

**Doubling the Share of
Renewables in 2030:
The Role of the MENA region
EWACC-Building Bridges
December 11, 2012**

International Renewable Energy Agency

Established April 2011

The only intergovernmental RE agency worldwide

Mission:

Accelerate deployment of renewable energy

Scope:

Hub, voice and source of objective information for renewable energy

Members:

159 countries are engaged; 103 ratified members

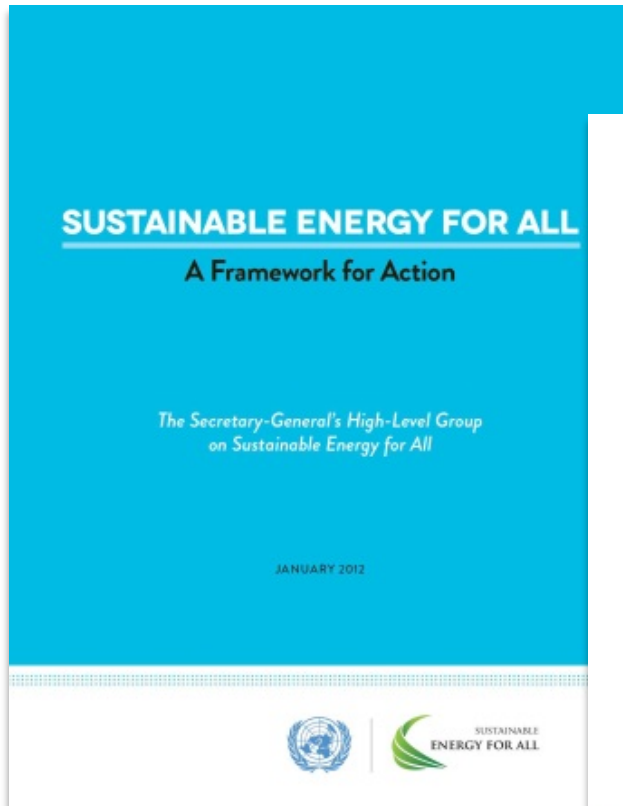
Mandate:

Sustainable deployment of the six RE resources
(Biomass, Geothermal, Hydro, Ocean, Solar, Wind)

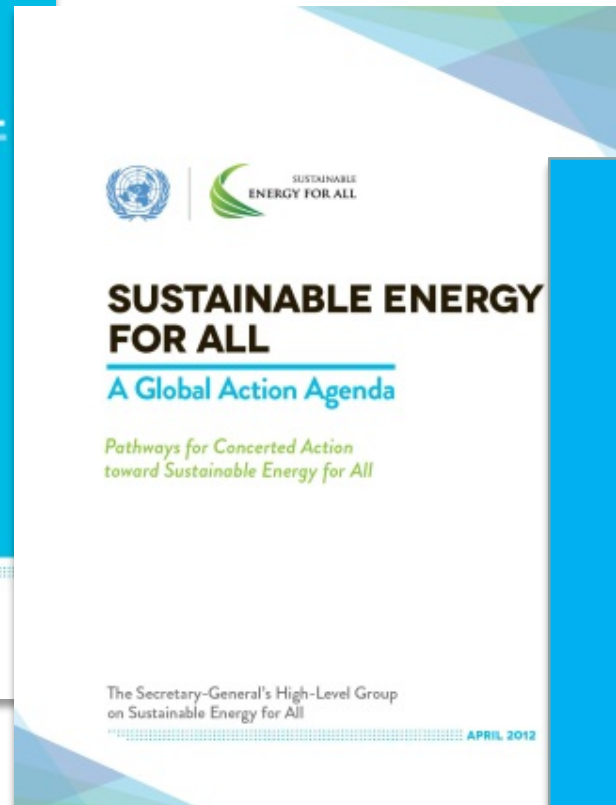
Location:

Headquarters in Abu Dhabi, United Arab Emirates
Innovation and Technology Centre IITC, Bonn, Germany

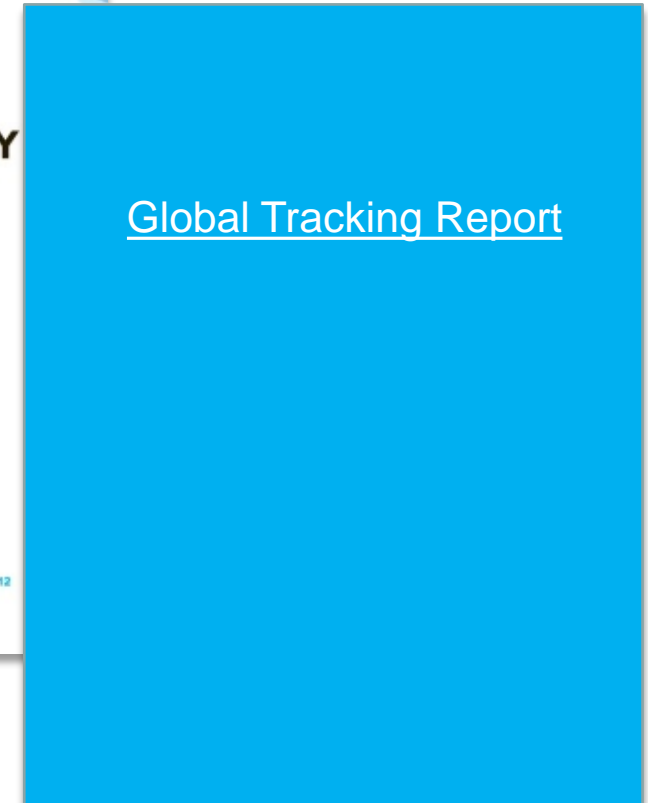
Director-General: Adnan Amin



Jan. 2012



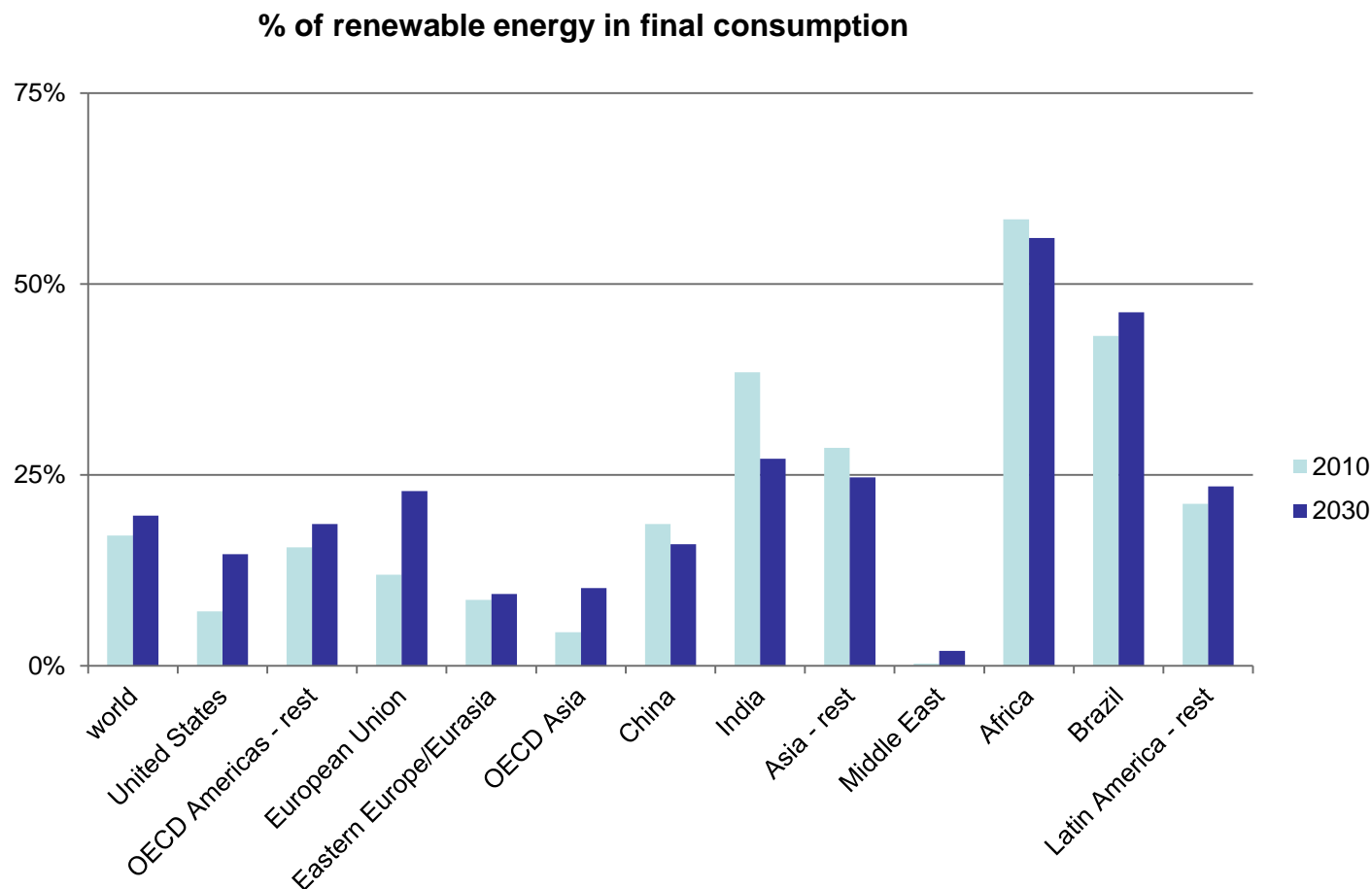
April 2012



1st Quarter 2013

The Role of the MENA region

- The share of renewables in the Middle East is projected to remain for lower than any other region or mayor country in the world.



- The roadmap will
 - Explore pathways to meet the doubling objective for 2030
 - Act as a bridge between developed and developing countries (global action needed)
 - Inform future IRENA programming
 - Inform the SE4ALL process, and its follow-up framework
 - Upon request, inform member countries regarding their opportunities
- Process started in 2012
 - 1st workshop 5. September, Malta
 - 2nd workshop 14. November, Abu Dhabi
- First report targeted for January 2013
 - Followed by refinements for regions/countries/sectors/technologies
- This is intended to be a continuous process, not one-off report
- Country engagement is critical

BEYOND OIL

Algeria: Post Petrol

With its deep reserves of oil and gas – a proven stock of 12.2 billion barrels of oil and 4,504 cubic metres of natural gas – Algeria has no immediate need to look beyond fossil fuels for energy needs. However, as the world consumes and uses energy is changing and it wants to continue to play a key and constructive role. The Algerian government is therefore trying a transition from fossil to alternative, renewable sources of energy.

Algeria has two important resources for the development of renewable energy: geography and climate.

Algeria has two important resources for the development of renewable energy: geography and climate. It is the biggest country in Africa, covering 2.38 million square kilometres, 75 percent of which is desert, meaning plenty of space for solar and wind installations.

There is also the loss of sun annual average insolation is 2,000 hours, rising to 3,900 hours in the high plateaus. This is an excellent asset for his country

an important challenge: by 2030, at least 40 percent of energy production should be from renewable sources.

Algeria's strategy is twofold: maximise existing hydrocarbon resources to finance the development of a new renewable energy industry, and adapt technologies developed elsewhere for the Algerian market.

A renewable energy fund has been established allocating one percent of hydrocarbon receipts for development of renewable energy and energy efficiency. The program includes incentives for investors such as bank loans at reduced rates, as well as encouragements for energy efficiency.

means an average solar energy of 6.57 kWh per m² per day.

To export some of this power to Europe, the government plans better connections. Existing lines connect Algeria to Tunisia and Morocco, and through this neighbour to the rest of Europe. However, Algeria plans direct links to the European continent through submarine cables to Spain and Italy.

"Our strategy is ... to build and construct a non-hydrocarbon economy."

— Mohamed Seghir Babès, President of the National Economic and Social Council of Algeria

Algeria is also looking for investment and cooperation with foreign companies with expertise in wind, solar and other technologies in "a partnership of equals," said Mr Babès. This means a transfer of technology, with the ultimate aim of developing local expertise and the creation of an industry with 100,000 jobs or more.

Collaborations with foreign partners are already proving fruitful, with Algeria providing ideal climatic conditions for testing new technologies in exchange for access to those technologies. Algeria and Germany have agreed to collaborate on the construction of a solar-gas hybrid power plant using

technology developed by the German Aerospace Centre. The plant in Bougezaoul, a newly-built low-carbon city in the south, will serve as a pilot and research facility.

"The key to this is technology," said Prof. Babès. "An economy founded on knowledge is the economy of tomorrow. We need to do more on education and training."

climate change. The University of Tlemcen will host the North African Institute of the Pan-African African, offering from 2013 training in water, energy and climate change sciences.



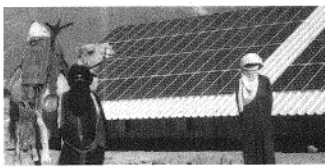
"We will be a real pole of excellence for all of Africa in the area of energy and renewables," stated the director general of Scientific Research and Technological Development at the ministry.

Since 2000, Algeria has invested \$2 billion in research centres, with the ambition that one day Algerian universities will be among the best in the world. Academic salaries have tripled, with guaranteed academic tenure for many researchers at the end of their studies.

"Algeria's brains are returning," said Prof. Aouf. "Now, foreign researchers are looking to come to Algeria."

Algeria's Ambitious Renewable Energy Program

Algeria intends to become a major actor in the production of clean energy. Building on the country's expertise in energy storage and an ideal climate for solar power, the Government of Algeria is planning for a small industry capable of manufacturing renewable energy plants and exporting know-how as well as energy.



National Renewable Energy aims to reach a power capacity of 2,600 megawatts by 2030. That is 12,000 megawatts for local consumption and – providing market access is right – 10,000 megawatts more. It is part of a wider strategy to support the renewable energy industry and attract foreign investors.

The first objective of the Program is to reduce the consumption of fossil fuels, to limit gas consumption so we will be able to export more and generate more to help the Algerian economy," said Babès, Head of Strategy at state-owned utility Sonelgaz. "The thing is that we have a very, very potential in solar power."

The Program is divided into three steps. The current phase 2013 has pilot projects to test the most available technologies and

will power up to reach a power capacity of 2,600 megawatts by 2030.

Algeria is particularly focused on developing solar energy. The Program anticipates the biggest capacity – 7,200 megawatts by 2030 – to come from solar thermal energy, which converts solar radiation into thermal energy. Commonly known as Concentrating Solar Power, or CSP, it can be used directly as a source of energy or indirectly to produce steam to power generators.

Photovoltaic (PV) solar energy, recovered from sunlight and transformed into electricity through photovoltaic panels, should generate 2,800 megawatt by 2030. It is particularly well adapted to remote



foreseen under the Program. By 2020, they will be producing a combined 2,357 megawatts. As well as these projects, the government is encouraging other operators to come forward.

As part of a diversification strategy, Sonelgaz, Africa's largest oil and gas company, has stepped up investments in new and renewable energies. Together with Sonelgaz in the NEAL (New Energy Algeria) joint venture, it is building Algeria's first hybrid solar-

thermal storage technology advances so as to make pure solar plants efficient on a large scale.

A factory of PV panels, the Rouiba-Eclairage subsidiary of the Sonelgaz Group, is due to start production in 2014 with 140 megawatt capacity. To service the industry, a national subcontracting network is evolving to manufacture inverters, batteries, transformers, cables and other equipment used in the construction of a PV power plant. In CSP, a mirror manufacturing plant will heat transfer fluid and energy storage equipment factories are planned for the period 2014-2020.

Looking even further ahead, Algeria's Scientific Research and Technological Development sees hydrogen as an even more attractive solution which wouldn't require decorating large swathes of the Sahara with solar panels or wind turbines. To produce hydrogen, researchers are looking at how to split water using thermal power from Algeria's sun.

"Today our ambition and research project are oriented to the possibility of producing hydrogen," the director said. "We have an ambitious program in terms of research structures."

Concerning controversial techniques of extracting shale gas through hydraulic fracturing, he said Algeria may not be the best climate for such technologies. "Shale gas is a very polluting technology which requires enormous quantities of water. Today, Algeria has



that natural gas consumption will rise from 45 billion cubic metres in 2010 to 55 billion cubic metres in 2030. At the same time, electricity needs will increase from 75-80 TeraWatt hours to 130-150 TWh over the same period.

Anticipating these changes, in 1985 the Agency for the Promotion and Rational Use of Energy (APRUE) was set up. Its goal, particularly since the energy laws of 1999 which called for energy efficiency, is to promote a change in energy use in all Algerian sectors of activity, including building and construction, and industry.

"It is known that the low cost of energy in Algeria tends not to encourage real energy efficiency because we have such a robust supply of fossil fuels, and thus energy conservation has not been perceived to be as urgent as in other countries," said Salah Bouassif, Director General of the APRUE. "Nonetheless, we have the long-term vision and understanding that energy efficiency needs projects and education. Hydrocarbons are not incompatible with energy savings."



Thank you

www.irena.org

rkempener@irena.org;

info@irena.org

The Role of the MENA region

- The GCC per capita energy consumption far exceeds that of the larger economies of the US, China and the EU

