Regarding the second pillar of the energy strategy, the regulator and operators have identified some leads to improve the security of supply while increasing the share of RES in the mix:

- **Cross border interconnection development:**

Developing new cross border interconnection is a key element to ensure the security of supply. The EU market is an excellent model for interconnections between the countries, where there are still further plans to have more reinforcement in the future. However, more efforts are needed to extend Europe and create bridges in the Mediterranean region (North- North, South-South, North-South, East- West). Morocco have always expressed its willingness to develop more interconnection with its neighboring countries. Moreover, the finalization of the grid code will help to harmonize the standards with the EU market standards.

- **Involvement of all the stakeholders**

The efforts to tackle the intermittency of the RES power plants should be implemented at all the levels of the energy sector. For example, Demand Side management, as mentioned in the Portuguese case study. In Morocco, there is a potential in optimizing the consumption of many industrial to support the flexibility of the grid. However, the current regulations do not include this type of mechanisms and it should be implemented to reach the 2050 objectives.

Another mechanism that can be used, is to define a scale of network use fees, that reflect the intermittence created by the RES power plant, which will incentives the producers to be more efficient. Moreover, the producers can provide a capacity service to support the flexibility of the system.

- **Diversification of the energy mix**

The energy mix in Morocco can be more diversified by including the natural gas into the system. Recently, the exploration activity in the East of Morocco has discovered a basin ‘Temara’ that will provide a new source of natural gas in the country. However, more investments are needed to intensify the exploration activities and to develop the necessary Gas infrastructure to provide more flexibility by developing more natural gas in the energy mix and LNG for the industrial consumers to reduce their energy consumption and promote the economic development of the country. In that regard, many efforts in the regulator aspects needs to be done to establish a well-functioning gas market.

2

THE REASONS OF ENERGY SOARING AND THE ROLE OF THE REGULATORS

2.1 Energy crisis: Preliminary analysis of the ELE WG Task Force

To set the scene and better understand the upcoming challenges in the energy market for the NRAs, **Mr. Esnault** briefly presented the preliminary analysis of the ELE WG task force on the energy price surge⁵.

The analysis of the energy crisis of the task force focuses on three main aspects; The impact of the energy price surge at the global level, a focus on the Mediterranean region, and finally a reflection on the contribution of the energy regulators to mitigate the impact of the crisis.

Over the last two years, the global energy market has witnessed one of its biggest challenges, starting with rising global prices for materials, including oil, compounded by strong demand during the winter of 2021.

In the gas market, the analysis shows a change in the exports/import schemes, as in the summer of 2021, Gazprom reduced its share of exports and hence not filling the EU storage. Moreover, the LNG market has witnessed tension due to the increased import demand and higher prices in the Asian market.

As a result, the prices of gas climbed to the highest level in the gas market history and extended to the electricity prices reaching a new record (around 200 Euros/MWh, compared to 50 Euros/MWh before the crisis).

The second part of the task force analysis focuses on the government's decisions to tackle the energy price increase, from the EU to the south shore countries. However, at that time, the crisis was not expected to spread over time and with the extension of the Ukraine conflict, the end of the crisis remains unpredictable and unknown.

These circumstances lead to an EU level discussion on developing a market design towards a dynamic market to react to the energy crisis in a short time. In that regard, ACER elaborated a report in April named "ACER's assessment of the EU wholesale electricity market design."

At the Mediterranean level, the preliminary analysis shows a contrasted situation among the MEDREG members. Most of the MEDREG countries were impacted by the crisis; where the Balkan countries and Turkey has a similar impact to the EU countries due to the independence on the Russian gas, and in some cases due to the pricing mechanisms; for example, Turkey have their market prices indexed on the European prices.

However, in the Mediterranean south shore countries, the impact was much more limited due to less dependence on Gas in the electricity mix and the principles behind the indexation and energy pricing are different than in the north shore countries.

Furthermore, in the oil and gas exporting countries, it is being noticed a mirror effect, where the high gas and oil prices have a positive impact on the revenues and investments in the exports in these countries.

⁵ The final report will be published upon its approval during the MEDREG 2nd General Assembly



Figure 5. Energy price surge impact on the Mediterranean countries

Finally, the first draft of the report concludes with some reflections on the next steps and what needs to be done in short term and long-term to increase the complementarity between the countries. Furthermore, it would be beneficial in the long term to develop more RES capacities with further development of cross-border cooperation as a key element.

2.2 Role of the regulators to overcome the energy crisis

The dialogues among the MEDREG members were focused on 5 important topics to describe the contribution of the energy regulators in overcoming energy crises and emergencies. These topics are as follows:

- How to tackle the deficiency of the regulatory framework and raise awareness in that regard.
- The role of cross-border infrastructures in the future.
- The need for speeding up the energy transition and diversifying the energy supply to avoid dependency on one supplier and stabilize the energy prices.
- How to implement and improve the Energy Efficiency, and what are the support schemes to incentive its development.
- How to design a resilient regulation to cope with expectational cases.

During the discussion, MEDREG members shared their point of views on the topics mentioned above and provided updates on the recent development in their respective countries' energy markets.

This sub-chapter summarizes the main outcomes of the dialogue among the MEDREG members.

It's important to highlight that the responsibilities of the NRAs are to ensure a transparent, competitive, and secure energy supply for the end consumers, and to achieve that an integrated market is a must. Therefore, the cooperation among the Mediterranean countries needs to be improved and strengthened to create a more competitive market and stabilize the energy price while increasing the security of supply for the whole region.



“The voice of the regulators needs to be heard” - ALBANIA

The Albanian electricity sector is based on hydro production and to maintain the balance, the rest of the electricity is imported. In addition, it's difficult to install more renewable energy sources. However, with the improvement of the technologies and research, new opportunities may have arisen. As a good example, Morocco achieved an advanced milestone within a short time in terms of developments to facilitate the energy transition and it is mainly due to technological improvements and cooperation between regulator and political institutions.

Besides the technological aspects, it is important to first understand how the crisis was created and its impact on the country's market to be able to focus on actions and measures that protect the end consumers. However, it is also important to cooperate with the political institutions and reinforce the relationship with the governments.

In the case of Albania, the regulator discussed and collaborated with the government to reach a solution that aligns with the political vision and the regulator's role to protect the consumer. In that aspect, it has been decided to support the households through subsidies.

The Albanian case in terms of cooperation between political institutions and the NRA shows that it is the NRA's responsibility to include the technical aspects and protection of consumers in the political decision through discussions.



“Enhance the involvement of Stakeholders, Investors & Consumers” - EGYPT

The lessons learned from the development of the Egyptian electricity market have shown that in addition to improving the relationship with local political institutions, there is also a need to focus on the following points: **Involvement of all the stakeholders:** To achieve energy transition, all the stakeholders⁶ need to act with a short-, medium- and long-term vision. This will not only help to achieve a smooth energy transition but also be prepared for any future crisis.

For the service providers, it is important to encourage and improve efficiency and reduce the impact of losses. For example, in Egypt, the reduction of 1% of losses would save up a couple hundred million Euros⁷. As a part of the solution, smart grids and meters will enhance and improve the quality of service and increase the efficiency of the service provided.

Involvement of the consumers: The consumers need to be more aware of their impact on the energy market and to need to start to be more efficient and save energy. In addition, from the governmental and regulatory perspective, there is a need to raise the consumers' awareness and find adequate mechanisms to involve the consumers in the market such as using the electric vehicles or generating a portion of their consumption locally.

Furthermore, it is important to involve the banks in the energy sector to facilitate the payment of the energy bills of the vulnerable consumers and to facilitate funding to attract investors.

⁶ Energy market actors, service providers, investors, and banks

⁷ 1% of losses equivalent to around 2 TWh.

Involvement of the investors: Nowadays, it's difficult to invest in renewables in some countries due to the lack of attractiveness and environment. In Egypt, a lot of efforts have been put into creating a suitable environment for the investors in the renewable energy source sector, and the results have been reflected in the achieved prices; 3 cents/kWh for wind and 2 cents/kWh for PV.

Lastly, for the cross-border interconnection, it's important to highlight that if the infrastructure already exists, it is important to use it at its maximum capacity. However, if the infrastructure is not sufficient, it can be considered as a long-term solution.

In Egypt, there are four interconnections:

- with Jordan: 550MW.
- Libya: 150MW.
- Sudan: 80MW (planned to be increased to 300MW by October 2022).
- Egypt and Saudi Arabia: recently a contract has been signed for 300MW (both ways). It will increase the exchanges between the countries and it's a good example of load curve complementarity as the peak load in Saudi Arabia is during the day and in Egypt, it's by night.

The case of Egypt also shows good cooperation between the government, that supports all measures mentioned above, and the regulator. In addition, it is the regulator's duty to achieve these actions and measures and to monitor the performance of the energy market actors.



“Accelerate the energy transition but carefully” - PORTUGAL

The energy crisis has demonstrated that the market design and the regulatory framework need to always be updated and adapted to the current situation. At the EU level, there is a rush to accelerate the energy transition, and many investments are made with a short-term vision, and it may not be well designed for a long-term perspective.

In that view, it is important to enable energy transition on a good basis as the energy sector is complicated and involves many other sectors. In addition, the structure and machinery of the energy sector are well known by the regulator, which is not always the case for political institutions. Therefore, it is the regulator's role to guide and advise the respective governments on the right mechanisms and measures to avoid worsening the situation and to ensure a security of supply at optimal yet affordable price levels.

In that regard, most NRAs have been created by law and in their decision process, they need to include the stakeholders through consultancy to improve and optimize the rules and mechanisms. This will facilitate the implementation of the measures and will also help to strengthen the role of the consumers in the energy sector. In addition, transparency is a crucial element while regulating a sector that involves public/government funding. Years ago, NRAs started to publish an annual report on the energy market activities and ensure the good usage of public funding. Nowadays, the annual report is deemed not sufficient, and the regulators publish shorter period reports on a weekly, monthly, and trimestral basis, and publish data on the websites to prove the right use of the public funds.



“Resilient regulation is the future” - GREECE

In the past years, the terminology of “Resilience” has usually been linked to the systems. However, it’s important to extend this terminology to the regulatory aspects and the NRAs need to design a resilient regulatory framework that includes measures and actions that tackle crises and emergency situations.

In Greece, the regulator has prepared a set of regulation tools to prevent a future crisis and to ensure the security of supply. It’s also important to highlight that this type of tool needs to be prepared and tested before any crisis through simulation and avoid creating them during the crisis. As an example, the security of supply did not impact the energy market as the energy price surge, due to the existing security of supply tools and mechanisms in each country. However, there are no regulation tools to prevent from energy price surge, which creates pressure on the politicians to act and adapt to the situation.

Therefore, all the regulators need to design preventive tools and mechanisms to mitigate crises in the future, with enough time for preparation and testing.



“Improve the national system, competition and RES shares” - JORDAN

For countries with few cross-border interconnections, it’s important to focus on the national market and to achieve the country's strategy by upgrading the local infrastructure and increasing the competitiveness in the market.

In Jordan, the regulator has an important role in increasing the local production share to reduce its dependency on imports and to reduce the energy prices for end-users.

With the opening of the energy market and competitiveness, the Jordanian government reviewed its 2030 strategy to increase its share of RES and find solutions for the RES intermittency by using natural gas from Egypt, developing an LNG terminal, and producing green Hydrogen.

However, there is a need to upgrade the infrastructure, especially at the distribution level with smart grids and smart meters to allow the consumers to inject their surplus into the grid. In addition, like in Egypt, there is a need to encourage and support the consumers to facilitate the payments of the energy bills and avoid any losses.

2.3 Energy poverty and vulnerable consumers' protection

Most of the analyses on the energy price increase take into consideration only the increase in the oil/gas prices during the last year. However, it is noteworthy to highlight that the current crisis is the summation of two different crises, the COVID-19 pandemic significantly impacted the energy market, and the energy price surge further aggravated the situation, especially for vulnerable consumers⁸.

This sub-chapter will provide a summary of the discussions of the MEDREG members on the role regulators and mechanisms to fight energy poverty and protect the vulnerable consumers.

⁸ Please read our report “Regulatory measures to mitigate the impact of COVID-19 outbreak in the Mediterranean region” available on our [website](#).

The two topics can be approached from two different perspectives, a contextual and structural approach that reflect the strategy and long-term vision of the regulator and government, which should be clear and without significant changes. This approach also focuses on the measures at the national level such as smart grids and meters as mentioned in the previous chapter.

The second perspective reflects the efforts at regional and sub-regional levels to improve the quality of service and supply. This approach is based on strengthening the cooperation among the countries and creating a good function in sub-regional and regional markets.

2.3.1 Relation between new investments and energy price reduction

The measures and actions require investments and time to be properly developed. However, the regulators are also required to identify measures and solutions for the short term that mitigate the impact of crisis and energy prices increase on vulnerable consumers.

In the past, a new technology that would reduce 0,6% of the price, was considered as a significant success, which is not the case anymore. Therefore, it's important to identify the right investments in technologies and measures to stimulate efficiency and cost reduction for the final consumer.

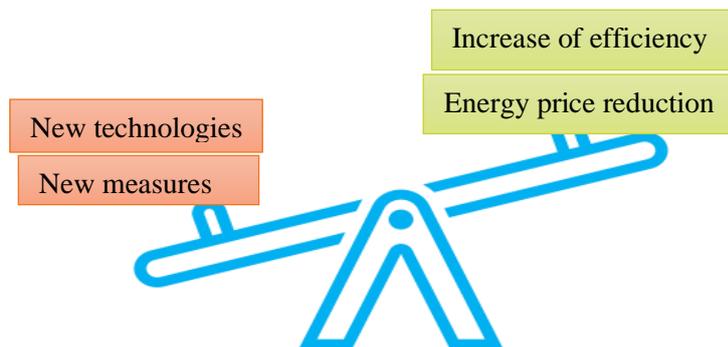


Figure 6. Balance between the new investment and its impact on the price reduction

In addition, significant support for vulnerable consumers with their energy bills is needed during such a difficult time. The actual situation can be compared with the past French crisis “Gilet Jaune” and the effect of the “just transition” but from a different perspective.

2.3.2 Mechanisms to protect vulnerable consumers

The French experience has shown that finding the right tools to mitigate the effect of the crisis on the consumers is challenging. The government has put in place several short-term measures to support vulnerable consumers and to protect the end-user from the energy price surge. For the electricity prices, the measures in place ensure an increase of the prices below 4% for the consumers. However, without the regulated prices, the increase is around 44% (see next figure). This price shield is applicable until the end of 2022 (for both electricity and gas).

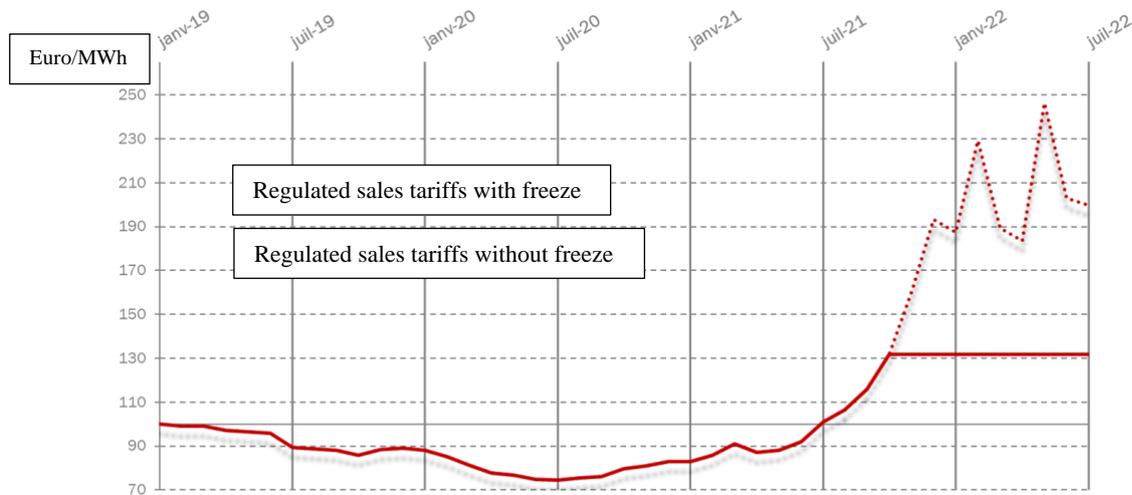


Figure 7. French electricity regulated sales tariffs⁹

In addition, the nuclear producer “EDF” is obliged to sell an important share of its production at the regulated price to mitigate the price for the supplier and therefore for the consumers. However, it’s important to highlight that these mechanisms are a short-term solution and cannot be considered as a long-term solution.

The regulators must further intervene in the functioning of the free market and debate with the European Commission to approve these mechanisms. Nevertheless, the efforts now are more focused to find a long-term solution.

The issues of economic incentives are to identify vulnerable consumers and to find the necessary funds to finance these subsidies. In Italy, the short-term tool is also based on incentives by reducing the fiscal part of the energy bills of the vulnerable consumers (from 25 to 30%).

As a next step, it’s important to find the optimal moment to switch from a short-term solution to a mid-term then to a long-term solution as shown in the next figure.

⁹ Source : CRE « letter d’information – Juin 2022 »

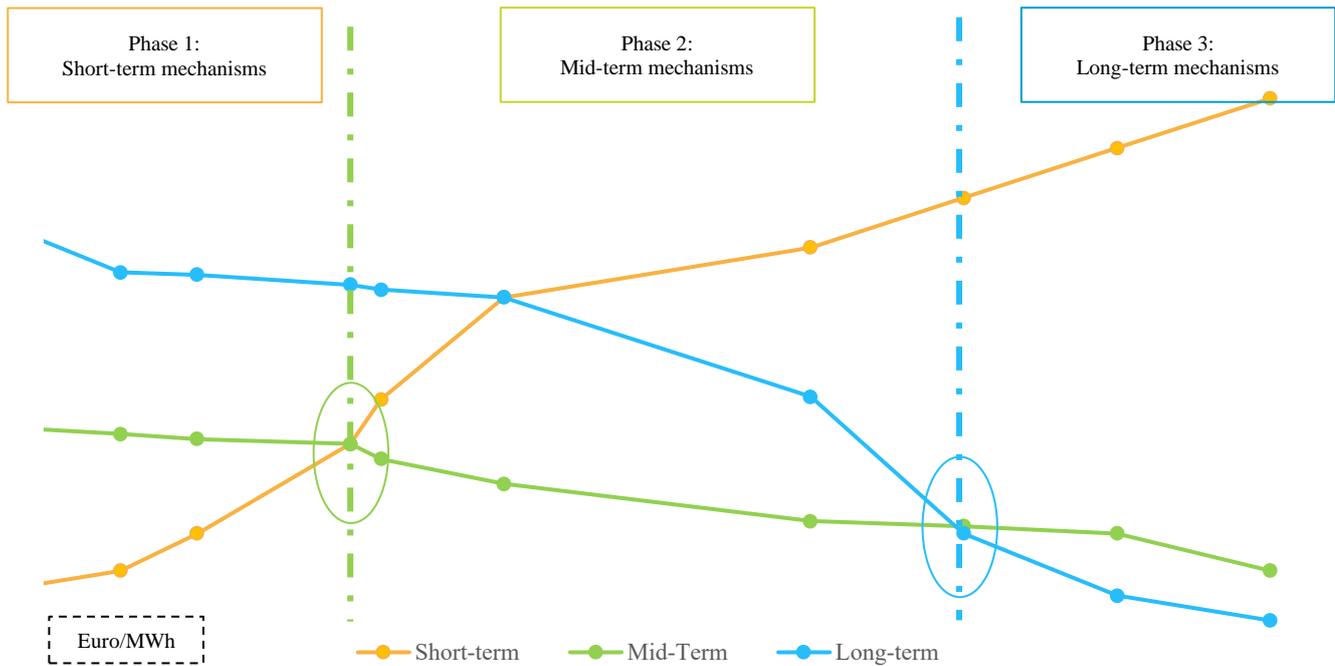


Figure 8. Phases of support mechanisms to mitigate the energy price surge

Regulators should focus at the first stage on identifying the vulnerable consumers and then design a social tariff that protects this category of consumer during a crisis. Furthermore, there is a need to develop dynamic regulation with a short time of reaction to adapt and design measures and tools to prevent and manage any energy economic risks and issues.

In Turkey, the price surge significantly impacted the market and the electricity price increased over the past 2 years from around 15 Euro/MWh to 115 Euro/MWh due to a price surge in oil and gas, depreciation of the local currency, and a dry season (decreasing the hydro production).

The Turkish government also opted for the use of energy subsidy mechanisms to protect the consumers. Furthermore, additional social support for the vulnerable consumers¹⁰ has been granted according to certain parameters, and the number of targeted households reached 4 million. In addition, for residential and commercial consumers a low tariff has been applied, respectively, 8 kWh/day and 30kWh/day which correspond to a 25% discount. For agriculture consumers, a reduction of taxes from 80% to 8% from March 2022. On the gas market, the price of natural gas is also subsidized for households, and to compensate for the subsidy a direct support mechanism from the ministry of the family has been granted for the first time for lower-income families.

In Italy, an automatic mechanism has been implemented to identify vulnerable consumers and grant economic support if the indicators correspond to ARERA's standards.

In Israel, the price surge didn't significantly impact the market as 80% of the electricity production is based on coal. However, to mitigate the increase in prices and protect the vulnerable consumers, two measures have been put in place, the first measure was decided by the government to reduce the taxes to almost 0% on imported coal to reduce the tariff of electricity production. From the regulator side, a collaboration with insurance authorities to identify the group of vulnerable consumers, the mechanisms initiated before the

¹⁰ with a monthly consumption of 150 kWh

COVID-19 crisis and was accelerated due to the energy price surge. The consumers with unpaid bills¹¹ cannot be cut off supply and the consumer are other many debts management with low-interest rates to support them in paying their bills. However, it is important to note that the unpaid bills rate in Israel is very low which facilitates the implementation of this kind of mechanism. The same mechanism will not be efficient in Italy for example, where the unpaid bills rate is around 2% in the north and 8% in the south.

Furthermore, the EU gas market is a projected market based on price prediction and should be based on long-term contract prices.

2.3.3 Economical support Vs Social approach

The previous sub-chapter provided the case studies on the measures to protect vulnerable consumers, which can be through economic tools or social approaches. Many energy market experts debate on which approach is more efficient.

However, the discussion among the Mediterranean energy regulators concluded that both approaches are efficient depending on the country and its consumers' characteristics.

The design of the support mechanisms should be cost-efficient and should fit with a free market principle. As regulators, the key responsibility is to protect the vulnerable consumers, tariff support and subsidies may be a short solution and should not last long as it interferes with the functioning of the market. Nevertheless, support mechanisms may be used at the market level or on the supply chain of the energy system, therefore supporting the final consumer.

The future regulatory framework should be hybrid and merge economics and efficiency in the infrastructure and energy system. The energy efficiency implementation is challenging and a long process as it linked to the changes in people's behavior.

¹¹ In Israel the unpaid bills are very low.

3

CONCLUSION

Conclusion

Energy Transition and Security of Supply remain of utmost importance to the Mediterranean region. The workshop has showed that different countries in the region have developed strategies to tackle both important subjects, with each country allocating almost similar roles to ensure attaining the targets, while still having a competitive market with an empowered and active consumer.

The experiences from the Mediterranean countries have shown that the management of the energy market crisis varies from one country to another depending on its characteristics and the regulators should initiate to develop a well-designed regulation with flexibility that cope with most emergency cases.

From the mid/long-term perspective, the regulators should develop a regulatory framework that allows them to reach a sustainable energy market and system, by following the next steps:

- Reduce the administrative barriers to new technologies and tools that may improve the efficiency of the system.
- Promote local and decentralized production.
- Incentivizes Energy communities' self and pro consumers.
- Achieve the energy transition and national energy objectives.
- Develop a Dynamic regulation.
- Design a market based on price affordability without affecting the market functioning.
- Promote the consumers' role and raise its awareness.
- More transparency and information availability for consumers.
- Protecting vulnerable consumers with target measures.
- Enable energy system integration with a long-term support for investors.

To achieve these steps, a good relationship with the political institutions is crucial. As energy regulators, it's the responsibility of the NRAs to advise the governments on the technical aspects of the energy market. Even more, it's the NRAs role to design tools and mechanisms to protect the consumers, with a focus on the vulnerable consumers from the energy crises or emergency situations.

In that aspect NRAs needs to be careful while designing these tools and mechanisms, to ensure a price affordability on a long-term perspective and adapt a dynamic and resilient regulation, that cope with most of emergency situations. However, during crises NRA needs to develop a short-term measure to protect the vulnerable consumers through economic or social benefits. Nevertheless, short-term measures require a significant funds and impact the free functioning of the energy market.

Conclusively, designing the right tools and mechanisms need to be developed on good basis and with enough time for testing and simulation of the results. For the protection of vulnerable consumers, it's important to develop a mechanism that identify the vulnerable consumers, using indicators and standards and grant support for this specific category through targeted measures.

The experience of the COVID-19 outbreak has proven that research development can adapt and find solutions to mitigate the impact of any crisis, which can hence facilitate energy transition and cultivate of new type of regulatory framework; one that is flexible, resilient, and preventive.

SPEAKERS' BIOGRAPHIES



Mr. Petrit Ahmeti is the Chairman of the Board of Commissioners of the Albanian Energy Regulatory Authority (ERE) and President of MEDREG. He holds a degree of master's in science in Electrical Engineering at the Polytechnic University of Tirana in 1981 and started his career working in the power sector after the graduation. During his long and successful career in the Power Sector, Mr. Ahmeti held many key and important positions in the energy sector such as, General Director of KESH S.A. (Albanian Power Corporation) and served as senior advisor to the Prime Minister of Albania and Ministers responsible for Power Sector. Also, he is the author or co-author of several studies regarding the development of energy systems and important policy papers in Albania. His regulatory experience starts in late 2004, when Mr. Ahmeti was primary appointed as a member of the Board of Commissioners of ERE. In September 2014 Mr. Ahmeti has been firstly appointed as Chairman of the ERE, position on which he was re-appointed in February 2019.



Mr. Stefano Besseghini is President of the Italian Regulatory Authority for Energy, Networks and Environment (ARERA) and Permanent Vice-President of MEDREG. He graduated in physics at the University of Milan, and he is specialized in science and technology of materials with honours, at the same University. He performed his research at the National Research Council, and since 1996 has been the head of Lecco CNR center, one of the most active Italian research centers in the field of physical metallurgy. Since 2007 he has contributed to the development of a scientific animation project promoting the development of the Innovation Pole of the Valtellina (Politec) of which he was CEO from 2007 to 2011. He is the president of Politec Broadband, the start-up company created for the development of broadband in the Province of Sondrio, and he is vice president of CTL – Technological Centre of Wood in Poschiavo (CH) – on whose council he sits as a representative of Politec. In 2010 he was appointed Managing Director of RSE S.p.A. - Research on the Energy System and since 2014 also has held the position of President of the company. In July 2017 he was re-appointed President and Managing Director of RSE S.p.A till his nomination in ARERA in August 2018.





Mr. Abdellatif Bardach is the Chairman of the Moroccan National Electricity Regulation Authority and Vice President of MEDREG. Mr. Bardach graduated from the industrial superior institute of Liège with an engineering diploma specialized in Electronics in 1989 and had an Executive Master of Business Administration MBA at AL AL AKHAWAYN University in 2005. Before being appointed as the President of ANRE, Mr. BARDACH had a fulfilling career in the Electricity sector within the National Office for Electricity and Potable Water (ONEE). He held many positions such as Director of Realization of Equipment Projects Very High Voltage Electrical Network (2003 - 2006). International Director in charge of the development, implementation, and supervision of ONE project abroad (2007 - 2009) Central Transport Network Director (2010 - 2015), and Central Production Director (2015 - 2018).

His regulator role started when The King of Morocco Mohammed VI appointed him to lead the National Electricity Regulation Authority (NERA) in August 2018. His work with the authority has been revolutionary to the Moroccan electrical market by assuring a free electricity market, regulating access to the industrial entities along with attracting private investors all over the world to assist the transformation the sector is living



Mr. Karem Mahmoud is the Chief Executive Officer of Egyptian Gas Regulatory Authority (GASREG) since 2017 and Vice President of MEDREG. His main responsibilities include the regulation of all activities related to the gas market, as specified in the law, the control and monitoring of gas availability. In his role, he ensures the availability of gas networks and facilities third parties' access, he secures the domestic needs, grants licenses to market segments, ensures the quality of services provided, considering the interests of all participants in the gas market and the protection of stakeholders' rights. Mr Mahmoud is also the Chair of the ICER's Virtual Working Group 2 on Gas and other Fuels since 2018. Previously, he held high level responsibilities as Chairman and Managing Director of the Egyptian Natural Gas Company (GASCO)-TSO for 4 years and as Chief Executive Officer (CEO) of the Egyptian Company for Liquefied Natural Gas (ELNG) from 2010 till 2013.





H.E. Ms. Leila BENALI was appointed by HM King Mohammed VI, on Thursday, October 7, 2021, Minister of Energy Transition and Sustainable Development. She has been Chief Economist of the International Energy Forum (IEF) since March 2021. In December 2019, Ms Leila BENALI was appointed a member of the Special Commission on the Development Model (CSMD). Since September 2018, she has been a member of the UN Group of Experts on Fossil Fuels. During her career, she has worked with major international companies, including Saudi Aramco, the World Economic Forum, and the Arab Petroleum Investment Corporation (APICORP). Ms. Leila BENALI was also Director for the Middle East and Africa at IHS, an international research and consulting firm in security and energy, professor at Sciences Po, as well as industrial engineer at Schlumberger. Mrs. Leila BENALI has contributed to numerous publications and books on energy, reforms, and sustainable wealth.



H.E. Mr. Ryad Mezzour was appointed by HM King Mohammed VI, on October 7, 2021, Minister of Industry and Trade. Graduate of the Swiss Federal Institute of Technology in Zurich in 1996. He began his professional career in Switzerland as a Research & Development engineer with the ABB Group, before joining the Deloitte firm as a strategy consultant. In 2003, Mr. Mezzour came back to Morocco and held successively the positions of General Manager of Budget Morocco, Director of the Société des Fonderies de Plomb de Zellidja and General Manager of Suzuki Morocco. In 2013, Mr. Ryad Mezzour was appointed Director of the Cabinet of the President of the Economic, Social and Environmental Council, before joining the Ministry of Industry, Trade, Green and Digital Economy in 2019 as Chief of Cabinet of Minister Moulay Hafid Elalamy. Active in the economic and social sphere, Mr. Ryad Mezzour was Vice President of the Green Economy Commission at the General Confederation of Moroccan Enterprises (CGEM) between 2012 and 2015 and is a member of the board of several non-profit institutions.



Mr. Mohammed Rachid Idrissi Kaitouni, President of the Federation of Energy, and a board member of CGEM and the World LPG Association and Chief Executive Officer of AKWA Group's Gas Division and Chairman of several subsidiaries, of the same division, in Morocco, Ivory coast, Cameroon, and director in Mauritania. He is a Business Administration graduate of "Ecole des Hautes Etudes Commerciales (HEC)" in Montreal, Canada. He joined AKWA Group in 1988 as Administrative and Financial Director of the MAGHREB OXYGENE subsidiary. In 1992, he became General Manager of TECHNOGAZ. In 1998, he became CEO of AFRIQUIA GAZ and participated in its Initial Public Offering in 1999. In September 2001, he was named General Manager of the Gas Division, heading, therefore, all AKWA Group's gas subsidiaries. Mr. Mohammed Rachid Idrissi Kaitouni was decorated with a "Wissam Alaouite" with rank of officer by His Majesty the King, on November 13, 2011.





Mr. Abderraouf BENABOU, Director of Electricity at the Ministry of Energy Transition and Sustainable Development since 2021. He has previously held several positions in the electricity sector such as Head of the Transmission and Electrical Interconnections Department from 2006 to 2011, Head of the Electrical Equipment and Rural Electrification Division from 2012 to 2021.

Mr. Benabou holds a bachelor's degree in Electronic Physics (Electricity) (1989), a bachelor's degree in Public Law (2020) and is currently in his 2nd year Master's in Administrative and Financial Sciences.

Mr. BENABOU has a global of 32 years of experience in the electricity sector within the Ministry of Energy Transition and Sustainable Development.



Ms. Iman MANSOURINE is the production and development director in ONHYM. She spent over 20 years in hydrocarbon Reservoir studies and development. She joined ONHYM as a reservoir engineer and has held several positions and gained a wide experience in reservoir engineering, field development, operating activities, and Hydrocarbons marketing.

Ms. MANSOURINE is an engineer from the National School of Mines in Rabat and had a Master of Science on petroleum engineering in Texas A&M in USA and a Master of Engineering in reservoir Geoscience and Engineering from IFP School.



Mr. Salah Eddine EL FIGEL is the System operator Director at the National Office of Electricity and Drinking Water (ONEE) at the Electricity Branch.

Mr. El Figel has a long experience within ONEE mainly working around the Moroccan transportation grid. He was also, part of one of the five regional power pools in Africa, COMELEC, the Maghrebin electricity committee, where he got the chance to work closely with the different state members on different projects.





Ms. Fatima HAMDouch, Strategic Steering Director at Masen, which she joined in 2013, continuing an extremely varied career in consulting, both in Morocco and overseas. Currently, her main role is to contribute to define Masen's strategy and translate it into strategic objectives and plans. She manages the various stages of project incubation and oversees reporting activities. She is also in charge of corporate activities including the company organisation and risk management. She is also member of Masen Executive Committee and represents the company in various Boards.



Ms. Claire HELLICH is the Director for European and International Affairs and Cooperation at the French Energy Regulatory Authority, CRE, since December 2019. She has held various positions within CRE since 2011, where she served as the Head of Legal Unit in European Affairs and Upstream Markets till 2018, and later served as the Deputy Director for European and International Affairs for a year before assuming her current role. Ms. Hellich has also been an active member of the CEER and ACER legal networks in charge of elaborating common papers among the EU regulatory authorities on the legal issue in the energy field.



Mr. Pedro VERDELHO, President of the Portuguese Energy Services Regulatory Authority (ERSE) since November 2021. Mr. Pedro is also Vice-President of the Council of European Energy Regulators CEER. He has spent 20 years at the pricing and Tariffs Division at ERSE. He chaired the Gas Working Group at CEER and the Agency for the Cooperation of Energy Regulators ACER. Mr. Verdelho is currently chairing the Renewables Working Group at MEDREG since November 2018, he also chaired the Gas Working Group at MEDREG from 2014 to 2018. He as a researcher at the Centre for Innovation in Electrical Engineering and Energy at the Instituto Superior Técnico of the Universidade Técnica de Lisboa from 2007 to 2013 and at the Centre for Automation in the same Institute from 1985 to 2007. He was assistant Professor at the Instituto Superior Técnico of the Universidade Técnica de Lisboa from 1995 to 1999, assistant at the Instituto Superior Técnico of the Universidade Técnica de Lisboa from 1987 to 1995. Mr. Verdelho holds a Ph.D., Master's, and Undergraduate degrees in Electrical and Computer Engineering from the Instituto Superior Técnico of the Universidade Técnica de Lisboa (1995, 1990 and 1987, respectively)





Mr. Saïd ELHADI is the Chairman & CEO of Nareva Holding, one of the leading private independent power producers in Morocco and is currently presiding over the Green Economy Committee of CGEM (Moroccan employers' organization).

Mr. Elhadi previously held various top management positions in Morocco as CEO of TMSA (Seaports and Special Economic Zones) and CEO of Sonasid (Steelmaking Industry).

He also acted as an international expert in infrastructure development and PPP setups



Mr. Hicham CHAD is the current Business Development and Planning Director at TAQA Group since December 2020. Mr. Chad has held various positions at TAQA since 2012, where he served as the Finance Manager and later as the Finance Director. Mr. Chad has more than 15 years of experience in driving profitable growth and transformation with a significant experience of optimizing the profitability, driving synergies and re-engineering/optimizing processes.



Mr. Mohammed SEGHIRI, General Director of Sound Energy Morocco, graduate of Ecole Nationale Supérieure des Mines de Nancy in France, has over 18 years' experience in leading complex sectors, including gas storage, oil & gas exploration, and power production. Joined Sound from OGIF, where he was managing partner.





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