

Exclusive/Abdelkader Amara, Minister of Energy of the Kingdom of Morocco

Rabat's energy turni

Morocco is now an example for the whole of Africa and the Middle East. This is due to 1,400 MW more electricity in the last 4 years and 42 percent of installed capacity from renewable energy by 2020



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by GRANT
SUMMER

ne African country has achieved impressive results in developing its energy sector, in the process greatly improving the standard of living of its inhabitants. We are talking about Morocco, the kingdom on the Atlantic Ocean that has nonetheless always looked towards the Mediterranean, where it could build commercial and technological relations with nearby countries, especially in Europe. Having made the development of renewable energy sources a priority, Morocco now turns its attention to its hydrocarbons sector, including several discoveries of gas and oil fields off Ifni. Abdelkader Amara, the kingdom's Minister of Energy, Mining, Water and the Environment, explains the country's energy strategy.

We know that for many years Morocco has undertaken a program to expand its electricity production capacity, which has allowed it to satisfy all the requirements of the population. Can you explain how that was done and what energy choices were involved?

From the beginning of the last decade, the increase in domestic consumption of primary energy exceeded five percent and the figure for electricity demand rose by 7 percent, by virtue of the economic upturn that began in our country around that time. In order to deal with this increased demand, and to strengthen electricity production structures, Morocco adopted an ambitious energy strategy based on a diversified and optimized mix of reliable and competitive technological choices, with the development of renewable energy as one of the most important foci. This strategy was translated into precise targets and quantified and converted into clear road maps with short-, medium- or long-term deadlines. In the short term, the "Plan National d'Actions Prioritaires" (PNAP, National Plan of Priority Actions), implemented as part of this energy plan, was executed between 2009 and 2012 and produced an additional 1,400 MW of power that allowed supply to meet demand. In compliance with the initial planning, this program allowed the accumulated delay in terms of investments in electrical infrastructures to be recovered, and the country went from a negative reserve margin to one that was positive by 13 percent. In recent years, the production system has been strengthened by two units, with a total capacity of 700 MW running on coal at Jorf Lasfar, and four wind farms with a total capacity of 500 MW, which brought the total installed power capacity at the end of 2014 to over 7,800 MW. This first phase of our strategy has also allowed us to adopt a clear, shared vision based on medium- and long-term programs and reforms.

Morocco plans to increase the percentage of energy produced from renewable sources between now and 2020. How do you hope to achieve this?

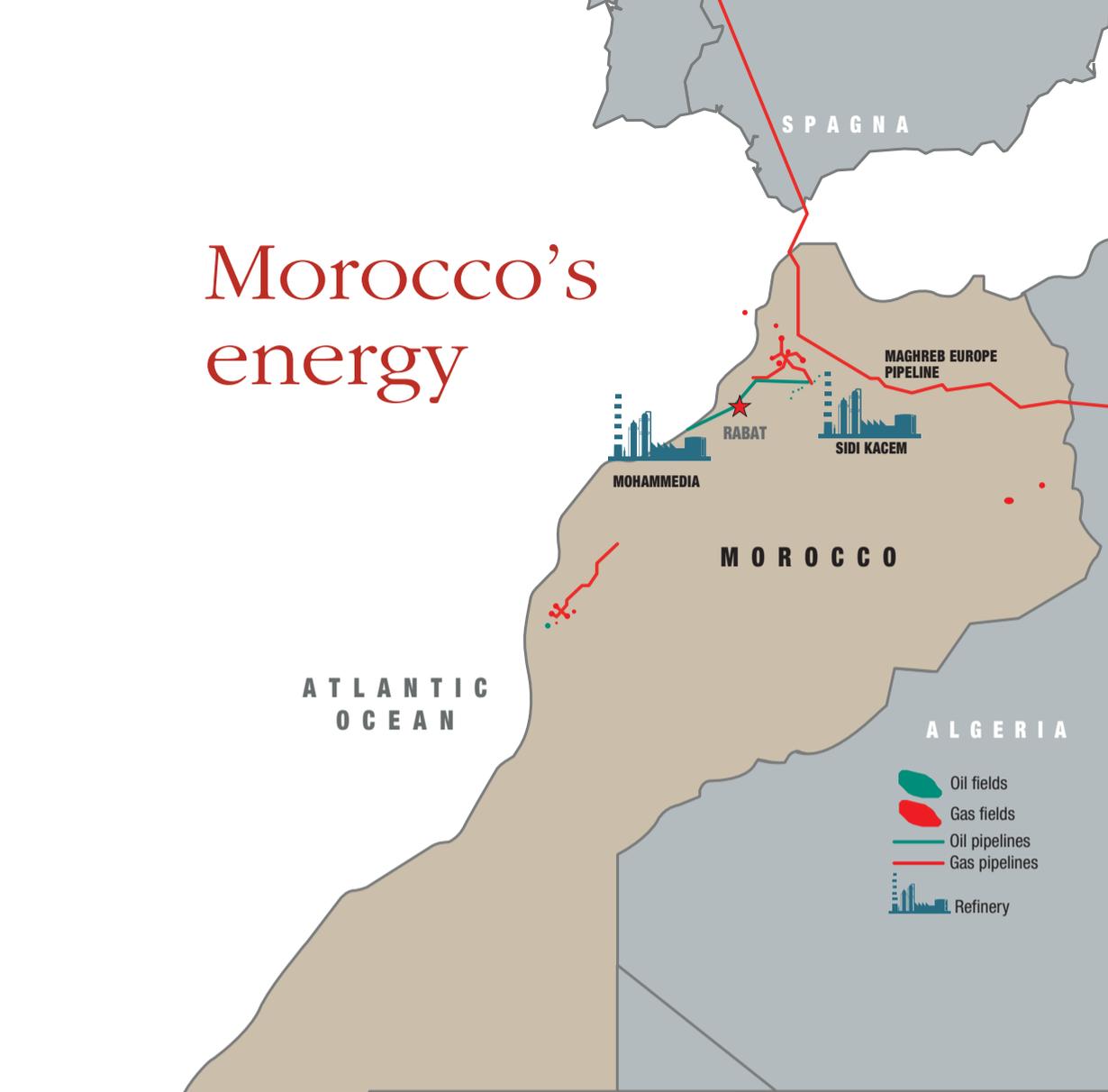
The second phase of the energy strategy, from 2013 to 2020, will allow the acceleration of the development of renewable energy and the adoption of an energy mix based on economically sound technologies. Therefore the share of renewable energy will increase the installed power capacity in 2020 to 42 percent, with 2,000 MW of solar energy, 2,000 MW of wind power and 2,000 MW of hydraulic energy. The implementation process of the two wind and solar energy programs is already underway. The Moroccan Wind Power Project is currently making good progress: all the planned units have already been built, introduced or are in progress. The anticipated or actual production costs make this chain extremely competitive compared with power plants running on fossil fuels. In addition to the 750 MW already operational, approximately 670 MW are currently under construction and technical bids have already been received to build another 850 MW under the scope of →



ABDELKADER AMARA

Abdelkader Amara was appointed Minister of Energy, Mines, Water and the Environment of the Kingdom Morocco on October 3, 2013. He has been a professor at the Institute of Agriculture and Veterinary Medicine Hassan II in Rabat since 1986. For a decade, he was scientific advisor of the World Organization of Sciences in Sweden. As Member of the General Secretariat of the Justice and Development Party (PJD) since 1997, Aâmara was also president of the Committee of Productive Sectors within the Assembly of Representatives and member of the steering committee of the latter. He is vice president of the PJD group within the Assembly of Representatives, responsible for Communication and founding member of the Association of Moroccan Parliament against corruption. Aâmara is also vice president of the International Islamic Parliamentary Forum, of which he is a founding member, and founding member of the International Alliance for the Support of Al-Quds and Palestine (Istanbul).

Morocco's energy



private electricity production. The integrated Moroccan Project for Solar Energy, which aims to develop our solar potential, has shown promised: both the steps taken by the Moroccan Agency for Solar Energy related to development and the interest shown in this program throughout the world (specifically in the first part of the Ouarzazate power plant involving 160 MW), by several internationally renowned developers and international financial institutions bode well. For the next Concentrated Solar Power Plants, NOOR 2 and 3, with a capacity of 350 MW, the international selection process of developers has made it possible to choose Le Consortium for the development of these two projects. The PV phase, NOOR 4, with a capacity of 50 MW, will also be developed further thanks to shorter implementation times. For the hydroelectric power plant program, the current installed power capacity is 1,770 MW, and the capacity under development is an additional 650 MW, of which 350 MW is reserved for the development of "STEP" (Energy transfer pumping stations).

With regard to the hydrocarbon sector, there has been talk of the discovery of new gas and oil fields, particularly off the coasts. Can you confirm this? Which fields are involved?

At present, it's too early to talk about actual discoveries. There were announcements last October by GENEL, SAN LEON and SERICA regarding the SM1 drilling site located 59 km from the town of Ifni, which found traces of oil. These sites are currently being investigated and analyzed in order to determine the nature of the oil found and to evaluate the petrophysical properties of the rocks in order to decide on the actual potential of the area involved. In this regard, it is worth pointing out that research into hydrocarbons is currently experiencing a dynamic recovery through the use of new prospecting techniques, specifically 3D seismic acquisition, horizontal and multi-directional drilling and feasibility studies of basins, such as the Tangier-Tarfaya offshore Atlantic area and the onshore areas of Gharb and Essaouira-Haha. This return of interest can also be seen in the constant increase in investments made, to the

tune of 1 billion dirham in 2012, reaching 2.7 billion dirham in 2013 and 5 billion dirham in 2014. Currently the results of the work carried out on research into hydrocarbons have involved modest discoveries of onshore gas, essentially in the area of Gharb, by the companies Circle Oil and Gulf-sands. It goes without saying that Morocco has important sedimentary basins, with geology similar to that of other countries where oil has been discovered and exploited. The results obtained so far and the data available demonstrate a favorable potential for the accumulation of hydrocarbons underground.

Is Morocco planning to undertake energy projects in conjunction with other North African countries?

The countries in North Africa work together in a way that is both complementary and interdependent, which guarantees the security of energy procurement and makes energy transition one of the foundations of new growth. The construction of the new infrastructure necessary for energy procurement requires the mobilization of all the technical, economic and financial expertise of North African countries. For example, the development and consolidation of existing energy connections is no longer a choice but a necessity that allows the security of procurement for the region to be strengthened. The electrical systems of the countries in the region must take into account the increase in terms of renewable energy power.

Do you believe that Morocco could export electricity and energy sources to those African countries in which limited access to electricity continues to be a barrier to industrial and civil development?

Regarding electricity in particular, the first technical studies into the connection of Nouadhibou, Mauritania to Dakhla, Morocco have been launched. In addition, consolidation projects are already under way in southern Morocco (for example, the 400 KV Agadir-Laâyoune line, which will come into service in 2015, and the connection of the town of Dakhla to the national electric grid through a 225 KV line scheduled for 2018). These connections will promote economic exchanges of electricity between the two electricity systems and will form the basis of future energy cooperation between Morocco and Sub-Saharan countries.

Morocco has always paid special attention to the creation of new infrastructure, particularly with a view to attracting new and large foreign investments. What stage has this project reached and what has been the impact of the new funds received by the country?

The new sites launched in Morocco to develop electrical, oil and gas infrastructure constitute real opportunities for investment, with figures estimated at almost \$36 billion between 2014 and 2025. Due to the confidence shown in Morocco by banks and other financial backers, it has managed to obtain enormous funding to support the realization of substantial energy projects, particularly in electricity. These projects are still generating considerable interest in international financial partners. By way of example, agreements signed recently will fund the construction of a solar power plant and two thermal power plants over the next five years, including the financing of a coal-fired thermal power plant with a capacity of 1,386 MW at Safi for a total investment of 23 billion dirham. Safi Energy Company, owned by the consortium of GDF SUEZ (France), Nareva (Morocco) and Mitsui (Japan), will be responsible for the construction and management of the plant, which will comprise two thermal units of 693 MW. This will be the second largest coal-fired power plant in Morocco. The second thermal project consists of the construction in Jerada of a coal-fired power plant with a capacity of 318 MW, with an investment of 3 billion dirham. This power plant will be built by the Chinese company SEPCO III (Shandong Elec-

Production: 0 thousands barrels/day
Reserves: 1 million barrels as at 31st of December
Consumption: 297 thousands barrels/day

Production: 0.08 billion cubic metres
Reserves: 2 billion cubic metres as at 31st of December
Consumption: 1.20 billion cubic metres
Imports: 1.12 billion cubic metres

Source: Eni World Oil and Gas Review 2014

PLANS FOR THE FUTURE

The share of the installed capacity of renewable energy in Morocco will rise to **42 percent** of total energy produced, developing

BY 2020



2,000 MW



2,000 MW



2,000 MW

The country expects to invest **\$36 billion** for the development of electrical, oil and gas infrastructure. The main projects concern:

BY 2025



the **Safi** coal-fired power plant (1,386 MW)



the **Jerada** coal power plant (318 MW)



the second phase of the **Ouarzazate** solar energy complex (**350 MW**):

Noor II, with an installed capacity of 200 MW
Noor III, with an installed capacity of 150 MW.

OFFSHORE AND ONSHORE PROJECTS

Since 2012, the country has embarked on an investment plan for exploration activities in the Atlantic, offshore **Tanger-Tarfaya** and in the onshore areas of **Gharb** and **Haha Essaouira**, for an investment which, in 2014, amounted to 8.7 billion dirhams (approximately \$910 million):

1 billion dirhams (approximately \$105 million) in 2012,
2.7 billion dirhams (approximately \$280 million) in 2013
and **5 billion** dirhams (approximately \$525 million) in 2014.

tric Power Construction Corporation). With regard to solar energy there is the second phase of the Ouarzazate solar energy complex, Noor II, with an installed power capacity of 200 MW, and Noor III, with an installed power capacity of 150 MW.

An International Monetary Fund report stated that the Moroccan economy, like those of other countries that are essentially importers, is currently benefiting from the fall in oil prices on international markets. Is this true?

The fall in oil prices is definitely an opportunity for non-producing countries, like Morocco, to restabilize their macroeconomic equilibrium. Moroccan citizens have also benefited from this situation through a series of reductions in the price of fuel. However, the global energy situation has always featured instability with regard to oil prices and

a lack of any clear vision with regard to the future of fuel prices. This situation has made it possible to develop other energy chains, including renewable energy, which has seen considerable development in recent years. Furthermore, according to the experts, renewable energies' share should increase between 2012 and 2040 from 14 to 19 percent with regard to primary energy consumption, and from 21 to 33 percent with regard to global electricity. In spite of the current fall in oil prices, these chains are maintaining their growth rhythm, even for some countries that have fossil fuel energy sources. In my opinion, this fall in prices is only a trend and should not in any case influence the fundamentals of energy policies. In fact, it should be understood as an economic trend because energy policies are devised on the basis of foundations that aim to guarantee energy procurement in the long term.