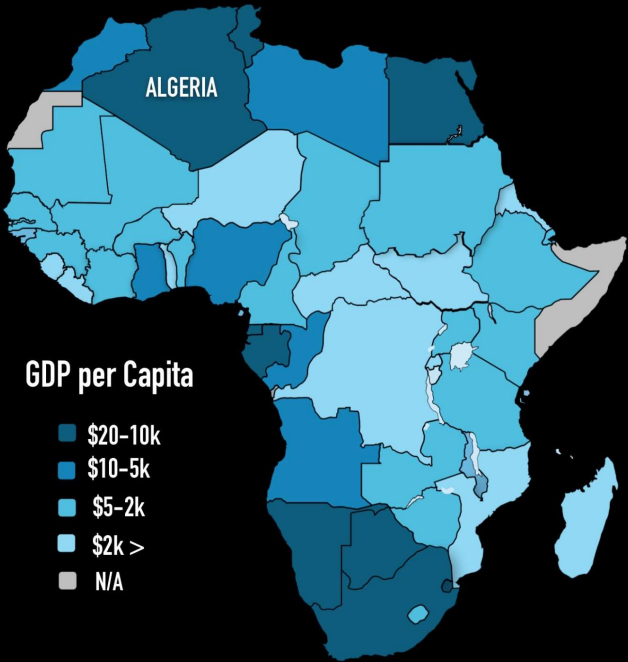




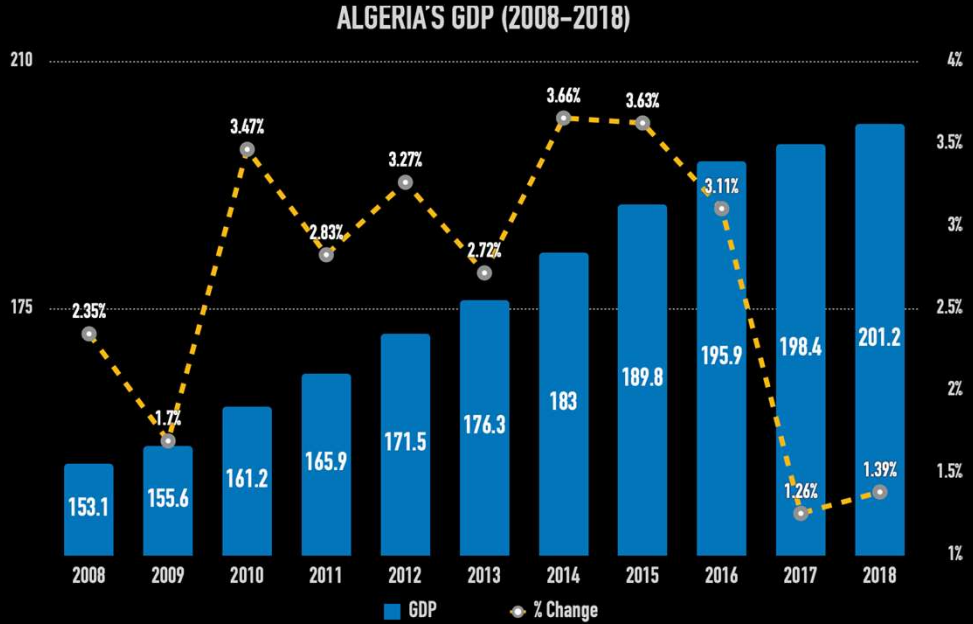
OPPORTUNITIES IN ALGERIA'S RENEWABLE ENERGY SECTOR

May 18, 2021, 11:00 a.m. EST

Algeria Has One of the Largest and Most Developed Economies on the Continent



Source: International Monetary Fund (2019)



Relatively High Levels of Development are Due to Wealth Generated by Significant Hydrocarbon Resources

30% of GDP

60% of
Budget
Revenues

95% of Export
Earnings

Oil



12,200 M barrels of proven reserves
571,000 barrels produced per day
\$15.90 B crude oil exports (2018)
\$ 7.05 B in refined petroleum exports
(2018)

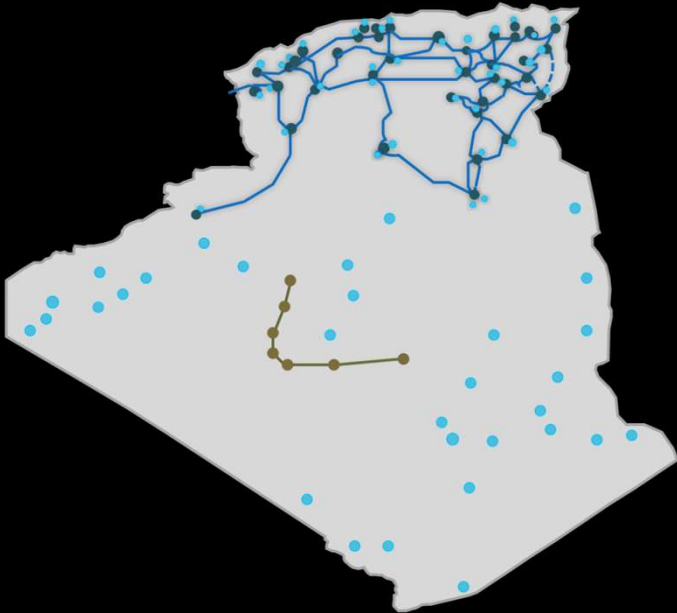
Gas



4,504 B cubic meters of proven reserves
51,424 M cubic meters per year
\$12.80 B in natural gas exports (2018)

Thanks to Its Resources and Developed Economy, Algeria is the Most Electrified Country in Africa

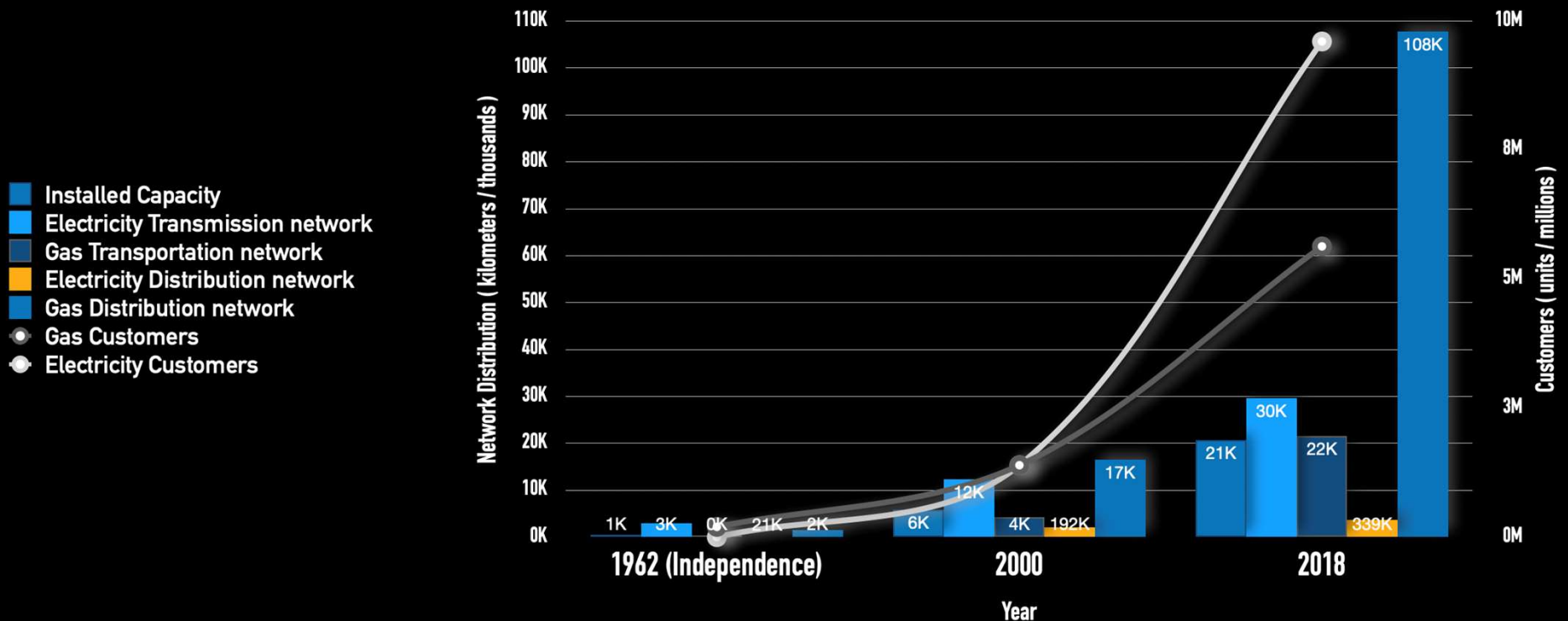
99% Electrification



Networks	Installed Capacity for Production (megawatts)	Production (megawatts)
Interconnected	19,445	69,000,000
Isolated	805	1,100,000
Adrar Region	713	1,200,000

Power Sector Developed by Algerians Following Hard Won Independence from France in 1962, Especially in Last 20 Years

Electricity and Gas Networks Evolution (1962 ▷ 2000 ▷ 2018)



Ever Increasing Demand Will Lead to Massive Investments in Power in Algeria in the Next Decade and Beyond



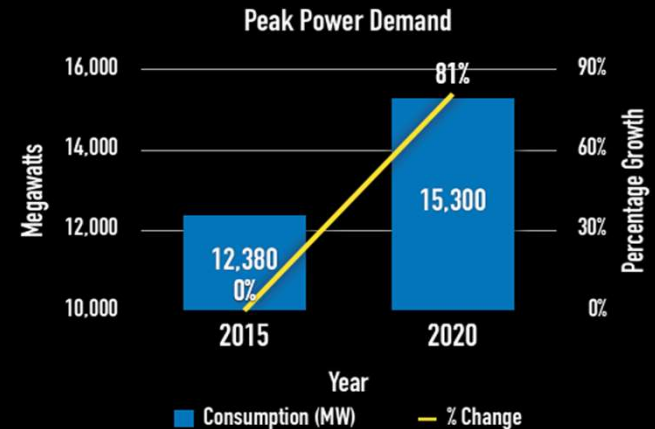
From 2015-2020, Algeria's peak power demand grew by 5% consistently, requiring \$5 billion of investment

From 12,380 MW (2015) to 15,800 MW (2020)



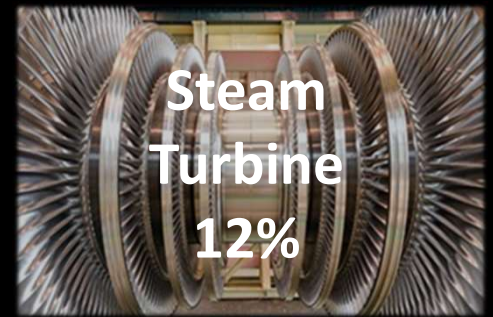
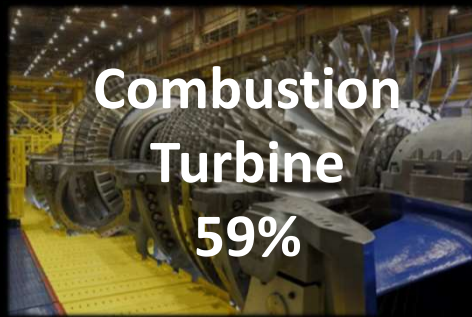
From 2021-2030, demand forecasts will maintain the same trend and require the addition of 5,000 MW, estimated at \$5 billion

All Maghreb countries will face similar challenges, with demand steadily rising 3% to 6%



The Country's Generation Mix is Currently Dominated by Gas-Fired Technology

Gas-fired
technology
~ 94% of
mix in 2017



All others
~ 6% of
mix in
2017



Algeria Aims to Produce 27% of Its Electricity from Renewable Resources by 2030, Mostly from Solar PV

NATIONAL PROGRAM FOR THE DEVELOPMENT OF RENEWABLE ENERGY TARGETS

Resource	Phase I MW	Phase II MW	Total MW
	2015-2020	2021-2030	by 2030
Solar PV	3,000	10,575	13,575
Wind	1,010	4,000	5,010
CSP	-	2,000	2,000
Cogeneration	150	250	400
Biomass	360	640	1,000
Geothermal	5	10	15
Total	4,525	17,475	22,000

Agenda

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Market Snapshot

Renewable Energy Strategy & Best Prospects
for U.S. Companies

Next Steps + Q&A



Merouane Chabane
Chief of Staff to the Minister
Ministry of Energy Transition
and Renewable Energies

Algeria's Three-Part Energy Transition Strategy

Energy Conservation and Efficiency

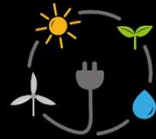


10 % Annual Energy Savings

National Energy Management Program oriented primarily towards:

- *Transportation*
- *Housing*
- *Industry*

National Renewable Energy Development Program



15 000 MW by 2035

“Green” hydrogen plan

New National Energy Model



30% RE model by 2030

Definition of the optimal energy mix for 2030 within the framework of a law on Energy Transition.



Independence & Energy Security



Moving from Dependency on Hydrocarbon Revenues



Control of Energy Demand

Part 1 : Energy Conservation & Efficiency

Transportation



- Development of the LPG fuel : Conversion of 1.5 million vehicles by 2030
- Development of dual-fuel - Gasoil-LPG/c, for heavy-duty transportation
- Gradual development of the electric transportation
- Deterrent regulations for vehicles > consumption/pollution thresholds
- Reconsideration of the transportation policy: *Strengthening public transportation, encourage car pooling, development of pathways for cycling,...etc.*

Housing



- Regulation for the design/renovation of energy efficient buildings and advance energy diagnosis;
- Prohibiting conventional lighting (incandescent) and generalization of energy-efficient lighting (*LED type*) : for both residential and public lighting;
- Industrialization and promotion of solar water heaters (at least 100.000 by 2030);
- Setting up laboratories (both state-owned and private sector) for rigorous energy performance control of household appliances.

Manufacturing



- Strengthen energy auditing;
- Support the introduction of efficient industrial equipment;
- Encourage cogeneration for self-consumption.

Part 2 : National Renewable Energy Program

Construction of Power Generation Plants Using Renewable Sources



- **15 000 MW** by 2035 in a multi-year program
- **1000 MW per year** power generation plants from renewable energy sources, primarily PV and wind

taking into account the existing potential and absorption capacities of the national electrical power transmission and distribution grid.

Development of Off-Grid/Small-Scale Renewable Energy Solutions



1000 MW by 2025

- Regulation for the design/renovation of energy efficient buildings and advance energy diagnosis
- Prohibition of conventional lighting (incandescent) and generalization of energy-efficient lighting (*LED type*) : for residential and public lighting
- Industrialization and promotion of solar water heaters (100,000 by 2030)
- Setting up laboratories for rigorous energy performance control of household appliances

Part 2a : Construction of Power Generation Grids Using Renewable Sources

Preparation of the Call for Tenders for investors for the construction of photovoltaic Production Plants for a total capacity of 1000 MWc :



Creation of a State-owned company for the development of renewable energies under the authority of the MTEER, for the implementation of the national RE program

Preparation of sites designed for RE projects

Removal of constraints associated with the tendering process, & financial, regulatory and administrative ecosystem.

SHAEMS



A total surface area of 2000 Ha available

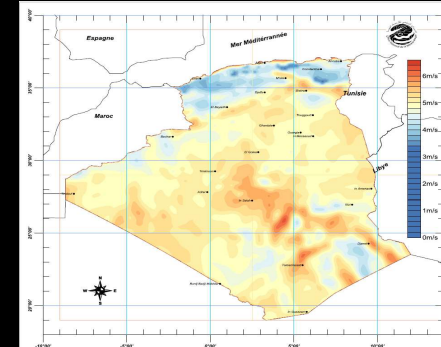
Undergoing with the Ministry of Finance & with international experts

Provisional Call for Tenders: **Summer 2021**

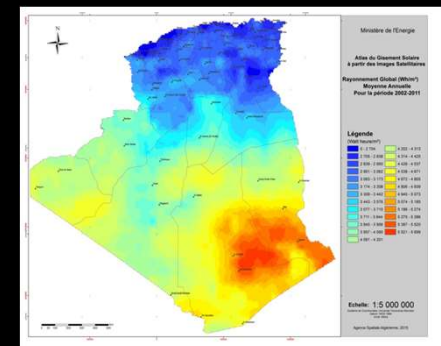
Part 2b : The 2021 Renewable Energy Program

Benefits Available to Investors

1. SHAEMS: a one-stop shop for investors
2. Provision of the land surface identified beforehand for the benefit of investors
3. Availability of National Power Grid Connection Studies
4. Knowledge of the solar potential of sites identified beforehand
5. Injection and flow priority of the RE energy to be generated into the national electricity grid
6. Signing of 20+-years PPA contracts
7. Introduction of incentives and tax measures



Solar Potential Atlas



Wind Potential Atlas

Part 2c : The Green Hydrogen Plan

Objectives



1. **Accelerate** the energy and ecological transition
2. Build an Algerian low-carbon hydrogen industry that creates jobs and ensures a technological mastering: **moving from the R&D stage/demonstrators stage to the industrial stage**
3. Produce profitable **large scale** green hydrogen to substitute, over time, natural gas by green hydrogen
4. Develop economically viable uses, in industry in particular (*production of ammonia et methanol*), network mobility and balancing – large scale energy storage and conversion of power plants to hydrogen



Within the Framework of a
Partnership of Exception



A RE plan dedicated for the production of green hydrogen estimated at 15 to 25 GW by 2050

Factors to Consider in Evaluating Renewable Energy Opportunities in Algeria



Ministry of Energy Transition and Renewable Energies (METRE)



Companies Charged with Implementation of the RE Development Program



Regulatory Body for Electricity and Gas

Public Investment Companies



Network Operators

& Buyer



R&D - Certification

Factors to Consider in Evaluating Renewable Energy Opportunities in Algeria



Multiple Foreign Competitors are
Already Present in the Market



Factors to Consider in Evaluating Renewable Energy Opportunities in Algeria

Private Sector Players in Algeria – Equipment Manufacturing



Photovoltaic Modules

- ENI (State-owned company)
- Aures Solaire PV Modules (30 MW/year) - private sector)
- Condor Electronics (100 MW/year) – private sector
- Algerian PV Company ALPV (12 MW/year) – private sector
- Milltech (100 MW/year) – private sector
- Zergoune Green Energy (160 MW/year) – private sector



Mounting Structures



Cabling



Other RE Equipment, Except Inverters

Factors to Consider in Evaluating Renewable Energy Opportunities in Algeria



Legal Basis for the Opening of Algeria's Electricity Market

Algerian Law No. 02-01 on electricity and public distribution of gas by pipelines & Executive Decree No. 17-98 of 2017, specify that:

- The promotion of the use and the integration of RE in the indicative program for the development of national electricity generation means;
- **The opening up of the market for renewable electricity (generation)**
- **The encouragement of RE through the tendering procedure (to investors or auctions)**
- **The invitation to tender to investors is open to any investor wishing to build and operate electricity generation facilities from the RE**
- Producers using RE and/or cogeneration may benefit from premiums which are considered as diversification costs
- These diversification costs (in case the renewable KWh is more expensive than the conventional KWh) are offset by a Fund set forth by the Algerian Government and managed by the Ministry of Energy Transition and RE

Implementation of the RE Development Program

SHAEMS

الشركة الجزائرية للطاقة المتجددة

Implementation is the responsibility of SHAEMS

- issues calls for tenders
- processes the tenders
- determines which bidders are compliant and meet tender specifications
- allowing transparency vis-à-vis all potential investors

- Tender Specification will Provide Investors with Several Guarantees
 - a) the availability of field areas chosen beforehand
 - b) the RE potential
 - c) identification and provision of electrical works
 - d) signing of a contract to purchase and sell electricity
 - e) a contract duration of more than 20 years
 - f) assistance to state institutions in obtaining the various authorisations
- Projects will be in IPP mode
- Project companies (SPVs) may bid on their own or in consortium which can consist of State-owned and/or private sector companies

Agreements between governments (e.g., Partnership of Exception Agreements) may be concluded to implement part of the Algerian RE development program, depending on the negotiation beforehand of several factors between the two parties.

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