



Mitigation Enabling Energy Transition in the MEDiterranean region
Together We Switch to Clean Energy

COUNTRY REPORT ON ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENT CLIMATE

Algeria



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The meetMED project is a two-year project funded by the EU and jointly carried out by the Mediterranean Association of the National Agencies for Energy Management (MEDENER) and by the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE). Its main goal is to reinforce regional cooperation aimed at fostering the energy transition in Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia under the umbrella of the UfM REEE platform.

The meetMED team in Brussels coordinates the project partners and experts in implementing the project activities, in the following areas of work: assessing EE and RES strategies and policies; advancing vocational training and public awareness; attracting sustainable RE and EE investments; supporting the UfM Renewable Energy and Energy Efficiency Platform.

The meetMED activities target and benefit a wide range of stakeholders, including policy makers, public authorities, investors and financial institutions as well as local communities and final customers. meetMED supports regional cooperation by building the technical capacity and raising the public awareness necessary to implement RE and EE projects and solutions, while creating synergies with other initiatives targeting energy transition in the Mediterranean region.



MEDENER is an international non-profit organization gathering agencies from the northern and southern Mediterranean countries in charge of implementing public policies on energy efficiency and the promotion of renewable energy sources, by implementing regional projects facilitating the sharing of know-how and best practices among its members and international partners, as well as accelerating the transfer of skills, methods and technologies in the field of energy efficiency and renewable energy.



RCREEE is an intergovernmental organization aiming at enabling the adoption of renewable energy and energy efficiency practices in the Arab region. **RCREEE** brings together regional governments and global organizations to initiate and lead clean energy policy dialogues, strategies, technologies and capacity development in order to increase Arab states' share of tomorrow's energy. Its key work areas are capacity development and learning, policies and regulations, research and statistics, and technical assistance.

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Acronyms

AfDB	African Development Bank
ALNAFT	Agence nationale pour la valorisation des ressources en hydrocarbure
ANRH	Agence nationale des ressources hydraulique
APRUE	Agence nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Énergie
BP	British Petroleum plc.
CIA	Central Intelligence Agency U.S.
CREG	Commission de Régulation de l'Electricité et du Gaz
CSP	Concentrating Solar Power
EE	Energy Efficiency
ENEA	Italian National Agency for New Technologies, Energy and Sustainable Economic Development
FDI	Foreign Direct Investment
FiT	Feed-in-Tariff
FNI	National Investment Fund (Fonds National d'Investissement)
FRR	Oil Stabilization Fund (Fonds de Regulation des Recettes)
GDP	Gross Domestic Product
GHG	Green House Gases
GRTE	Gestionnaire réseau de transport électricité
ICEM	Intersectoral Council for Energy Management (Conseil intersectoriel de la maîtrise de l'énergie - CIME)
IEA	International Energy Agency
IMF	International Monetary Fund
IPP	Independent Power Producers
IRENA	International Renewable Energy Agency
MEM	Ministry of Energy
MEDENER	Mediterranean Association of National Agencies for Energy Management
NEEP	National Energy Efficiency Program
NFEM	National Fund for Energy Management (Fonds national de Maîtrise de l'Énergie – FNME)
NFRE	National Fund for Renewable Energies (NFRE)
NFREC	National Fund for Renewable Energies and Cogeneration (Fonds national pour les énergies renouvelables et la cogénération - FNER)

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NFEEREC	National Fund for Energy Efficiency and for Renewable Energies and Cogeneration (Fonds national pour la maîtrise de l'énergie et pour les énergies renouvelables et de la cogénération)
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PNME	National Energy Efficiency Program
PPA	Power Purchase Agreement
PV	Photovoltaic
RCREEE	Regional Center for Renewable Energy and Energy Efficiency
UNCTAD	United Nations Conference on Trade and Development
WB	World Bank

Foreword



It has been a great privilege and responsibility for me to coordinate the activities planned in the framework of the meetMED project dedicated to “Mapping selected countries’ investment climate and market structure in order to mitigate investment risks for pre-defined Energy Efficiency and Renewable Energy Sources technologies”.

These activities addressed policy and regulatory risks and barriers for the financing of energy efficiency and renewable energy sources in two Mediterranean countries (Algeria and Palestinian Territories), by gathering updated information on the national economy, in particular the investment climate in the energy sector, the energy market structure and the legislative framework for energy efficiency and renewable energy sources investments.

This meetMED Investment Country Report is the main outcome of the activity and is aimed at giving a brief and up-to-date picture of the energy efficiency and renewable energy markets in Algeria as well as at providing for a transparent and comprehensive analysis of the existing legal and regulatory framework applicable to the investments in the energy sector. A survey has been conducted through questionnaires and interviews addressed to public decision-makers and local and foreign sectoral companies in order to study the market confidence in the field of renewable energy sources and energy efficiency.

Policy recommendations are a crucial part of the report through a combination of general and specific recommendations, which ensure both long-term policy advice and short-term policy guidance for the improvement of the investment climate and the market structure.

This report shows that there is a pressing need to achieve an extraordinary deployment of initiatives and actions in order to promote and support strategies and policies in the Mediterranean region that could trigger a tumultuous investment growth in renewable energy and energy efficiency. On the other hand, it is clear that overcoming existing barriers and risks to invest-

ment requires deep changes to the regulatory framework and to market rules, that have to be necessarily accompanied by adequate technical assistance, guidelines and good practices to make them effectively contribute to green investment and sustainable growth.

The report has been carried out in agreement with - and with the remarkable support of the experts from the Agence nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Énergie (APRUE), in order to identify the strategic goals and objectives of the reviewing process.

I hope that these meetMED case studies might represent a starting point for future project cooperation opportunities, to be applied to all MEDENER and RCREEE countries, properly revised and expanded, so as to contribute significantly to the definition of a detailed framework at regional level, that could serve as an additional tool to support sharing and dialogue among the countries in the region.

My warm and sincere thanks go to our Partners and to all the colleagues who have contributed, through their efforts and expertise, to the successful realization of this work.

Roberto Del Ciello
ENEA – Activity Leader

Acknowledgements



This meetMED country report on the investment climate for the EE and RE sector in Algeria provides an updated insight into the legal framework and the market structure for EE and RE investment in Algeria.

Opportunities, risks and barriers have been evaluated by involving national authorities as well as domestic and foreign companies in taking an accurate survey.

The main conclusions of this report should guide policy-makers, public authorities, investors and financial institutions, but also local communities and final customers to facilitate investment that might increase the penetration of RES and EE in the national energy system of Algeria.

This report is the result of the very effective team work between the experts from the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and those from the Algerian National Agency for the Promotion and Rationalisation of Energy Use (APRUE), that worked together in the framework of the EU-funded meetMED project.

Special thanks go to Nadia Chioukh and Tahar Moussaoui from APRUE, who coordinated the scoping missions and the market survey in Algeria.

The ENEA team, led by Roberto Del Ciello and composed of Cecilia Camporeale, Lorenza Daroda, Lucilla Fornarini, Michele Preziosi with the contribution of Alessandro Federici, Mario Jorizzo and Corinna Viola, coordinated the drafting of the report and secured the consistency of its methodology and structure, together with Dr Maged Mahmoud from the RCREEE, leader of the relevant meetMED action.

Not least, the important contribution of organizations and individuals in Algeria that have granted solid commentaries and in-depth review of the text should be acknowledged, among others: the division of the Ministry of Energy

in charge of Energy Efficiency and the promotion of Renewable Energies, the division of the Ministry of Industry and Mines in charge of studies and investments, the National Agency of Climate Change, the National Agency for the Promotion of Investment, Sonatrach, Sonelgaz, SKTM as well as other domestic and foreign private companies and non-governmental-organization.

Finally, I wish to thank the network of the meetMED experts that contributed to this report. Their expertise, diversity and commitment are essential for the efforts in terms of regional cooperation towards increasing the penetration of EE and RE in the energy systems of the countries surrounding the Mediterranean Sea.

Matteo Barra

meetMED Project Manager

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Executive Summary

Background

This report is part of the activities of the project 'Mitigation Enabling Energy Transition in the Mediterranean Region' (meetMED) focusing on mapping the investment climate in order to mitigate the investment risks for Energy Efficiency and Renewable Energy Sources technologies in Mediterranean countries. This report focuses on Algeria.

The main objective of the report is to identify the policy and regulatory risks and barriers by gathering updated information from market players on the investment climate, after an overview of the energy market structure and of the legislative framework for investments in the field of energy efficiency and renewable energy sources. In its conclusions, the report presents its general and specific policy recommendations, which provide both long-term policy advice and short-term policy guidance for the improvement of the investment climate.

Introduction

This meetMED country report on renewable energy sources (RES) and energy efficiency (EE) investment climate provides a transparent and comprehensive analysis of the legal and regulatory framework applicable to domestic and foreign investment in the RES and EE sectors in Algeria. The report highlights investment risks and barriers based on the analysis of the energy market structure and of the market confidence, taking into account the experience of domestic and foreign market players. The main objective of the report is to promote energy investment through the identification of potential investment opportunities and the formulation of policy recommendations.

Besides general information about Algeria – like country information, political system, economic situation, national financial institutions, and international investment flows – the report describes the importance of the energy sector in the Algerian national economy, energy supply and consumption, national energy plan and strategy.

To attract RES and EE investments in the country is crucial to boost a transition towards a new paradigm of sustainability both to respect the international commitments to fight climate change and to assure the sustainability of the Algerian economy. The best tool to involve relevant stakeholders was a survey, conducted by means of two questionnaires: the first questionnaire submitted to public authorities, the second one submitted to entrepreneurs/companies investing on RES and EE in Algeria.

Overview of the Algerian Economy

Algeria, the eleventh largest country in the world with over 43 million people, is a democratic and popular republic using a semi-presidential model of government.

Hydrocarbons have long been the backbone of the Algerian economy: oil and gas accounted for two thirds of the State revenues and about 30% of its GDP. Exporting hydrocarbons enabled Algeria to maintain macroeconomic stability, low external debt and financial incentives, such as generous subsidies and free housing while global oil prices were high.

The decline in oil prices have reduced the government's ability to use state-driven growth to distribute rents and fund generous public subsidies, thus the government has been under pressure to reduce spending. Public investment became an engine for growth and public employment, and absorbed the growing labour force.

Algeria is one of a handful of countries that have achieved 20% poverty reduction in the past two decades and improved the well being of its people by implementing social policies in line with the United Nations' Sustainable Development Goals. However, 10% of the population is considered vulnerable to fall back into poverty.

Algeria's high vulnerability to volatile international oil prices exposes it to a high risk of a prolonged economic slowdown. To face the crisis, the government needs to diversify its economy away from hydrocarbons, encouraging domestic production of non-oil and gas industries. The role of the State is traditionally dominant. The sharp drop in hydrocarbon revenues caused companies to suffer a double shock: i) the drop in public procurement, which many

sectors depended on; and ii) the restrictions on imports (equipment, raw materials, semi-finished products, etc.).⁽¹⁾

Besides and given the new world energy order characterized by abundant supply, lower prices and the gradual introduction of renewable energies into the energy mix of the countries, an in-depth overhaul of the legal system of hydrocarbons, in particular at the fiscal and contractual levels was judged necessary and essential to restore the attractiveness of the national mining domain. Thus, a new hydrocarbons Act. n° 19-13, December 11th, 2019 was adopted to revitalize this strategic sector by introducing several measures to encourage investments in the Hydrocarbons sector in Algeria. It actually provides a more flexible contractual regime and a tax regime more favourable to foreign partners.

The International Investment Flow in Algeria

To face the global financial crisis starting in 2008, the Algerian government introduced the 51/49 rule, according to which foreign investors have been restricted to a maximum stake of 49% in a company in order to encourage the development of infant local industries that needed support. This policy has been, probably, the reason why the foreign direct investment flows to Algeria have diminished in the recent years.

According to the UN Conference on Trade and Development, in 2015 the foreign direct investment flows in Algeria had registered its first negative balance since 1994, after three years of permanent reduction, thus remaining in 2017 at USD 1.2 billion, below the levels of a decade ago.

Table E.1 – Algeria: FDI and external financial resources

(millions of USD unless otherwise specified)	2005	2010	2015	2017
FDI inflows	1145.34	2301.23	-584.00	1203.00
FDI outflows	-20.19	220.49	103.22	-4.00
Personal remittances, % of GDP	1.65	1.27	1.21	1.18

Source : UNCTADstat (<http://unctadstat.unctad.org>)

(1) *Observatoire du Climat des Affaires - OCA (2017), «Programme de Réformes économiques pour l'entreprise. De la revendication à la concertation», juillet 2017, www.oca.dz*

Seeking more trade and foreign investment, in 2005 Algeria redesigned the hydrocarbon law to encourage foreign investment in energy exploration while, in 2016, Algeria introduced a “Revised Investment Law” to replace most provisions of the current investment legislation. Furthermore, the Government launched a new operation to finance economic investments and major infrastructure projects, called “National Bond Issue for Economic Growth” that raised USD 5.2 billion to finance its domestic debt market.

Investments in Algeria remain complex due to protectionist measures, along with bureaucracy, a weak financial sector, and legal insecurity over intellectual property, yet, the Government has set up reforms and various attractive mechanisms to encourage and stimulate foreign investment.

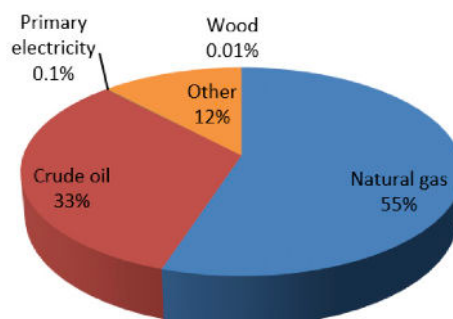
The renewable energy sector in Algeria is a priority, still an emerging field, it offers huge opportunities considering the significant potential, the various tax incentives and the inexpensive labour force. Furthermore, the withdrawal of the “51/49 rule” for foreign investment in non-strategic sectors and the new Finance Law will also enable the use of external financing for “strategic, flagships, and targeted” projects for the national economy.

The Current Energy Situation

Algeria, a country severely affected by desertification, is particularly vulnerable to the multiform effects of climate change that risk to undermine its economic and social development.

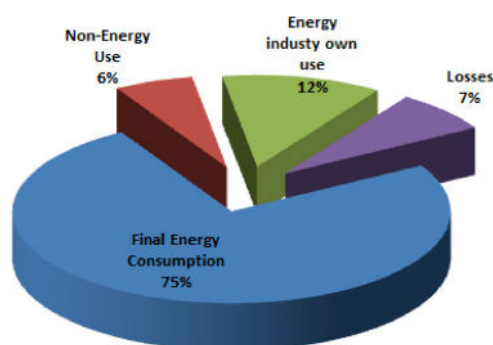
In the recent years, Algeria has begun to diversify its energy sector through solar energy in order to increase the share of renewable energy in its energy mix. Despite a considerable potential, the share of renewable energies in the energy balance is still low, especially in the production of electricity. Taking into consideration its high potential in RES, Algeria has announced a renewable energy development program allowing the production of 15 GW of electricity by 2035, including 4 GW by 2024.

Figure E.1 – Algerian primary energy production in 2017



Source: Ministère de l'Énergie (2018)

Figure E.2 – Algerian final energy consumption by aggregates in 2017



Source: Ministère de l'Énergie (2018)

In 2017, the primary energy production was 165.6 Mtoe with an increase in gas production covering the light decline of liquids (oil and LPG) due to the OPEC agreement of reducing oil supply.

National final energy consumption (including losses) reached 59.6 Mtoe, mainly driven by final consumption (+4.1%). Among final consumption, “Households & others”, with 19.8 Mtoe, is dominant, driven by the residential subsector (15 Mtoe), while “Transport” reaches 14.9 Mtoe, driven by road fuel consumptions.

The needs of the residential sector are expected to multiply by 2.7 at 2030 while the tertiary sector is expected to increase its power consumption by 3.2. To cover the energy demand growth, Algeria has embarked on the path of RES in order to face the environmental challenges and resources conser-

vation issues concerning energy from fossil fuels through the launch of an ambitious programme for the development of RES.

The ambitious programme for the development of RES aims to reach a 37% of installed capacity by 2030 and 27% of electricity production for national consumption from renewable sources.

Survey on Market Confidence

In order to understand how to boost transition towards RES and EE, it is necessary to discuss how to attract investment in these fields, by involving relevant stakeholders in a survey in order to identify hurdles and barriers that impede a stable growth.

The survey consists of two questionnaires designed by the ENEA staff in cooperation with the national experts of APRUE who provided in depth comments and remarks. The questionnaires were submitted on-line to institutional stakeholders, local authorities, and national enterprises who operate, or intend to make investment, in RES and EE in the Algerian energy market, according to a participative approach.

The initial findings of the report were discussed, together with the initial findings of the Palestinian case study, in a workshop held in Rome on December 4th, 2019 at the ENEA headquarters, and further drafts were commented by country experts and peer reviewers in order to secure the quality and in-depth review of the report.

With respect to the questionnaire targeting local authorities, the main goal was to assess the effectiveness and adequacy of national and local policies to increase foreign direct investments (FDI) in RES and EE. Together with this questionnaire, also a questionnaire for national companies has been arranged, whose goal was to acquire information on companies' points of view on the attractiveness of Algeria, as a country where it is feasible to invest.

Considering how the climate conditions affect the well-being of the Algerian population and its economy, the political agenda includes actions specifically targeted to mitigate the challenging climate conditions characterising most

of the national territory. For these reasons, in the context of accession to the Paris Agreement Algeria has submitted its Intended Nationally Determined Contribution (INDC), and adopted the National Climate Plan, an implementation instrument which has been put forward by the INDC itself. Furthermore, Algeria will submit its Nationally Determined Contribution (NDC), in accordance with the Paris Agreement.

Investing in RES and EE is a good step in this direction, and in order to strengthen these two elements, Algeria launched a National Energy Efficiency and Renewable Energy Program to be realized thanks to the incentive regimes and subsidies coming from the National Fund for Energy Management, Renewable Energies and Cogeneration.

According to the results of the survey, one of the main barriers in the energy market is the monopolistic regime, in which natural gas - as primary energy - has a price well below the international price and an uncompetitive cost of renewable energy. Respondents underline the significance of the topic as a national priority validated at the central government level: to this aim, they foresee the regulatory framework will be strengthened in order to facilitate the support of this tool by banks.

According to the preliminary findings concerning national companies, among the economic and financial barriers, the most significant ones are linked to the uncertainty in modelling the potential financial externalities when deciding to invest, and also to the long pay-back period, while the difficulty in accessing financing is considered as a moderately significant barrier.

Among the technological and infrastructural barriers, it is the lack of a solid regulatory framework for land securement being an extremely significant bottleneck to invest in RES and EE, as well as the currently faced grid connection constraints and lack of grid capacity.

On the institutional and regulatory aspects, the lack of coordination among relevant Algerian institutions results the first barrier, followed by the lack of a regulatory framework for competition. At the same time, the lack of regulatory framework for the liberalisation of renewable energy and energy efficiency is the least challenging hurdle according to the respondents.

Recommendations

The main barriers to investment on EE and RES depend on political, regulatory, economic and social factors.

Algeria is facing an important transition towards a path of sustainable development that, for a country strongly linked to the production of fossil energy, has formidable economic, social and political implications. More than 95% of Algeria's revenue comes from its oil and gas exports, but it is facing the reduction of its own resources in presence of a highly fluctuating market that is reducing revenues compared to previous years. Moreover, domestic energy needs are constantly growing, with an annual increase of more than 6% since 2000. This rapid growth in the demand for energy is in line with the population growth, with the number of housing units, with the country's development projects and the major public works.

In a context of declining resources and revenues, the energy supply needed to meet this ever-growing demand, is a major challenge for the country. Even if economic reasons suggest an upward revision of energy prices, which are too low in Algeria due to a high State subsidy, it remains a particularly sensitive issue to implement any measures to revise energy pricing, because of its social implications and risks with entitles particularly policy choices.

RES and EE can give a significant contribution to overcome the dilemma between a pricing policy that allows investment to be remunerated and the need to avoid social tensions and energy poverty. In other words, RES and EE can cope up with the expected growth in the domestic energy demand without being affected by volatility of fossil fuel prices and without compromising revenues from oil and gas exports but contributing to sustainable development policies and the achievement of emissions reduction targets. This strategy cannot disregard the crucial role that can be played by public investment plans in the sector, accompanied by the creation of market conditions that foster an adequate level of private investment by domestic and foreign companies.

As this report shows, the achievement of adequate levels of public and private investment in the RES and EE sector is facing numerous and complex barriers and obstacles.

Policy and Institutional Recommendations

The Ministry of Energy is now committed to developing a clear energy efficiency policy in order to develop a coherent government strategy to address low energy costs.

However, a strong coordination between the different sectors shall be achieved, in order to enable Public Authorities to coordinate and harmonise their programmes in favour of a common energy efficiency strategy, in particular in key sectors, such as construction, health, industry, tourism, transport and finance.

Synergy between the public and private sectors has to be improved, since its weakness is still a major obstacle to the development of these energy markets. Public policies in the energy sector have not provided significant scope for the intervention of private operators yet.

Looking at the framework of a national energy efficiency and renewable energy programmes, it is necessary to promote and to boost a policy of dialogue among public and private stakeholders, also through a public consultation and shared participation.

The current institutional set-up in Algeria, based on a strong centralisation at the State level, does not help the development of measures, which would require an important role for local authorities, especially for energy efficiency. At the moment, there is no dedicated public structure or institution to support the 1,541 existing local Authorities in Algeria, neither the Ministry of the Interior nor another energy institution, such as the APRUE which despite its efforts, remains in need of institutional and organizational enhancement to accompany the municipalities in the implementation of EE plans. On the other hand, the roles of all stakeholders in this sector shall be clearly identified in order to facilitate the procedure of investing in RES and EE.

The private sector could play a leading role in this sector by investing in energy efficiency and renewable energy at the municipal level (mosques, schools, public buildings, street lighting, etc.). This is an area that not only contributes to improving the quality of energy supply, but also encourages job creation and environmental protection through the reduction of greenhouse gas emissions and pollutants. To date, the private sector is acting more as a service

provider than as a full partner, fact that considerably reduces its intervention and investment in the medium and long term.

With the publication of the decrees on the feed-in tariff for solar and wind electricity, private sector investment projects should be able to emerge, and, then, local Authorities could have a role to play in attracting these investors to their territory.

Appropriate measures should be implemented to enhance the infrastructure like the national grid in order to absorb all the energy generated from RES without affecting the quality of power signal. The overall energy transition policy, which is high in cost, will induce the creation of new important markets. The numerous opportunities for industrial investment that emerge and the place given to innovation in this market call for considering promoting not only activities in the energy sphere but also related industries in order to mitigate the costs of the global policy.

Financial Recommendations

Investment costs and length of pay-back times related to the implementation of RES and EE measures may be a financial and/or psychological constraint for investors, who may not understand the return on investment that will be generated by these costs.

This is particularly true in the social housing sector, which is very sensitive to financial issues. In this case, the State, through the Ministry of Housing, is the only authorized body to promote investment.

The assessment of housing values should take into account not only the construction costs but also the operating costs of these dwellings. Because of the strong State subsidy on energy products, it is clearly demonstrated that the State would benefit much more from the additional costs of EE measures introduced in buildings, rather than from subsidising the energy consumption of its less-energy-efficient dwellings with reduced thermal / cooling comfort.

Extra incentives for tax exemptions in energy efficiency goods and projects shall be promoted.

Also, the lack of access to bank loans reduces the opportunities to implement projects and excludes any possibility of financial arrangements. Finally, it is suggested to open the energy markets to both small and large investments, since currently small investors cannot implement their own projects because large investors cover all the demand.

Information Recommendations

The lack of information on current funding mechanisms and regulations prevents small and medium size enterprises, suppliers and installers (such as architects, engineers, etc.) and policy makers mainly at the local level to understand the benefits of energy efficiency, renewable energy and financing opportunities.

As a result, most operators and investors do not take these energy aspects into consideration in their projects, and therefore do not develop projects that contribute to energy efficiency and renewable energy development.

Energy efficiency must be promoted so as it will no longer remain a marginal and very little known element for investments in all sectors. It is often seen more as a constraint than as an improvement solution that can have a significant impact on the profitability of the project.

The opening up of markets to ESCOs (Energy Service Companies) should be supported through regulations and ad hoc measures as a tool to support the promotion of energy efficiency.

Renewable energy projects in municipalities are often more in line with a municipality's image strategy, rather than with an investment project per se. Therefore, it is strongly recommended to develop clear guidance to investment and connection of RES projects.

The creation of an information centre and data bank for all the RES projects would be welcomed, as well as a classification of RES and EE companies. This classification should be based on the feedback received from the customers on such companies. RES and EE companies should hire only qualified and certified engineers and technicians.

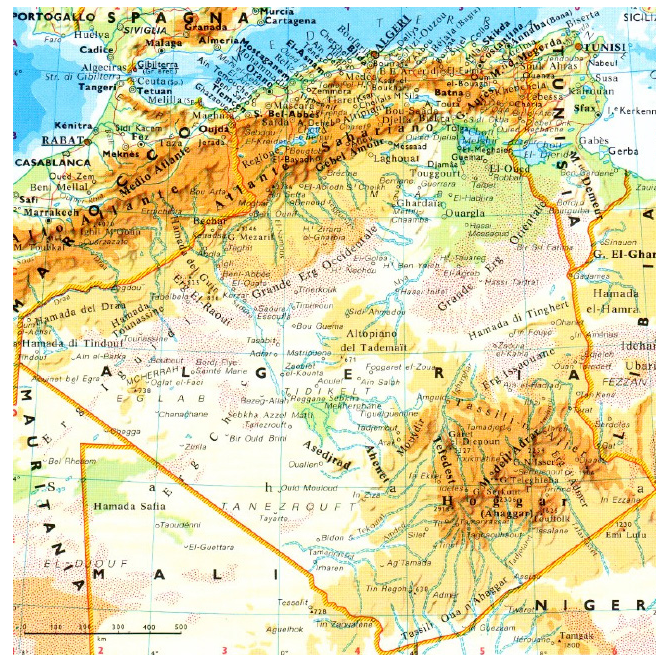
Further awareness campaigns should start up as along with the organization of workshops at all levels utilizing formal and informal mass media, social media, etc. It needs to prepare dissemination campaigns and promotion of knowledge among citizens and in schools.

1. General Information on Algeria

1.1. Country Information

Algeria – officially called the People’s Democratic Republic of Algeria – lies in the Maghreb region⁽²⁾ of North Africa. With an area of 2,381,741 square kilometres, Algeria is the eleventh-largest country in the world, and the largest in Africa.⁽³⁾

Figure 1 – Map of Algeria



Algeria is bordered to the north-east by Tunisia, to the east by Libya, to the west by Morocco, to the south-west by the Western Saharan territory, Mauritania and Mali, to the southeast by Niger and to the north by the Mediterranean Sea with a 1 622,48 km (1,008 mi) coastline.

(2) The Maghreb, known as North-West Africa or Northern Africa, represents a major region of North Africa that consists of the following countries: Algeria, Morocco, Tunisia, Libya and Mauritania.

(3) CIA (2018), “Country Comparison: Area” - CIA World Fact book. 20 March 2019.

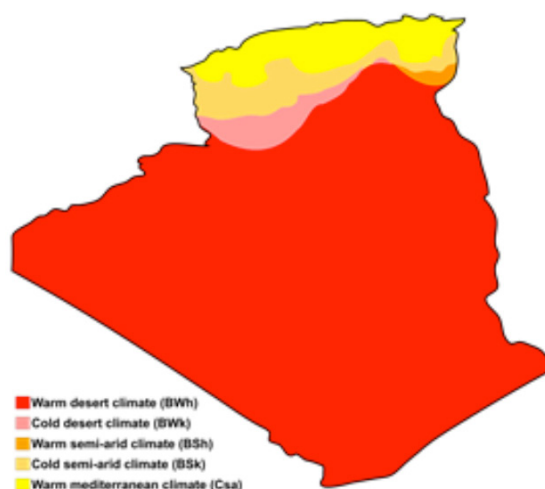
Country Report on Energy Efficiency and Renewable Energy Investment Climate

Algeria has a population of approximately 42 million people, 90% of which live in the northern coastal area. Algiers is the capital and most populous city.

Arabic is the official language, and Tamazight is a national language. The country is almost only populated in the small coastal region, because its southern part is covered by the Sahara, the largest subtropical hot desert.

Algeria may be divided into two distinct geographic regions: the northern one, most generally known as the Tell, is subject to the moderating influences of the Mediterranean sea and consists largely of the Atlas Mountains, which separate the coastal plains from the second region in the south; while the southern region forms the majority of the country's territory and is situated in the Western portion of the Sahara, which stretches across North Africa. In southern Algeria, the Hoggar Mountains, also known as the Hoggar, are a highland region in central Sahara. They are located about 1,500 km south of the capital, Algiers, and just East of Tamanrasset.

Figure 2 – Algeria map of Köppen climate classification



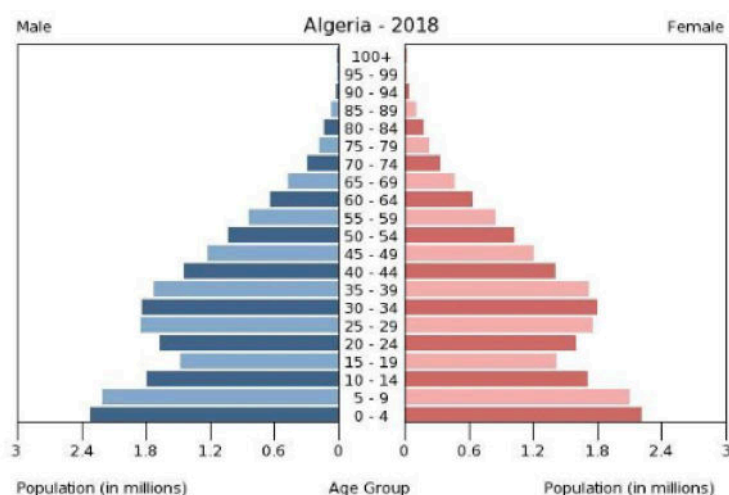
The climate varies from arid to semiarid: mild, wet winters with hot, dry summers along the coast; drier, with cold winters and hot summers on high plateau; summers are characterised by the sirocco, a hot, dust/sand-laden wind. However, enormous daily ranges of temperature are recorded.

Rainfall is fairly plentiful along the coastal part of the Tell Atlas, ranging from

400-670 mm annually; precipitations increase from West to East and they are heavier in the Northern part of Eastern Algeria, where it reaches up to 1,000 mm in some years. Inland, the rainfall is less plentiful. Algeria also has sand dunes, between mountains. There, in the summer, when winds are heavy and gusty, temperatures can get up to 43.3 °C.

During 2019, the resident population in Algeria is estimated at 43,424,000 people as of July 1st, the natural increase recorded during the year reached 837,000 people, with a natural increase rate of 1.93%, continuing to record the decline started since 2017, with a decrease of 0.06 point compared to the year 2018.

Figure 3 – Algerian population pyramid in 2018



Source: CIA (2018)

A large part of the population is young, the average age continues to grow as a result of the increase in life expectancy at birth.

1.2. Political System

The country is a semi-presidential republic consisting of 48 provinces and 1,541 communes (municipalities).

The legislative power is held by a bicameral Parliament, consisting of the Council of Nation (upper house with 144 seats; one-third of members appoint-

ed by the president, two-thirds indirectly elected by simple majority vote by an electoral college composed of local council members; members serve 6-year terms with one-half of the membership renewed every 3 years) and the National People's Assembly (lower house with 462 seats including 8 seats for Algerians living abroad; members directly elected in multi-seat constituencies by proportional representation vote to serve 5-year terms).

The executive power is in the hands of the chief of State or President, directly elected by absolute majority popular vote in two rounds - if needed - for a 5-year term. The President appoints also the Cabinet of Ministers and nominates the Prime minister after consultation with the party that holds the majority in the Parliament.

After 132 years under French domination, Algerians fought from 1954 to finally achieve independence in 1962.

1.3. Economic Situation and Performance

Algeria's economy remains dominated by the State. In the recent years, the Algerian Government has halted the privatization of state-owned industries and imposed restrictions on imports and foreign involvement in its economy, pursuing an explicit import substitution policy.⁽⁴⁾

Hydrocarbons have long been the backbone of the economy, accounting for roughly 30% of GDP, 60% of budget revenues, and nearly 95% of export earnings. Exporting hydrocarbons enabled Algeria to maintain macroeconomic stability, gather large foreign currency reserves, and maintain low external debt while global oil prices were high.

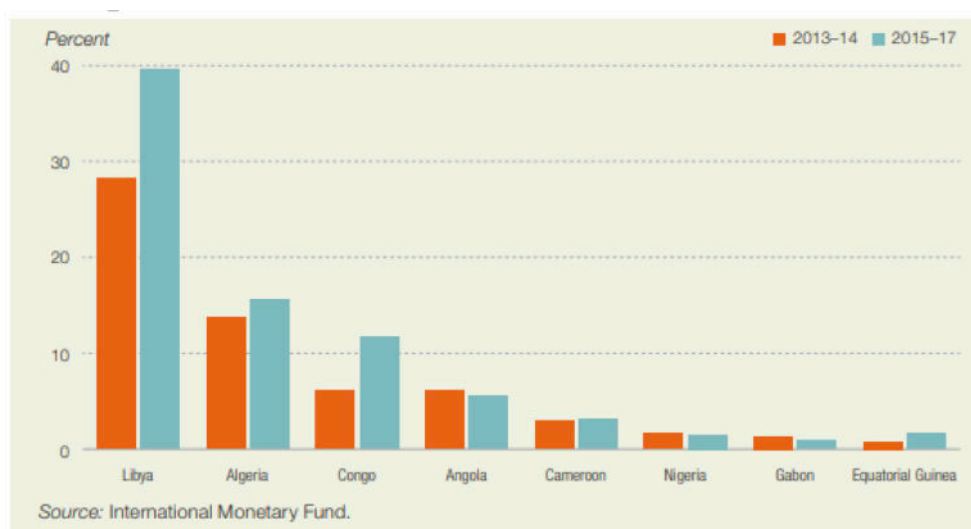
Since 2014, due to lower oil prices, Algeria's foreign exchange reserves have declined by more than half and its oil stabilization fund has decreased from about USD 20 billion at the end of 2013, to about USD7 billion in 2017, which is the statutory minimum, while the large subsidies for the population have fallen under stress.⁽⁵⁾

(4) CIA (2018)

(5) CIA (2018)

The decline in oil prices have also reduced the government's ability to use state-driven growth to distribute rents and fund generous public subsidies. Moreover, the government has been recently under pressure to reduce spending. The sharp drop in hydrocarbon revenues caused companies to suffer a double shock: i) the drop in public procurement, which many sectors depended on and ii) the restrictions on imports (equipment, raw materials, semi-finished products, etc.).⁽⁶⁾

Figure 4 – Energy subsidies as a share of nominal GDP, African oil exporters, 2013-14 and 2015-17

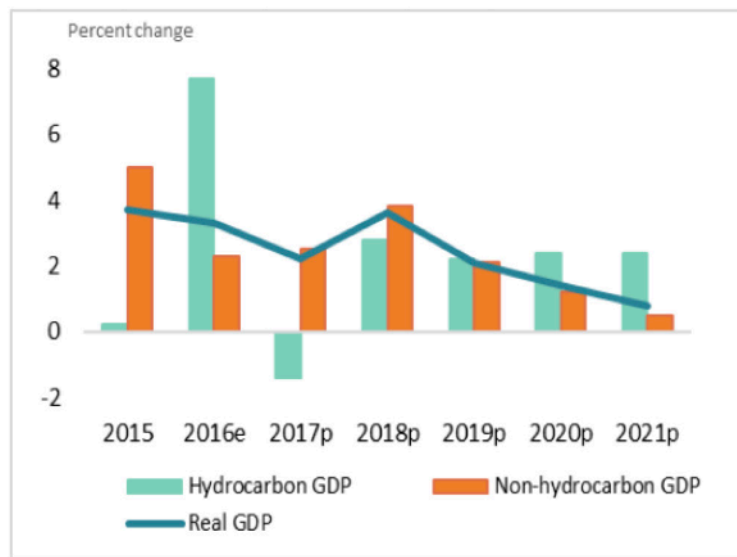


According to the African Development Bank (AfDB, 2019), energy subsidies in many African countries might be considered as a major fiscal burden. Despite the drop in global oil prices, energy subsidies as a share of GDP have remained mostly unchanged. Among oil-exporting economies, Angola, Cameroon and Nigeria had a similar share in the pre-peak period (2013 and 2014) and post-peak period (2015–17), but in Libya, Algeria, and Congo, the share increased (fig. 4).

The African Development Bank (AfDB, 2019) suggested that subsidy reforms must be geared toward more-efficient and better targeted social safety nets for the most vulnerable. This could improve public finance management, create more fiscal space for much needed public investments in infrastructure, and improve the debt situation.

(6) Observatoire du Climat des Affaires - OCA (2017), « Programme de Réformes économiques pour l'entreprise. De la revendication à la concertation », Juillet 2017, www.oca.dz

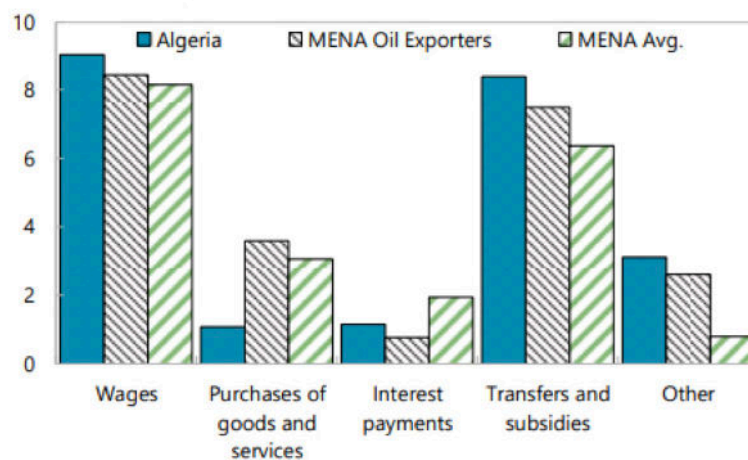
Figure 5 – Real GDP growth



e= estimated; p =projections

Sources: World Bank Staff estimates and projections.

Figure 6 – Composition of current spending (percent of GDP, 2000-16 average)



Sources: IMF (2018)

Over the past three years, the Algerian government increased some taxes, especially the value-added tax, which resulted in modest increases in prices for gasoline, cigarettes, alcohol, and certain imported goods, but avoided to reduce subsidies, particularly those for education, healthcare, and housing programs.

Since 2015, Algeria has increased protectionist measures to limit its import bill

and encourage domestic production of non-oil and gas industries. The government imposed additional restrictions to the access to foreign exchange for imports, as well as to import quotas for specific products, such as cars.⁽⁷⁾

In 2016, Algeria experienced a fairly strong growth, that was mainly driven by the recovery in hydrocarbon production, which balanced the slowdown of non-hydrocarbon growth.

Hydrocarbon production grew to 3.6%, up from 0.4% in 2015. The non-hydrocarbon sector growth slowed reaching 3.9% from 5% in 2015, because of a slowdown in agriculture (due to unfavourable weather), water and energy, and other industries.⁽⁸⁾

Algeria's economic growth decelerated in 2017 due to a slight decline in the hydrocarbon production and the continued modest non-hydrocarbon growth.

In 2017, real GDP growth was estimated at 2.1%, a slowdown compared to the 3.3% in 2016. This slowdown was mainly due to the weak growth in the hydrocarbon production, which was estimated to have decreased by 1.4%, thus in sharp contrast to the dynamic start characterising the first quarter of the year. Meanwhile, growth in the non-hydrocarbon sector remained modest, despite the slight upturn from 2.3% in 2016 to 2.5% in 2017. This upturn was mainly caused by the reversal of the fiscal consolidation in the second half of 2017. Inflation remained high (5.5% in 2017) but decreased compared to 6.4% in 2016.⁽⁹⁾

Growth recovered sharply in 2018 with the fiscal expansion (fig. 5). As new public investments announced in the 2018 budget were carried out, headline growth and inflation increased. As a result, GDP growth will struggle to surpass the 2% threshold for the biennium 2019-20, constituting an anaemic growth for a middle-income country with a large youth bulge. While a continuing strong production from new oil wells will provide a growth boost, non-hydrocarbon growth would bear the brunt of the fiscal consolidation announced by the government for mid-2019.⁽¹⁰⁾

Public spending decreased by less than expected due to difficulties in pursuing

(7) In January 2018, the government decided to suspend indefinitely the imports of roughly 850 products, subject to periodic review.

(8) World Bank, 2017.

(9) World Bank, 2018

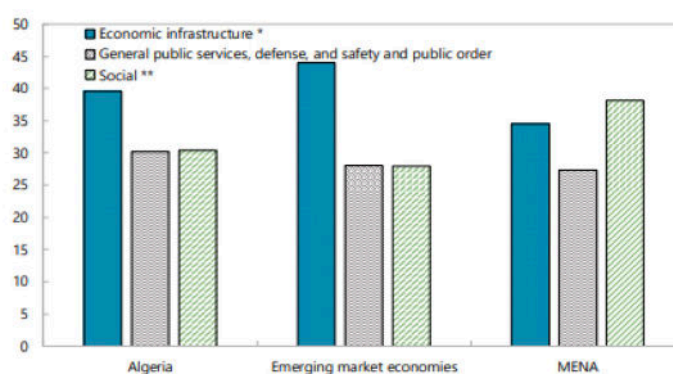
(10) World Bank, 2018

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the 2017 budget target. In fact, since the end of the 1990s, Algeria has made massive investments in health and education in response to the pressing needs of its people, while working also to close large infrastructure gaps. In the current fiscal framework (2018-2020), adopted in the 2018 Budget Law, public spending will remain very high, and will not be offset by a potential increase in the revenues of the government, due to an expected upturn in oil price and production.⁽¹¹⁾

Public investment has been about 20% of non-hydrocarbon GDP on average since 2000, much more than in similar countries. Reflecting the country's policy priorities, Algeria allocated on average about 70% of public investment to economic (including roads, ports, rails, airports and power and energy) and social infrastructure (such as housing, health, education, and recreation and culture) as shown in fig. 7.⁽¹²⁾

Figure 7 – Public investment by function (percent of total public expenditures, 2000-16 average)



Sources: Country authorities; and IMF staff calculations.

*Social comprises public investment in education, health, housing, social protection, and recreation and culture.

**Economic infrastructure comprises investment in power and energy, roads, airports, and rails.

Sources: IMF (2018)

Although imports increased slightly by 2.7% in 2017, exports have increased significantly, by 16.5%. As a result of continued deficits and limited capital inflows, the country's international currency reserves declined sharply. Nonetheless, external debt seemed to remain very low.⁽¹³⁾

(11) World Bank, 2018

(12) IMF, 2018

(13) World Bank, 2018

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However, according AfDB (2019), the real GDP growth was estimated to 2.5% in 2018, compared to the 1.4% in 2017. This increase is due to the growth in the non-hydrocarbon sector (5.2% growth) and significant fiscal spending (36.7% of GDP). The hydrocarbon sector remained sluggish (0.1% shrinkage). The growth estimates and projections for the period 2018–20 of AfDB are based on the conservative hypothesis of a weak hydrocarbon sector and a slightly improving non-hydrocarbon sector. Economic growth is projected to be 2.7% in 2019 and 1.9% in 2020.

The subdued 2020 growth is due partly to a more restrictive fiscal policy, as in 2019 public expenditures are projected to decline due to budgetary consolidation, which is projected to reduce the fiscal deficit from 5.3% of GDP in 2018 to 5% in 2019 and 4.7% in 2020.⁽¹⁴⁾

Table 1 – Algeria: Macro outlook indicators

(annual percent change unless indicated otherwise)	2015	2016	2017 e	2018 f	2019 f	2020 f
Real GDP growth, at constant market prices	3.7	3.3	2.1	3.5	2.0	1.3
Private consumption	3.9	3.3	3.6	3.7	2.5	1.5
Government consumption	3.1	1.3	0.9	1.2	-4.5	-2.5
Gross Fixed Capital Investment	5.7	3.5	0.5	10.5	-6.9	-5.6
Exports, Goods and Services	0.6	7.9	0.7	1.8	2.3	2.2
Imports, Goods and Services	6.4	-3.0	0.5	6.5	-8.2	-6.0
Real GDP growth, at constant factor prices	3.7	3.4	1.9	3.4	2.0	1.4
Agriculture	6.0	1.8	2.5	2.5	2.7	2.3
Industry	1.8	6.2	3.4	4.2	1.8	1.0
Services	4.3	2.3	0.9	3.1	2.0	1.4
Inflation (Consumer Price Index)	4.8	6.4	5.5	7.5	8.1	9.0
Current Account Balance (% of GDP)	-16.5	-15.6	-14.7	-16.1	-12.7	-10.2
Fiscal Balance (% of GDP)	-17.5	-15.7	-8.2	-11.4	-5.2	-1.9
Debt (% of GDP)	19.1	32.5	26.9	39.4	42.1	41.3
Primary Balance (% of GDP)	-16.8	-14.9	-6.9	-10.3	-3.6	-0.2

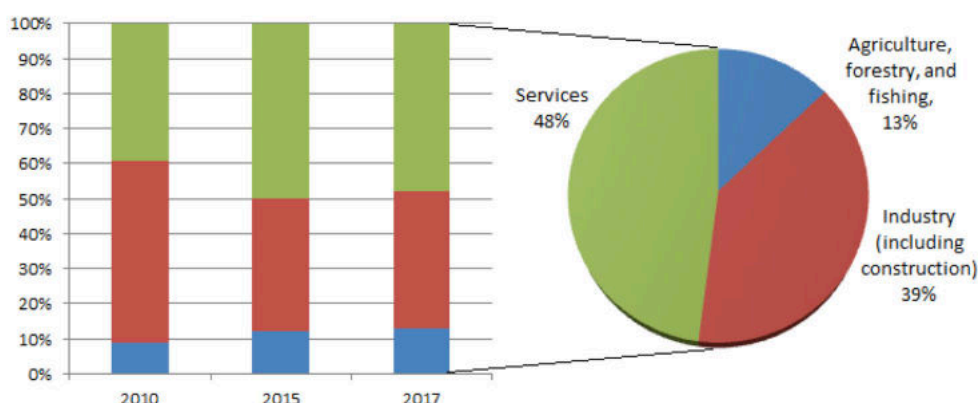
e=estimate; f=forecast

Source: World Bank (2018)

(14) AfDB, 2019

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Figure 8 – Composition of Value added, with a percent for 2017

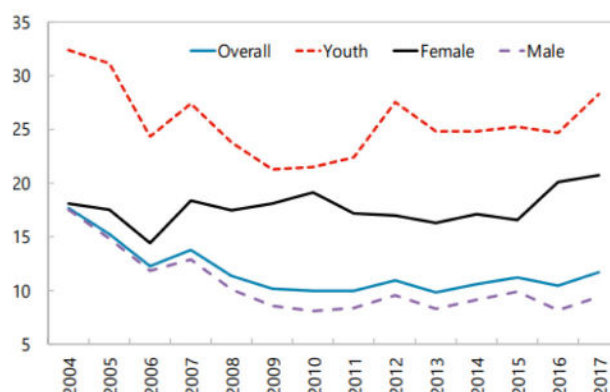


Source: Elaboration on World Bank databank

With the role of the State being traditionally dominant in the economy, public investment became an engine for growth, and public employment absorbed the growing labour force. In 2017, public employment was 40% of the total formal employment, with central government workers alone accounting for about 20% of the total formal employment.⁽¹⁵⁾

In the last few years, the unemployment rate increased by almost 1.5% points reflecting the sluggish non-hydrocarbon growth. Unemployment is particularly high (around 12%), but this percentage sensibly increases for youth (over 28%), and women (20.7%), as shown in figure 9. Furthermore, 10% of the population is considered vulnerable to fall back into poverty.

Figure 9 – Unemployment (percent)



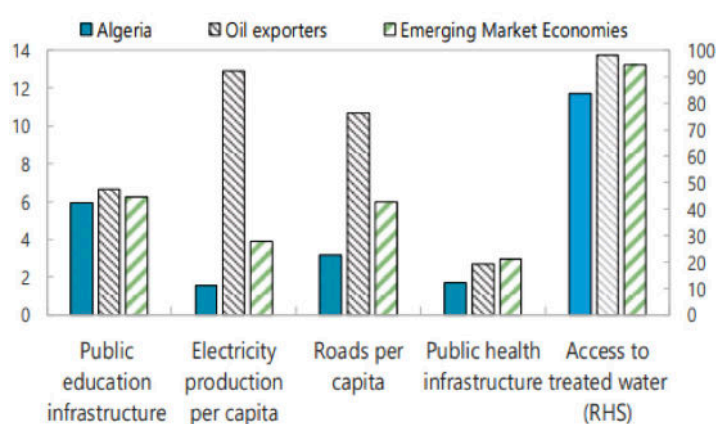
Source: IMF (2018)

(15) IMF, 2018

The national poverty was assessed at 5.5%, with a mere 0.5% of the population living in extreme poverty. Official calculations were based on a poverty line estimated to be 3.57 USD/day in 2011 PPP in urban areas and 3.18 USD/day in the rural ones, which could be perceived as low values for an upper middle country.⁽¹⁶⁾

Access to infrastructure and service delivery, notably to electricity and roads, seems still weaker in Algeria than in similar countries (fig. 10).

Figure 10 – Measures of Infrastructure Access (most recent year)



Sources: World Development Indicators; and IMF staff calculations.

¹ Units vary to fit scale. Left hand axis: Public education infrastructure is measured as secondary teachers per 1,000 persons; Electricity production per capita as thousands of kWh per person; Roads per capita as km per 1,000 persons; and Public health infrastructure as hospital beds per 1,000 persons. Right hand axis: Access to treated water is measured as percent of population.

Source: IMF (2018)

1.4. National Financial and Credit Market Institutions

Although Algeria remains a relatively closed economy, the government needs to diversify its economy away from hydrocarbons, the backbone of its economy⁽¹⁷⁾, especially since oil prices started falling in 2014. In order to face this crisis, in the recent years, the government has introduced a range of import restrictions to boost domestic production capacity and reduce imbalances in the external accounts.

(16) World Bank, 2018

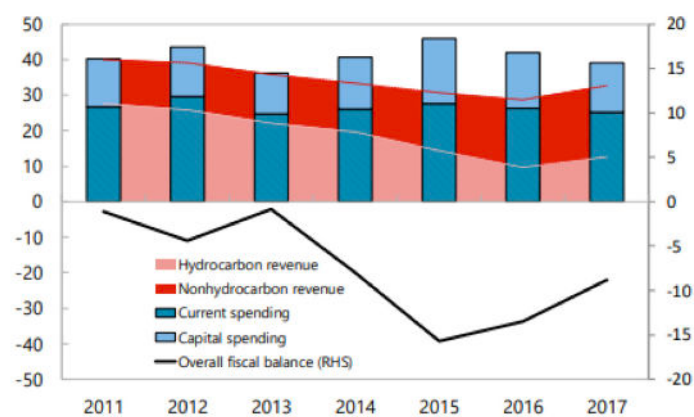
(17) OPEC (2018), Algeria facts and figures (https://www.opec.org/opec_web/en/about_us/146.htm)

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Algeria’s high vulnerability to volatile international oil prices exposes it to a high risk of a prolonged economic slowdown.

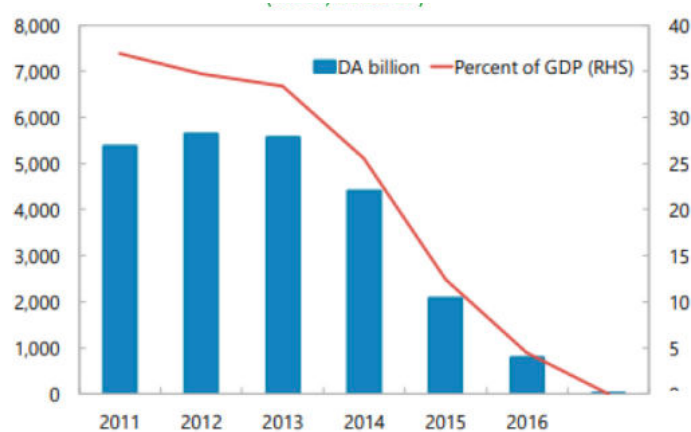
The budget deficit was significantly reduced in percent of GDP, due to lower spending and higher revenue, but the decline in non-hydrocarbon deficit was more moderate (fig. 11) and the deficits were financed largely by drawing on savings in the oil fund, which was depleted in 2017 (fig. 12).

Figure 11 – Overall Fiscal Balance (percent of GDP, 2011-17)



Source: IMF (2018b)

Figure 12 – Oil Stabilization Fund (Stock, 2011-17)

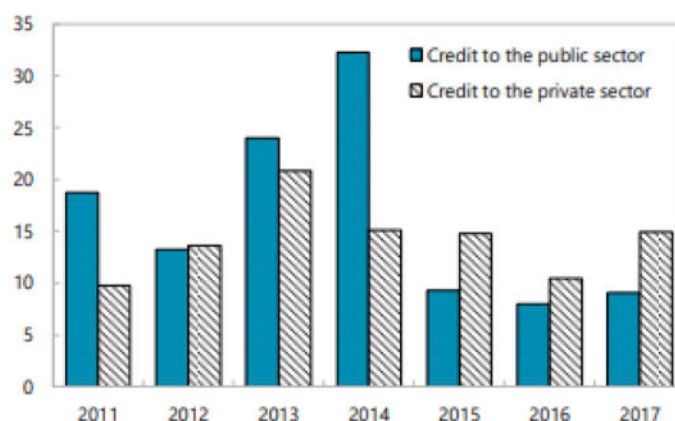


Source: IMF (2018b)

International reserves fell from USD17 billion to USD96 billion (half their 2013 peak), and the total external debt remained negligible at 2.4% of GDP.

Lower oil prices contributed to a sharp reduction in excess liquidity. As a result, some banks returned to Bank of Algeria for financing, interbank lending picked up, and interest rates increased.⁽¹⁸⁾

Figure 13 – Credit Growth (Percent)



Source: IMF (2018b)

The rapid growth in net credit to central government was around 8.3%, which more than offset the continued decline in net foreign assets. Growth in credit to the economy, particularly to the private sector, was robust at 12.8%, owing to large liquidity injections in the banking system stemming from government's drawdown of the oil stabilization fund (FRR) early in the year.⁽¹⁹⁾ Tighter bank liquidity, growth in credit combined with the government's drawdown of the oil stabilization fund, helped offset the decline in net foreign assets.⁽²⁰⁾

Monetary financing operations late in the year seemed to contribute little to the growth of credit in 2017. Due to the recapitalization of a public bank, in 2016 the banking system as a whole remained adequately capitalized and profitable, but credit quality deteriorated.⁽²¹⁾

Gross non-performing loans increased slightly from 11.9% to 12.3% of total loans at the end of 2017, partly reflecting the ripple effect of the delayed payments from the government to its suppliers. Banking sector liquidity declined but remained sufficient to cover about half of the banks' short-term liabilities.⁽²²⁾

(18) IMF (2017)

(19) IMF (2018b)

(20) IMF (2017) and IMF (2018b)

(21) IMF (2017)

(22) IMF (2018b)

Algeria has not financed its deficit through increased external debt, which remains negligible at less than 2% of GDP. Likewise, the government debt, consisting mainly of domestic debt, is limited to 40% of its GDP.

The volatility of oil prices, the weakness of its economy, the decline in non-oil industrial productivity fuelling unemployment brought the government to rethinking its vision. This context led authorities in 2016 to adopt the New Economic Growth Model 2016-2030⁽²³⁾, aimed at structural transformation reducing the state's role while enhancing that of the private sector and limiting dependency on the hydrocarbon revenues. The main reforms relate to improving the business climate and replacing direct and indirect subsidies with targeted social protection for low-income population.⁽²⁴⁾

According to this document, subsidies must be re-thought: in all sectors of the public service (electricity, gas, water, rail transport, and telecommunications), tariffs are kept at lower levels than the cost of operations for more than a decade for social considerations (i.e. to support the poor, but often the low level of tariff contributes to make inefficient subsidies that encourage wasteful consumption). The document proposes to diversify the economy with a focus on renewable energy, agriculture and industry.

In October 2017, the banking law was changed in order to allow Bank of Algeria to finance directly for five years, among others, the budget deficit, public-sector debt buy-back and the National Investment Fund (FNI). Consequently, since November 2017, this reform has required to cover an equivalent of 8.6% of GDP, with the depletion of fiscal savings and the materialization of fiscal risks (including support to Algeria International Monetary Fund and public enterprises). Furthermore, the central government debt has increased significantly since 2016 but remains relatively low (27% of the GDP) at the end of 2017 and is expected to remain sustainable.

In addition, the “New Economic Growth Model” aims to promote, among others, some structural reforms, such as the energy subsidy reform by raising fuel and electricity taxes. The government is working with the World Bank to deepen the reform and better target its support to vulnerable households, with the view to start implementation in 2019. It also adopted an ambitious structural reform plan

(23) Ministère des Finances (2016)

(24) AfDB (2019)

that aims at simplifying business regulations, improving governance and transparency, reforming the pension system, and modernizing the financial sector. This builds on previous efforts to improve the business climate among other measures, such as opening the sea and air freight industry to the private sector.⁽²⁵⁾

According to AfDB (2019), Algeria's infrastructure, geographic position, diaspora, domestic market, and natural resource endowment provided the assets to transform and diversify its economy. In addition, the external debt reduction policy over the past decade and substantial foreign exchange reserves, though declining, enabled Algeria to better withstand economic shocks.

1.5. International Investment Flows

Since 2008, foreign investors have been limited to hold a maximum stake of 49% of a company. This policy has likely been the reason why the foreign direct investment (FDI) flows⁽²⁶⁾ to Algeria have diminished in recent years.

According to the UN Conference on Trade and Development, FDI inflows averaged USD 1.7billion from 2005 to 2010, but, after three years of reduction, in 2015 the figure turned negative, at USD -584million, and remained below levels of a decade in 2017 at USD 1.20billion (see table 2 and fig. 14). As a percentage of GDP, however, FDI progressed from 12.6% in 2014 to 16.4% in 2017.

Table 2 – Algeria: FDI and external financial resources

(millions of USD unless otherwise specified)	2005	2010	2015	2017
FDI inflows	1145.34	2301.23	-584.00	1203.00
FDI outflows	-20.19	220.49	103.22	-4.00
Personal remittances, % of GDP	1.65	1.27	1.21	1.18

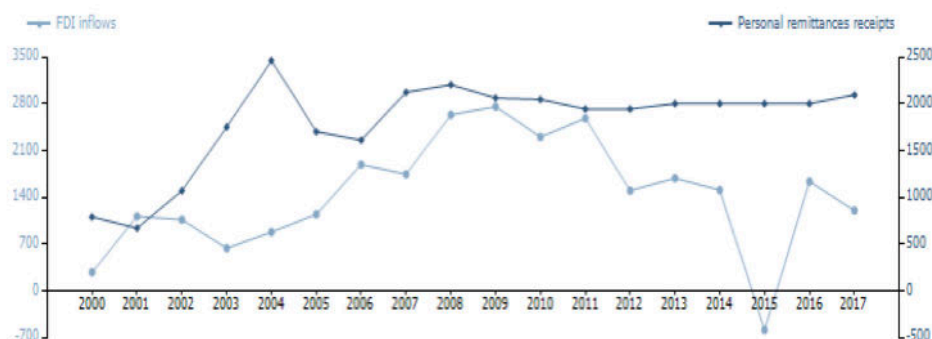
Source: UNCTADstat (<http://unctadstat.unctad.org>)

(25) IMF (2018b)

(26) Foreign direct investments (FDI) are investments made by a resident enterprise in one economy (direct investor or parent enterprise) with the objective of establishing a lasting interest in an enterprise that is resident in another economy (direct investment enterprise or foreign affiliate). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The ownership of 10% or more of the voting power of a direct investment enterprise by a direct investor is the evidence of such a relationship. FDI flows comprise mainly three components:

- acquisition or disposal of equity capital. FDI includes the initial equity transaction that meets the 10% threshold and all subsequent financial transactions and positions between the direct investor and the direct investment enterprise;
- reinvestment of earnings, which are not distributed as dividends;
- inter-company debt.

Figure 14 – Financial flows trends (millions of USD)



Source: UNCTADstat (<http://unctadstat.unctad.org>)

As shown in figure 14, in 2015 Algeria registered its first negative foreign trade balance since 1994.

In 2016, Algeria launched a new operation to finance economic investments and major infrastructure projects called “National Bond Issue for Economic Growth”, raising USD 5.2 billion to fund its domestic debt market. The government, previously reluctant to borrow on international markets, obtained a USD 1 billion loan from the African Development Bank.⁽²⁷⁾ Through this instrument, the Algerian Ministry of Finance invited his nationals living abroad to subscribe to this national bond issue, open to public subscription since April 2016, and to participate in the economic development of country.

The authorities reduced an important source of fiscal risk by closing several special treasury accounts that led to spending overruns in the past, while other sources of fiscal risk have materialized recently and are still present.⁽²⁸⁾ According to IMF (2017), fiscal risks in Algeria are multiple and interrelated due to the dominant role played by the state in the economic activities through government programs as well as through commercial activities carried out by public institutions and state-owned enterprises.

Other sources of fiscal risk include volatile hydrocarbon revenues, natural disasters, and the financial situation of social safety net programs. For example, in 2016 the materialization of fiscal risks cost an estimated 8.9% of the GDP, mainly reflecting two operations: the government’s purchase of debt owed by a public utility company to a public bank, and the issuance of bonds to the

(27) Pera J.R. (2017)

(28) IMF (2017)

state-owned oil company to compensate for losses incurred from selling imported refined fuel in the domestic market at subsidized prices.⁽²⁹⁾

However, Algeria is seeking more trade and foreign investment. For example, in April 2005 the hydrocarbons law was designed to encourage foreign investment in energy exploration and, in 2016, the “Revised Investment Law” (Law No. 16-09) and the 2016 Finance Law aimed to replace most provisions of the current investment legislation. The Revised Investment Law of 2016 eased restrictions on transferring invested capital, dividends and disposal proceeds out of the country.

The main challenge of the new framework is the removal of the requirement for foreign investors to generate a foreign exchange surplus to the benefit of Algeria over the life of any given investment. In practice, the foreign investors are no longer required to notify the Algerian authorities of transfers of shareholdings in locally incorporated firms unless that shareholding is greater than 10%, which reduces the reporting burden on investors. This means that foreign investors were limited to the extent that returns on investment could be repatriated through dividends or asset sales. Therefore, as long as the initial equity investment requirement is respected, foreign investors are free to repatriate the investment income, improving the attractiveness of the country as an investment destination and opening the capital account.

The “Revised Investment Law” provided for three levels of advantages, without the possibility of cumulating advantages of the same nature (the investor “benefits from the most advantageous incentive” among those provided for by positive law):

- 1) advantages common-to-all, the so-called “eligible” investments, which concerns, for instance, activities not prohibited under the regulatory text to be adopted in application of Law No. 16-09. The text distinguishes the advantages according to the phase it refers to: (i) realisation (exemption from customs duties, exemption from VAT, etc.); (ii) exploitation of the project subject to the investment (Income tax exemption for example). In addition, certain tax and/or financial advantages are added to the eligible investments, which would be made in certain localities “whose development requires a special contribution from the State”.

(29) IMF (2017)

- 2) the so-called “additional” advantages, that are reserved for “privileged and/or job-creating activities”, for example for tourist, industrial and agricultural activities.
- 3) the so-called “exceptional” advantages, that are reserved to investments “of particular interest for the national economy”.⁽³⁰⁾ They are established by a negotiated agreement between the investor and the State.

According to Law No. 16-09, and provided that the activities and/or goods concerned are not excluded from the advantages provided for under the law, investments eligible for the advantages are:

- creative investments, traditionally understood in the economic sense of the term, which does not, for example, cover the case of a simple change in the social form of an economic operator.
- investments extending production capacity, including the acquisition of capital or sustainable assets for the purpose of expanding the production capacity of the same tax subject.
- rehabilitation investments, that may include, for example, the purchase of equipment to achieve productivity gains, the replacement of the equivalent of used or technologically obsolete equipment.
- goods, including “renovated goods, constituting external contributions in kind, which are part of relocation of activities from abroad”.
- goods “subject to the exercise of an option to purchase by the lessee creditor in the framework of international leasing provided that such goods are brought into the national territory in new condition”, in a manner to be specified by a regulation. Operations falling within the scope of the law may, if they fulfil certain conditions, benefit from various legal and economic advantages.

The renewable energy sector in Algeria is a priority, still an emerging field, it offers huge opportunities considering the significant potential, the various

(30) These benefits must be negotiated by the investor and Andi. The national investment council will have to agree that Andi can conclude the agreement fixing the additional advantages negotiated.

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tax incentives and the inexpensive labour force. Furthermore, the withdraw of the “51/49 rule” for foreign investment in non-strategic sectors and the new Finance Law will also enable the use of external financing for “strategic, flag-ships, and targeted” projects for the national economy, (the investments were limited to local financing).

A study of the International Bank for Reconstruction and Development/World Bank⁽³¹⁾ has elaborated an Attractiveness index for Algeria⁽³²⁾ referred to solar industry⁽³³⁾ (fig. 15).

Table 3 – Different types of risk: counting the ways

<p>Building and tasting risk: Risk of property damage or third-party liability arising from mishaps during building or testing of new plants</p>	<p>Market risk: Risk of an increase in the price of commodities and other inputs, or decrease in the price of the electricity sold</p>
<p>Business/strategic risk: Risk affecting the viability of the business, e.g. risk of technological obsolescence</p>	<p>Operational risk: Risk of unplanned plant closure, e.g. owing to unavailability of resources, plant damage or component failure</p>
<p>Environmental risk: Risk of damage to the environment caused by the power plant, and the liability arising from such damage</p>	<p>Political/regulatory risk: Risk of a change in public policy, e.g. subsidies policy, affecting plant profitability</p>
<p>Financial risk: Risk of insufficient access to capital</p>	<p>Weather-related volume risk: Risk of a fall in the volume of electricity produced owing to lack of wind or sunshine</p>

Source: Watt C. (2011)

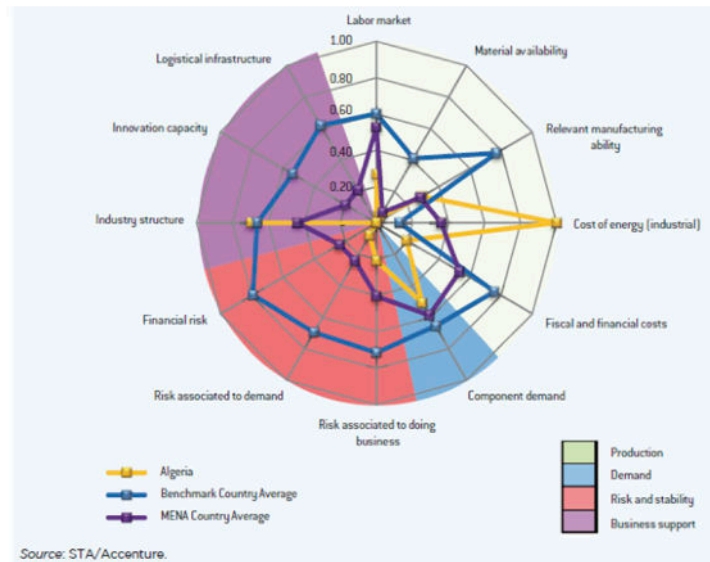
(31) International Bank for Reconstruction and Development/The World Bank (2015)

(32) Actually, the study has elaborated the index for some countries of MENA – Middle East and North Africa.

(33) The Attractiveness index is a synthetic indicator built by aggregating 49 parameters, composed of all relevant variables that an investor would take into account in his/her decision to set up a manufacturing plant.

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Figure 15 – Competitiveness Parameters in Algeria Compared to Benchmark and MENA Averages



The Attractiveness index shows that Algeria's key strengths are the costs of energy for industrial consumers,⁽³⁴⁾ its industry structure, and its solar energy targets. The four main aspects to improve would be the availability of required components and materials, risks associated with doing business, innovation capacity, and logistical infrastructure.

According to the Economist Intelligence Unit study (Watt C., 2011), the perception of financial risk is particularly significant in renewable energy projects because they are often capital-intensive, and are typically highly leveraged, with up to 70-80% of the total project being financed through debt, whilst also having the possibility to manage the risks by means of risk mitigation and risk transfer. In this way, it is possible to overcome the political and regulatory risks, the weather-related volume risk and other risks.

One general way to reduce business risk is to take additional equity investors into a project, or to enter a project as part of a consortium or joint venture with other renewable energy developers or financial partners, or to transfer portion of risk onto third parties through insurance or financial derivatives. Another

(34) According to the International Bank for Reconstruction and Development/ World Bank study, "a low-cost electricity presents a competitive advantage to private investors in energy-intensive industries. However, from the point of view of the country, subsidies to energy consumption introduce tensions in the system because they veil the true price signal to electricity consumers and may lead to adverse economic and environmental impacts. For a country that generates its electricity largely from natural gas, a true price of electricity would need to take into account the LCOE (levelized cost of energy) of a CCGT (Combined Cycle Gas Turbine) plant, estimated at 5 USDc/kWh, and add to it transportation costs, business margin, and others to arrive at the final number."

er way to reduce business risk is to buy into renewable energy developments at a later stage, once the riskier early stages of development are complete, and the renewable power assets are fully permitted or operational.

For example, the risk of insufficient wind for wind power producers or the risk of insufficient radiation for solar power producers (“price volatility risk”) can be mitigated through long-term power purchase agreements (PPA) to secure a fixed price for the power that the renewable energy plant produces.

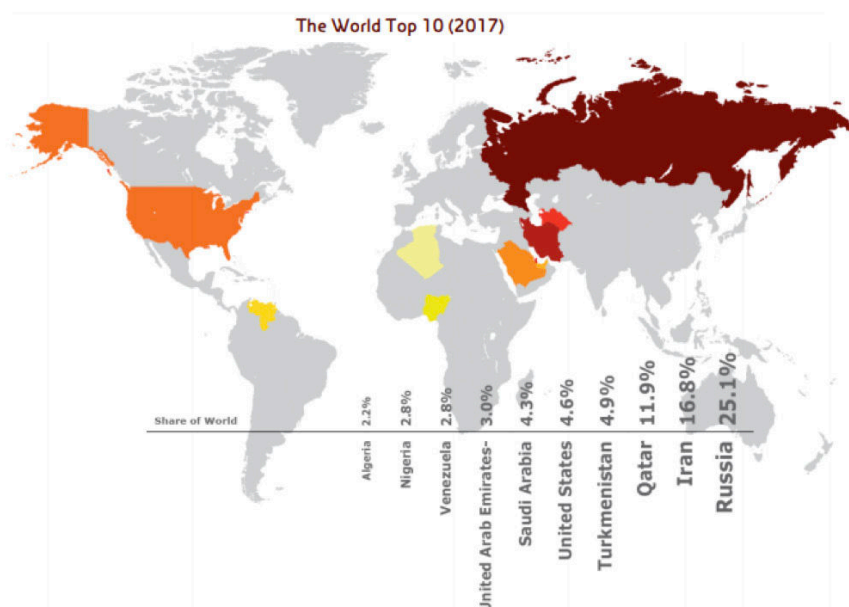
In this context, a new pathway has been tracked by the “New Economic Growth Model”, according to which the Algerian Government would promote the reallocation of the investment both in favour of no-energy sector, in order to diversify the economy, and in favour of private companies, to reduce state ownership.

2. Significance of the Energy Sector in the Economy of Algeria

2.1. Energy Supply and Consumption

Algeria, a country severely affected by desertification, is particularly vulnerable to the multiform effects of climate change risking to undermine its economic and social development, like other countries in Africa and in the Southern shore of the Mediterranean.⁽³⁵⁾

Figure 16 – The World Top 10 Reserves Holders in 2017



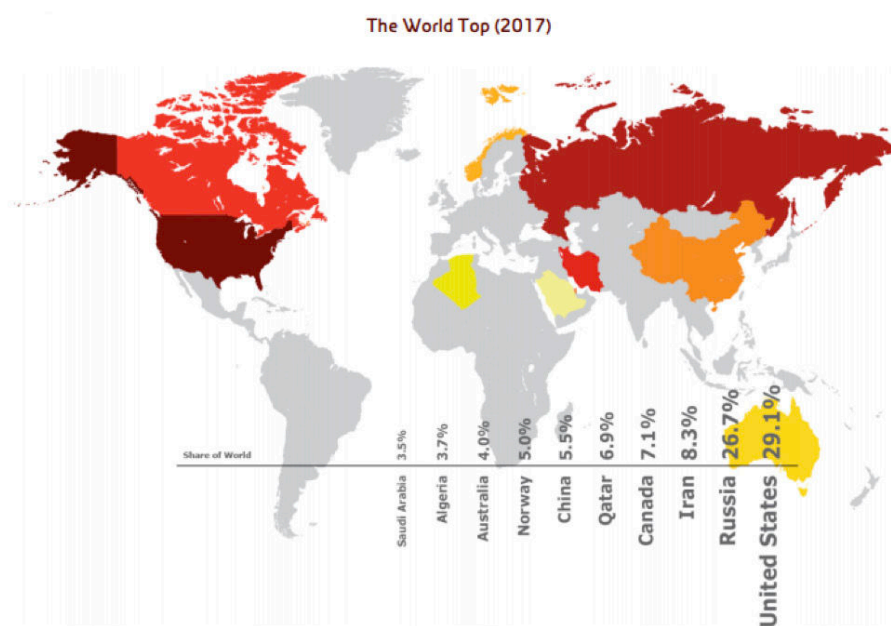
Source: ENI (2018b)

The Algerian hydrocarbon energy sector is the main pillar of the country's economy both for the state balance, thanks to export revenues, and for the availability of fossil fuel sources.

(35) République Algérienne Démocratique et Populaire (2015)

To decrease the strong dependency of the Algerian economy on the international price of hydrocarbon, Algeria intends to develop its non-conventional energy resources. Algeria has struggled to develop non-hydrocarbon industries because of heavy regulation and an emphasis on state-driven growth. Algeria has not increased non-hydrocarbon exports, and hydrocarbon exports have declined because of field depletion and increased domestic demand.⁽³⁶⁾

Figure 17 – The World Top 10 Producers in 2017



Source: ENI (2018b)

Algeria has the 10th-largest reserves of natural gas in the world - including the 3rd-largest reserves of shale gas - and is the 9th-largest gas producers (see respectively fig. 16 and fig. 17); it ranks 7th among gas exporters; 3rd-largest for gas liquefaction capacity⁽³⁷⁾ and 7th-largest among natural gas liquids producers, but also 16th in proven oil reserves.⁽³⁸⁾

The conventional hydrocarbon reserves discovered in Algeria to date are contained in just over 200 oil and gas deposits, of which 73 located in the Illizi basin, 57 in the basins of Central Sahara, 34 in basins Ghadames-Rhourde

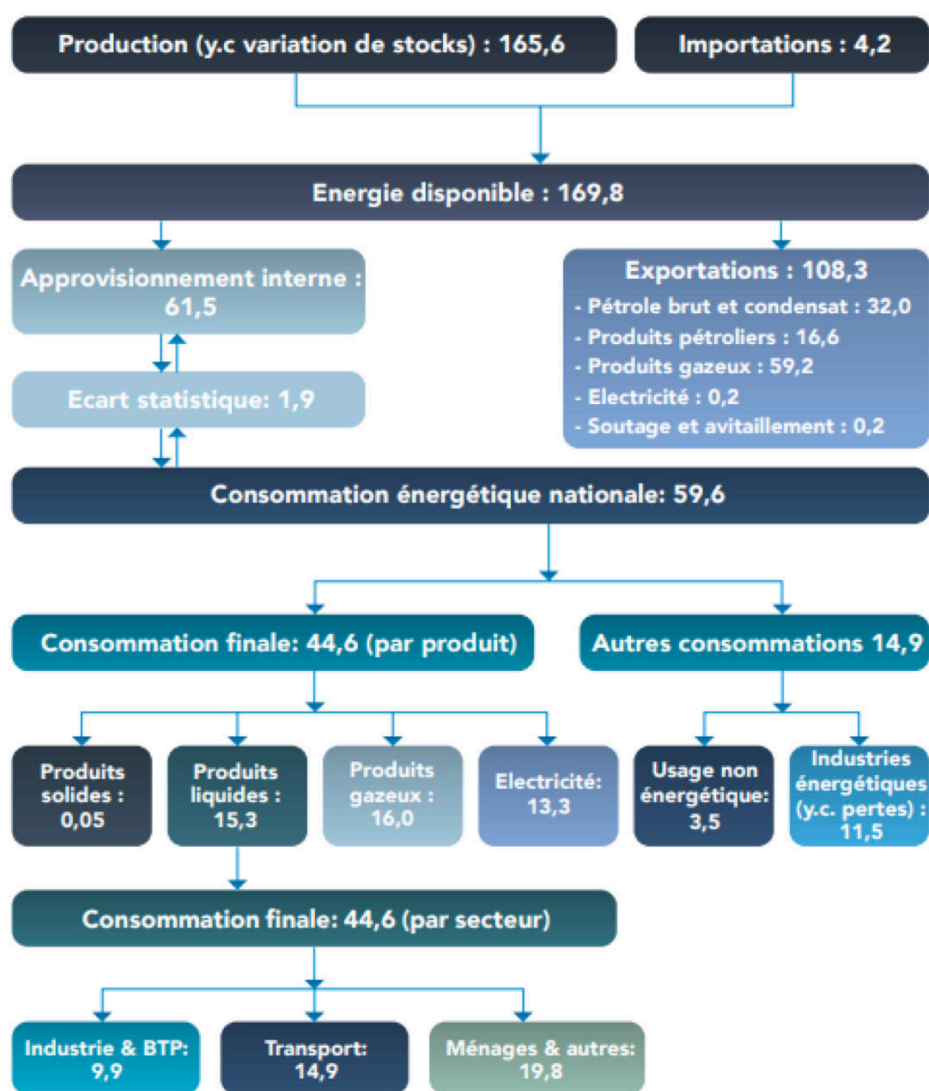
(36) CIA (2018)

(37) ENI (2018b)

(38) CIA (2018)

Nouss, and 31 in the Oued Maya basin.⁽³⁹⁾ These are the number of the deposits discovered while the volumes could increase due to the development of future discoveries and/or the technological innovations.

Figure 18 – Synthesis of energy flows in 2017 (Mtoe)



Source: Ministère de l'Énergie (2018)

In the recent years, Algeria has begun to diversify its energy sector through solar energy in order to increase its energy independence.

Despite a considerable potential, the share of renewable energies in the energy

(39) Abada Z. and M. Bouharkat (2018);

balance is still low especially in the production of electricity. In the first phase, the main condition for increasing the potential of renewable energy in Algeria is the policy support and encouragement to the introduction of hybrid possibilities, including electricity generation by the private sector (Ghezloun et al. 2010).

However, the country could have other reasons to develop its solar industry, such as the opportunity to free more gas for export, or the will to diversify industrial structure by developing a new industry in the face of a possible reduction in oil and gas supply.⁽⁴⁰⁾

In 2017, the primary energy production was 165.6 Mtoe with an increase of gas production covering the light decline of liquids (oil and LPG) due to the OPEC agreement of reducing oil supply. The primary electricity contribution was double compared to 2016 thanks to the new renewable energy capacity: 5 new PV plants, equal to a total of 125 MW. The natural gas remained the main source followed by oil. Approximately 6.2% of gas production was used for the production of electricity (17.5 Mtoe vs 16.5 Mtoe in 2016).

The share of renewable energies in the energy balance is still low especially in the electricity generation, despite the considerable potential of the country. In fact, Algeria has a great potential with respect to solar energy: with an average annual sunshine of 2,000h and a territory composed of 86% of the Sahara desert, its solar power is estimated at about 1,700 kWh/mq/year in the North and 2,650 kWh/mq/year in the South, which corresponds to a capacity 8 times higher than the one of the natural gas reserves of the country.⁽⁴¹⁾ The potential of other renewable energy sources is more modest, especially hydroelectricity and wind power, since wind speed vary between 2 and 6 m/s only. The potential of biomass, which includes the recycling of waste from human activities, urban and agricultural waste, is estimated at 1.33 Mtoe/year. Geothermal energy has a more favourable outlook with 200 hot springs listed.⁽⁴²⁾

Thanks to its high potential, Algeria is moving towards renewable energy, having announced a substantial 20-year plan for solar development, which calls for 5% renewable energy installed capacity by 2017, and 20% by 2030, of

(40) International Bank for Reconstruction and Development/The World Bank (2015)

(41) Abada Z. and M. Bouharkat (2018); Sulmont N. and F. Meley (2013)

(42) Abada Z. and M. Bouharkat (2018); Sulmont N. and F. Meley (2013)

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which 70% would be CSP, 20% PV, and the remaining 10% wind power.⁽⁴³⁾ Hosting one of the world's first Integrated Solar Combined Cycle (ISCC) plants⁽⁴⁴⁾, Algeria has also gained a valuable insight into the development, construction, and operation of this type of plant.

The export volume is equal to 108.3 Mtoe, with a reduction of -2.2% compared to 2016. This decline affected almost all products except LNG and electricity, which recorded increases of 5.7% and 71.2% respectively. Imports, 4.2 Mtoe, were mainly linked to derived energy (3.9 Mtoe) due to imports of coke and electricity, which offset the decline in imports of petroleum products (-3.4%) but remaining a net exporter (104.1 Mtoe).

Table 4 – Algeria: national final energy consumption by aggregates and sectors

(Mtoe)	2005	2010	2015	2016	2017
Final Energy Consumption	24.51	31.65	42.46	42.88	44.65
- Industry & Construction	5.82	8.02	8.82	9.24	9.94
- Transport	5.84	11.22	15.50	15.06	14.90
- Households & others:	12.85	12.42	18.15	18.58	19.81
a) Agriculture		0.32	0.41	0.42	0.44
b) Residential		8.86	13.93	14.20	15.00
c) Tertiary and others		3.23	3.81	3.97	4.36
Non-energy use	2.04	2.19	4.08	4.33	3.49
Energy industry own use	7.02	6.70	7.84	7.44	7.06
Losses	2.69	3.29	3.89	3.69	4.39
Total Energy Consumption	36.19	43.82	58.27	58.34	59.58

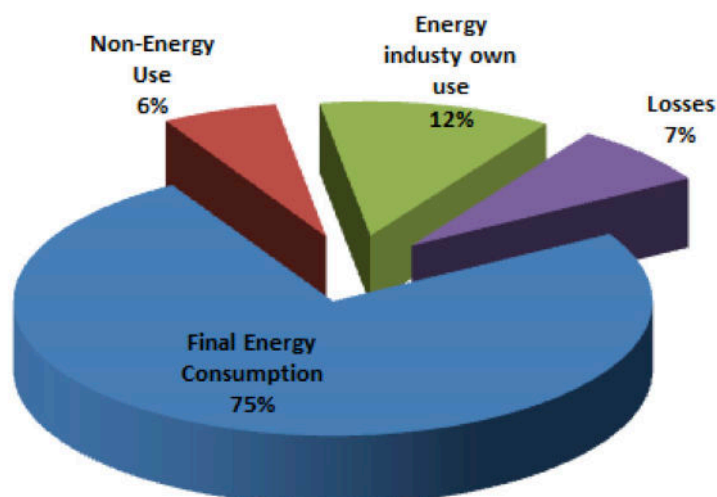
Source: Elaboration on Ministère de l'Energie (2006, 2011, 2012, 2016, 2018)

National final energy consumption (including losses) reached 59.6 Mtoe in 2017, mainly driven by final consumption (+4.1%). Conversely, non-energy consumption, which refers to the quantities consumed as a raw material in the petrochemical and other industries, fell by -19.5%, followed by the consumption reduction of energy industries (-5.1%) (table 4).

(43) International Bank for Reconstruction and Development/The World Bank (2015)

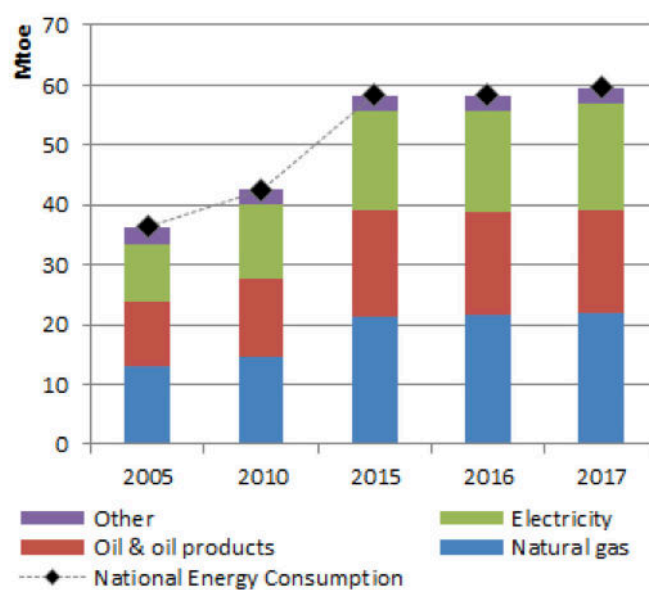
(44) ISCC HassiR'mel is a 150-MWe combined cycle hybridized with a 25-MWe equivalent CSP solar field. It was the first ISCC plant in the world to start construction although Morocco's ISCC Ain Beni Mathar was the first operating plant of this type in the world [National Renewable Energy Laboratory (NREL), "Concentrating Solar Power Projects by Technology: Parabolic Trough Projects," 2013. [Online]. Available: www.nrel.gov/csp/solarpaces/parabolic_trough.cfm].

Figure 19 – National final energy consumption by aggregates in 2017



Source: Ministère de l'Énergie (2018)

Figure 20 – National final energy consumption by fuels in 2017



Source: Elaboration on Ministère de l'Énergie (2006, 2011, 2012, 2016, 2018)

Among final consumption, “Households & others” (i.e. “Ménages et autres”, 19.8 Mtoe, 44%) is dominant, driven by the residential sub-sector (15.0 Mtoe) and in particular by the gas and electricity needs induced by the increase

in the number of Sonelgaz customers (+345,000 new customers)⁽⁴⁵⁾. “Transport” reaches 14.9 Mtoe driven by road fuel consumption, followed by “Industry and construction” (i.e. “Industrie et BTP”, 9.94 Mtoe).

Looking at fuels used (table 5), natural gas remains the principal source used covering 37% of the final energy consumption in 2017 (36% in 2005), followed by electricity (30%), whose contribution exceeded slightly that of oil (28.5%) in 2017.

Table 5 – Algeria: national final energy consumption by fuels

(Mtoe)	2005	2010	2015	2016	2017
Natural gas	13.14	14.46	21.35	21.73	22.03
Oil and oil products	10.54	13.27	17.88	17.18	16.97
Electricity	9.75	12.20	16.41	16.88	17.81
Other	2.83	2.68	2.63	2.55	2.77
Total Energy Consumption	36.19	43.82	58.27	58.34	59.58

Source: Elaboration on Ministère de l’Energie (2006, 2011, 2012, 2016, 2018)

2.2. Current Energy Plan of the Country

The general approach and strategy intended by the Algerian Ministry of Energy is constituted by the decree no. 07-266, issued on 9 September 2007, which describes the function and role of the Ministry with respect to the intentions of the Algerian government.

In particular, in art. 1 the Ministry commits to the elaboration of political and strategic research, the production and valorisation of hydrocarbon, mineral and energy resources and the embedding of the respective industry in this sector; while, in art. 5, it also commits to the necessary studies and research and the promotion of renewable energy sources.

(45) Ministère de l’Energie (2018)

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Table 6 – Energy policy in force

Title	Year	Policy type	Policy target
Renewable Energy and Energy Efficiency Development Plan 2015-2030	2015	Policy Support: Strategic planning	Wind, Solar, Multiple RES (Geothermal, bioenergy)
Feed in tariff for solar PV installations	Apr-2014	Economic Instruments: Fiscal/financial incentives: Feed-in tariffs/premiums	Solar: Solar photovoltaic
Renewable Energy and Energy Efficiency Development Plan 2011-2030	Feb-2011	Policy Support: Strategic planning	Multiple RES, (including Power, Heating, Cooling)
Renewable Energy National Fund	2009	Policy Support: Institutional creation; Economic Instruments: Fiscal/financial incentives	Multiple RES Multiple RES>All
Law 04-92 on the Diversification of Power Generation Costs (REFIT)	2004	Economic Instruments: Fiscal/financial incentives: Feed-in tariffs/premiums	Multiple RES, Multiple RES>All, Multiple RES>Power
Law 04-90 on Renewable Energy Promotion in the Framework of Sustainable Development	2004	Regulatory Instruments: Codes and standards; Policy Support: Institutional creation, Research, Development and Deployment (RD&D): Research programme, Technology deployment and diffusion	Wind, Bioenergy>Biomass for power, Geothermal, Hydropower, Multiple RES>Power, Solar, Bioenergy
Law 99-09 on the Management of Energy	1999	Policy Support: Strategic planning; Institutional creation	Multiple RES

Source: IEA/OECD/IRENA (2018), Policy and measures

Some energy policies to support the implementation of RES have been made since 2004 (see table 6), first as studies of technologies (research programme) and regulatory instruments; later on, as economic instrument to promote renewable energy sources through incentives (feed-in tariffs, premiums or direct incentives).

Algeria has embarked on the path of renewable energies in order to provide global and sustainable solutions to environmental challenges and problems of energy resource conservation from fossil fuels through the launch of an ambitious programme for the development of renewable energy.

Through this renewable energy program, Algeria intends to position itself as a major player in the production of electricity from the photovoltaic and wind sectors by integrating biomass, cogeneration, geothermal energy and beyond 2021, thermal solar. These energy sectors will be the engines of sustainable economic development capable of stimulating a new model of economic growth: 37% of installed capacity by 2030 and 27% of electricity production

for national consumption will be from renewable sources.

The national potential in renewable energies being strongly dominated by solar energy, Algeria considers this source of energy as an opportunity and a lever for economic and social development, in particular through the establishment of industries that create wealth and jobs. This does not exclude the launch of numerous projects for the construction of wind farms and the implementation of experimental projects in biomass, geothermal energy and cogeneration.

Renewable electricity production projects dedicated to the national market will induce in the phase 2021 – 2030, the development of the electrical inter-connection between the North and the Sahara (Adrar), allowing the installation of large renewable energy plants in the regions of In Salah, Adrar, Timimoune and Bechar and their integration in the national energy system. At this deadline, solar thermal could be economically viable.

Besides, Algeria's strategy in this area aims to develop a real renewable energy industry associated with a training and knowledge capitalization program, making possible to employ local Algerian high level experts, particularly in terms of engineering and project management. The renewable energy program, for the electricity needs of the national market, will enhance the creation of direct and indirect jobs.

Table 7 – Renewable Energy Programme 2015-2030

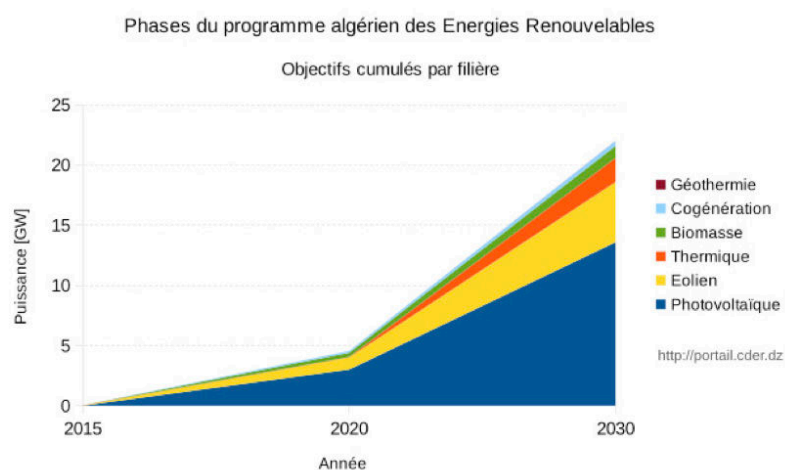
(MW)	1° step 2015-2020	2° step 2021-2030	Total
Photovoltaic	3000	10575	13575
Wind	1010	4000	5010
CSP	-	2000	2000
Cogeneration	150	250	400
Biomass	360	640	1000
Geothermal	5	10	15
Total	4525	17475	22000

Source: Renewable energy programme 2015-2030

In this context, the Algerian government approved a hybrid power plant plus a further 150 MW tender for the development of PV plants in South-western Algeria in June 2018, followed by a second tender issued by the Algerian Electricity and Gas Regulation Commission in mid-November 2018 for

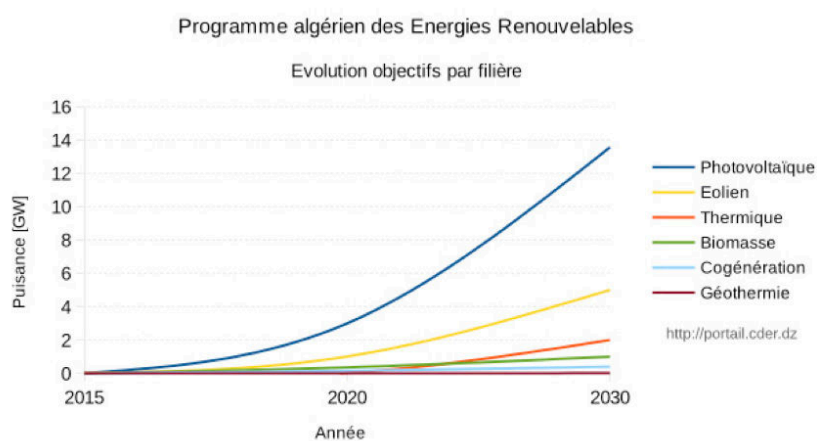
a construction of several PV power plants ranging from 10 MW to 50 MW in South-Western Algeria (in Guerara, Diffel, and in the municipalities of Meggarine, Nezla and Belhirane), with a combined capacity of 150 MW.

Figure 21 – Phases of development of RES according to Renewable Energy Programme 2015-2030



Source: Ministère de l'Énergie (2018)

Figure 22 – Evolution trend by RES according to Renewable Energy Programme 2015-2030



Source: Ministère de l'Énergie (2018)

Many projects were realized:

- a central hybrid solar/diesel by 13 KWC installed in Illizi allowed 300 households (or 2,000 people) to benefit from access to electricity.
- a project led by the High Commissioner for Development of Steppe (HCDS), a public institution whose mission is the development of steppes and pastoral areas, has also allowed the electrification of more than 3,000 homes with a capacity of 550 KWC, the provision of 160 solar pumps for a power of 240 KWC and 80 wind pumps equivalent to a power of 120 KWC.
- a 10 KWp photovoltaic plant in the North connected to the national grid (as part of the Algerian-Spanish cooperation) installed by CDER, a service station Naftal powered by solar energy (Staoueli with a capacity of 7 KWC), pilot plants for the benefit of the National Gendarmerie and the photovoltaic power supply of traffic monitoring stations.
- a hybrid gas-solar plant located in HassiR'mel, where the plant combines a 25 MW solar with a 130 MW combined cycle gas turbine plant, developed by New Energy Algeria (NEAL), a joint venture between Sonatrach, Sonelgaz and SIM, in 2011.
- a 10 MW wind farm in Tindouf, implemented by NEAL.

At the end of November 2018, a 10 MW solar plant was inaugurated in Bir Rebaa North (BRN) in Algeria. The plant, co-operated by ENI and Sonatrach through the Groupement Sonatrach-Agip (GSA), will provide green energy to the oil field, thus contributing to the decarbonisation of the Algerian energy system. In addition, ENI and Sonatrach have signed an agreement to implement the construction of an advanced research and development laboratory at the BRN site to test solar and hybrid technologies in a desert environment.

At the end of December 2018, the Algerian government issued a tender to develop five projects for off-grid gas/diesel and solar projects in non-interconnected areas in the south of the country. A first 9 MW project, consisting of 3 MW and 6 MW units, is planned for Guezzem, in the Tamanrasset province and a second 7 MW project – consisting of 4 MW and 3 MW units – will be built in Djanet and Illizi respectively, in the Illizi province. A third project consisting

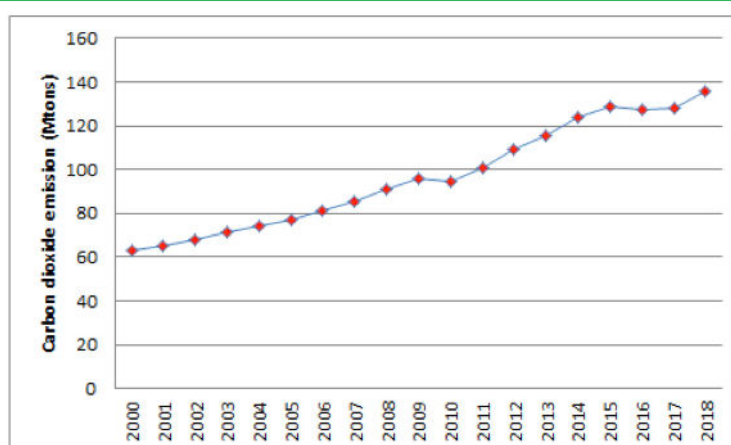
of 10 MW and 2 MW sections will be constructed in Bordj Badji Mokhtar district, in Adrar province, and a fourth installation will comprise an 8 MW plant in Adrar and a 3 MW system in Bechar. The fifth project is intended to provide power for the town of Tindouf.

The energy efficiency program is based on:

- improving the thermal insulation of buildings (its consumption accounts for over 42% of final consumption)
- developing solar water heaters
- promoting cogeneration
- converting combined cycle power plants where possible
- implementing solar cooling projects⁽⁴⁶⁾

The reduction of more than 193 million tons of CO₂ by 2030⁽⁴⁷⁾ is among the expected results of this program. In fact, according to BP data, Algeria is considered as one of the most significant emitters of CO₂ among African countries, by ranking third after South Africa and Egypt, due to economic growth (increase of energy utilization and electricity consumption) and the predominant use of fossil fuel, yet, its emissions estimated at the level of 127.6 Mt, represents around 0.4 per cent of the global emissions, according to the IEA database.

Figure 23 – Evolution of CO₂ emission in Algeria (2000-2018)



(46) Abada Z. and M. Bouharkat (2018);

(47) Ministry of Energy (www document), www.energy.gov.dz

Source: Elaboration on BP data

2.3. Institutional Structure of the Energy Sector



Sonatrach – Société Nationale pour la Recherche, la Production, le Transport, la Transformation et la Commercialisation des Hydrocarbures is a state-owned company formed to explore and develop the largest hydrocarbon resources of the country.

Sonatrach – Société Nationale de Transport et de Commercialisation des Hydrocarbures was founded on 31 December 1963 to transport and market hydrocarbons, while in 1966 the name has been changed in Société Nationale pour la Recherche, la Production, le Transport, la Transformation et la Commercialisation des Hydrocarbures to take into account its whole activities. In fact, after the Arab-Israeli War (June 1967), Algeria decided to nationalize the refining and distribution activities, including all the French oil and gas holdings (February 1971), so as to control all Algerian petrochemical resources.

The Fundamental Law on Hydrocarbons, which was promulgated by the Algerian government on 12 April 1971, had two main purposes:

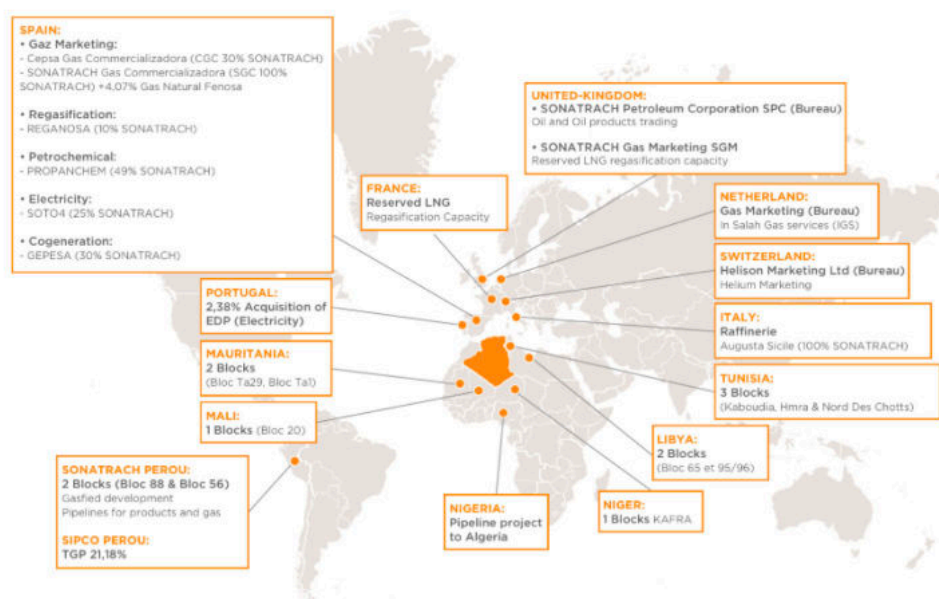
- 1) to formally abolish the system of concessions and establish that all mining titles, including the control of all petroleum reserves that might be discovered in the future in any part of Algeria, must be transferred to Sonatrach;
- 2) to make provision for foreign companies to enter into service contracts or joint ventures with Sonatrach, provided that 51% of the assets were held by the state company.⁽⁴⁸⁾

In the 1980s, the name changed again in Enterprise Nationale Sonatrach, which coincided with a reduction in the company's direct control over these assets. The company was divided into four enterprises and it became possible for foreign hydrocarbon companies to do business in Algeria being in a

(48) <http://www.fundinguniverse.com/company-histories/sonatrach-history/>

partnership with Sonatrach.

Figure 24 – Sonatrach in the world



Source: «Les opérations internationales de SONATRACH», <https://sonatrach.com/presentation>

Alongside the historical collaboration with ENI, dating back to 1977, for the export of natural gas to Italy through the Trans-Mediterranean pipeline, other joint ventures have been created by Sonatrach to diversify its holdings and expanding internationally. In 2000, Sonatrach entered a major joint venture with CEPSA and others to build MedGaz, a 450-kilometer gas pipeline running from Algeria to Spain. In 2002, Sonatrach and Shell formed a partnership to explore and develop oil and gas interests and, in 2003, Sonatrach formed the joint venture Helison with Germany's Linde Engineering, but also a joint venture with BP to distribute LNG to the United Kingdom. Nowadays, Sonatrach is the first hydrocarbon group in Africa, but it is also present in Europe and Peru.

The Algerian energy system is based on the hydrocarbon sector as its economy and state balance do. Due to this strong connection, the energy sector, and consequently its largest hydrocarbon resources, is dominated by two state-owned gas and oil companies: Sonelgaz and Sonatrach.



Sonelgaz – Société Nationale de l'Electricité et du Gaz

is a state-owned utility in charge of electricity and natural gas distribution in Algeria. Its participation on national energy policy permitted to cover 98% of electricity penetration and 43% of gas.

It was established in 1969, by replacing the previous body Electricité et gaz d'Algérie (EGA), and it was entrusted with the monopoly over the distribution and selling of natural gas within the country as well as the production, distribution, importation, and exportation of electricity.

Starting from 1977, its actions were oriented to promote the electrification programme into the country. Then, in September 1995, the Executive Decree No. 95-280 confirmed the nature of Sonelgaz as an Industrial and Commercial Public Establishment under the supervision of the Ministry of Energy and Mines and with legal personality, while enjoying financial autonomy.

In 2002, its monopoly was revoked by the Presidential Decree No. 02-195, which legally converted Sonelgaz into a private (though entirely government-owned) company for Algerian electricity and gas, which was the first step to transform Sonelgaz in an industrial group.

In 2011, the status of Sonelgaz was revised by the Council of Ministers (according to the Law n. 02-01 of 5 February 2002) and it was transformed in an "holding company", Sonelgaz SpA, without creating a new legal entity and, thus, taking the name of Sonelgaz: the Sonelgaz holding company and its subsidiaries form a group called the "Sonelgaz Group".

Now, Sonelgaz is responsible for the production, transmission and distribution of electricity as well as the transport and distribution of gas by pipelines. Sonelgaz is also actively involved in the development of renewable energy sources, including joint ventures with foreign companies.

In addition to the two national competitors, Sonelgaz and Sonatrach, in 2005

the reform of the legislative framework of hydrocarbon activities established a new agency: the Agence nationale pour la valorisation des ressources en hydrocarbure (ALNAFT) established in order to promote and stimulate the exploitation of national resources, in line, on the one hand, with the need to ensure the economic development of the country and, on the other hand, with the need to attract foreign investment.



ALNAFT – Agence nationale pour la valorisation des ressources en hydrocarbure was established by art. 12 of Law No. 05-07 of 28 April 2005.

ALNAFT is in charge of:

- a) promoting investments in exploration/production activities;
- b) issuing prospection authorizations;
- c) conducting calls for tender and evaluating offers;
- d) assigning exploration perimeters;
- e) following up and controlling the execution of the exploration/production contracts;
- f) setting and collecting royalties;
- g) fixing the periodical reference price of gas and the base price of exported products (crude oil, condensate, LPG);
- h) collaboration with the services of the Ministry of Hydrocarbons in matters of sectoral policy and the drafting of regulatory text governing hydrocarbon activities.



CREG – Commission de Régulation de l'Electricité et du Gaz, established by Law n. 01/2002, is an independent and autonomous organism aimed to observe and enforce the transparency of electricity markets in general, and, particularly of the renewable electricity one. It is also in charge of ensuring a well-functioning and healthy competition system in the interest of both the users and the operator as well as of performing

the standard tasks of a regulatory body.

According to art. 128 of the Law on electricity, operators have to lodge with the CREG sale and purchase contracts of electricity. This provision allows them to know the exact quantity and nature of the electricity sold in the market. For renewable electricity, it is thus possible to know its origin: thermal, solar, wind, biomass or geothermal.

The operating costs of the regulatory commission are part of the ongoing costs of the system. They are collected through the electricity and gas bill.

The main tasks of the Commission are:

- authorizations/concessions
- demand forecasting / investment planning
- operator remuneration and tariffs
- access to networks / markets
- quality and regulation/technical and environmental control
- consumer protection



APRUE – Agence Nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Énergie is a public institution created by a Presidential decree in 1985 and placed under the supervision of the Ministry of Energy. Its main mission is to implement the national energy management policy through the promotion of energy efficiency.

Within the framework of the Law n° 99- 09 of 28 July 1999 relating to energy management, the agency has the following missions:

- promote energy savings in all sectors of activity
- mobilize different stakeholders around the issues and challenges related to energy efficiency
- promote partnerships for the setting up of energy efficiency projects, thus giving visibility to potential investors
- contribute to the emergence of sustainable energy efficiency
- improve and strengthen the capacity of stakeholders in the field



CDER – Centre de Développement des Energies Renouvelables is a Research Centre, created on 22 March 1988 as a result of the restructuring of the High Commission for Research.

It is a Scientific and Technological Public Institution (EPST) responsible for developing and implementing scientific and technological research and development programmes for energy systems using solar, wind, geothermal and biomass energy, and its activities are part of the national research program on renewable energy.

The CDER has three research units:

- Solar Equipment Development Unit (UDES), created in 1988
- Applied Research Unit for Renewable Energies (URAER), created in 2002
- Renewable Energy Research Unit in the Saharan Environment (URERMS), created in 2004, that, together with its commercial subsidiary ER2, is focused on renewable energies at the service of the socio-economic sector for the benefit of the populations, particularly the isolated ones.

3. Legislative Framework of the Energy Sector

3.1. Energy Framework

In Algeria, three major laws govern the field of renewable energy and state incentives enjoyed by this sector. The Law on energy management enacted in 1999 provides for the creation of a National Fund for Energy Management (NFEM), which helps to finance renewable energy projects.

The Law on electricity and public distribution of gas by pipeline, passed in 2002, represents a first step towards an open national market to competition, also in the interest of the consumer, by separating the roles of the State, the companies and of the new Commission de Régulation de l'Electricité et du Gaz (CREG). The executive decree on the costs of the diversification of the electricity production, promulgated in 2004, allows to grant a premium for the green electricity up to 300% of the normal rate.

The Law on the promotion of renewable energy in the context of sustainable development sets a national program to promote renewable energy as well as incentives for developing renewable energy.

The matrix of the main legislative provisions in force on the energy sector is shown below by reference to the main sector covered or concerned.

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Table 7 – Matrix of the main legislative provision on energy sector in force

Law/Decree	Energy Efficiency	Renewable Energy	Conventional	Cross Setting
Decree n°85-235, 25 th August 1985 creation of an agency for the promotion and rationalisation of energy	✓	✓		
Law n. 99-09, 28 th July 1999 pertaining to energy management	✓	✓		
Executive Decree n. 2000-90 relating to thermal regulations for new buildings	✓			
Law No. 02-01, 5 th February 2002, pertaining to public distribution of gas by pipeline	✓	✓	✓	✓
Law No. 04-09, 14 th August 2004, pertaining to promotion of renewable energies in the context of sustainable development	✓	✓		
Executive Decree No. 04-314 of 25 September 2004 Amending and supplementing Decree No. 85-235 of 25 August 1985, as amended and supplemented, establishing an agency for the promotion and rationalization of energy use (APRUE)	✓			
Executive Decree No. 05-16, 11 January 2005 laying down specific energy efficiency rules applicable to appliances using electricity, gas and petroleum products.	✓			
Executive Decree n. 05-495 prescribing mandatory energy audits for large energy-consuming facilities	✓			
Law No.10-80, 30 th December 2010, bearing the law of 2011		✓		
Law No.11-11, 18 th July 2011, bearing the law of supplementary financing for 2011, in particular Article 40 amending Article 63 of the Law No. 09-09		✓		
Executive Decree No.13-218, 18 th June 2013, setting the conditions for granting allowances for the costs of diversification of production power		✓		
Ministerial decree 02 th February 2014, fixing the guaranteed purchase tariffs and the conditions for their application for electricity produced from installations using wind, photovoltaic and cogeneration energy		✓		
Ministerial decree 01 th September, 2014, fixing the guaranteed purchase tariffs and the conditions for their application for electricity produced from installations using the cogeneration energy		✓		
Law No. 14-10, 30 th December 2014, bearing the law of 2015, including Article 108 which provides for the merger of the two Funds. The National Fund for the Control of Energy (FNME) and the National Fund for Renewable Energies and Cogeneration (FNER)	✓	✓		
Executive Decree No.15-69, 11 th February 2015, laying down the procedures for certification of the origin of renewable energy and the use of such certificates		✓		
Executive Decree No. 17-98, 26 February 2017 defining the tendering procedure for the production of renewable energies or cogeneration and their integration into the national electricity supply system		✓		

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Law/Decree	Energy Efficiency	Renewable Energy	Conventional	Cross Setting
Executive Decree 17-168 of 22 May 2017 amending and supplementing Executive Decree No. 15-319 of 13 December 2015 setting the terms and conditions for the operation of Trust Account No. 302-131 entitled "National Fund for Energy Management and for Renewable Energy and Cogeneration"	√	√		

The Algerian energy policy framework is based on the Law on energy management 99-09 of 28 July 1999, in which it is described the national policy of energy management and the legal tools that are in force in the system. In fact, the law established what it is and how it works the National Programme for the Management of Energy, by outlining parameters for efficient consumption, energy conservation/energy efficiency, the reduction of GHG emissions and general air pollution, the education of both government agencies and the population regarding energy efficiency, and the development of renewable energy technologies and sources, including solar, geothermal, hydropower, and biomass.

Art. 2 underlines the three main pillars of energy management:⁽⁴⁹⁾

- the rational use of energy
- the development of renewable energy
- the protection of the environment from adverse effects of the energy system

Energy management, which is a public utility activity to ensure technology innovation and improve economic efficiency, aims to direct energy demand towards greater efficiency in the consumption system, through a national energy consumption model, in the framework of the national energy policy.

Under the Law 99-09, a strategy and some institutional arrangements were put in place through the creation of:

- a national agency for energy management (APRUE), responsible for leading and facilitating the implementation of programs and actions for the energy management
- an Intersectoral Council for Energy Management (ICEM), which serves as a forum for consultation and coordination between different actors involved in this area

(49) Sommet de Johannesburg 2002, profil de l'Algérie, Nations Unies in <http://www.un.org/esa/agenda21/natlinfo/wssd/algeria.pdf>

- a National Fund for Energy Management (NFEM), used as a catalyst for actions and programs in order to promote renewable energies, policies and measures on energy efficiency, the reduction of environmental impacts, etc.⁽⁵⁰⁾, financed by taxes, contributions and/or financial penalties on energy matters

If the promotion and coordination of the national program for energy management are provided by the institution responsible for energy management, namely the APRUE, other agencies could also technically coordinate the actions taken in the field of energy management, particularly at the sectoral level.

3.2. Hydrocarbons Law

The main legislative reference concerning hydrocarbons is the Law No. 07 of 28 April 2005, which aims to reform the previous system of hydrocarbons. The Commission has taken the necessary steps to ensure that the legal framework be thoroughly redrafted. In fact, through the new legislation, the Algerian government has redefined the institutional regulations for the exercise of activities in the field of hydrocarbons, by differentiating between research and exploration (upstream) and transport, refining, processing and marketing (downstream) activities.

The purpose of the legislation is:

1. to encourage investment in the hydrocarbon sector
2. to reduce production costs through better management of the exploration phase (and costs)
3. to increase tax revenues in the medium term

Under the previous system (Law No. 14/1986), the foreign partner's income tax was retained and paid by Sonatrach through what can be called a "withholding tax", that became both a tax and a legally responsible entity.

(50) Conférence internationale sur les énergies renouvelables, Discours du Docteur Chakib Khelil, Ministre de l'énergie et des mines Bonn, premier au 4 juin 2004 in <http://www.mem-algeria.org/francais/index.php?page=673>

With the new legislation⁽⁵¹⁾, the distinction between a foreign investor and Sonatrach disappears, so that everyone is required to pay the taxes for which they are legally responsible, meaning that those who invest are therefore tax subjects, legally responsible and actual debtors.

Law no. 01 of 20 February 2013 amended and supplemented Law no. 07/2005, including for the first time the reference and definition of non-conventional hydrocarbons.

The objective of Law no. 01/2013 is to improve the attractiveness of the national mining sector by intensifying research, exploration and exploitation of hydrocarbon resources in the country and by reconfirming the distinct role of the two agencies (Autorité de régulation des hydrocarbures and Agence nationale pour la valorisation des ressources en hydrocarbures). The search for new hydrocarbon reserves, both conventional and unconventional, has - in the intentions of the Algerian government - the objective of ensuring the economic and social development of the country by prioritizing the satisfaction of the internal demand.

In this context, in fact, a series of provisions concerning Sonatrach must be read. The state company, in fact, retains the exclusivity of the service of transport of hydrocarbons precisely to ensure the priority of supply to the domestic market, and can buy land through sale or expropriation. In addition, art. 32 reinforces Sonatrach's role in hydrocarbon exploration by including in the abovementioned contracts a mandatory clause that set its participation at a minimum threshold of 51%.

The legislation covers the entire hydrocarbon sector, going into the merits of regulating the various stages of the chain (research, exploration, and marketing), and legislating also on the rights and obligations of the contractors, up to updating the tax provisions.

In January 2014, the government reorganised the institutional framework for

(51) The operation of Law no. 07/2005 was guaranteed by the following decree:

- Decree n° 342/2007 concerning procedures for granting and withdrawal of licences and for hydrocarbon transport networks;
- Decree n° 294/2007 concerning procedures for granting and withdrawal of licences for prospective activity for hydrocarbons;
- Decree n° 297/2007 concerning procedures for building transport network (pipeline) for hydrocarbons.

the mining sector, classified resources into strategic and non-strategic ones and established that any local company with the requisite of technical and financial capacity can carry out the prospecting and development of non-strategic resources. Strategic resources can only be developed by state-owned companies or other state-owned entities. These companies can sign contracts with third parties, but must retain at least a 51% share in the project.

In 2015, the Finance Act introduced the specific tax for gas flaring⁽⁵²⁾, which remains prohibited but exceptionally authorised under specific conditions and constraints; 55% of the revenue from the payment of this tax, which is non-deductible, feeds a specific national fund for renewable energy and cogeneration.

3.3. Electricity Law

The Algerian electricity sector has undergone various phases of institutional reforms and rearrangement through the years. To a large extent, these reforms were tailored for Sonelgaz, the national electricity and gas company which is still the predominant actor in electricity generation, transmission and distribution.

In 2002, the Algerian government started to introduce liberalization reforms in the domestic electricity system. The objectives of the reforms were to bring the market closer to international standards and to open it also to foreign and private actors.

The gas and electricity law n° 02-01⁽⁵³⁾ enforced in February 2002 (loi n° 02-01 du 5 février 2002 relative à l'électricité et à la distribution du gaz par canalisation), is the milestone in the reform of the Algerian electric system and defines the new legislative framework in the field of electricity production, by allowing private independent power producers (IPPs) to enter the electricity generation business for the first time.

According to the new law, the distribution of electricity and gas remains a public service but free competition for activities linked to the production of electricity was introduced.

(52) The tax has been raised to 20,000 Algerian dinars/mc burned compared to the 8,000 Algerian dinars/mc provided for by Law 01/2013.

(53) <https://www.energy.gov.dz/?article=recueil-des-textes-relatifs-a-lrelectricite>

The “Commission de regulation de l’électricité et du gaz” (CREG), an independent organization endowed with a legal personality and financial autonomy, has been created in order to guarantee the effectiveness of the production, transportation, distribution, marketing of electricity and gas as well as to ensure the two markets may function in a competitive and transparent way in the interest of both consumers and operators.

Sonelgaz changed its legal status and was transformed into an industrial holding (Société par actions - SpA). Today, Sonelgaz consists of various specialized companies (decree n°02-195, 1 June 2002) with legally unbundled activities (generation, transmission, and distribution). As a new element of the reform, Sonelgaz SpA was also entitled to perform commercial operations at the international level.

The points of the law where the main features of the reform are introduced are the following:

- Articles 6 and 7: They concern the opening of the power generation sector to private and public operators. The law introduces competition in the electricity generation field, by allowing any natural or legal person to install electricity generation capacities. However, authorizations must be given by CREG for installations with a capacity exceeding 25 MW.
- Article 29: The transmission system is still a monopoly being operated by one single grid operator. The law attributes the ownership and the utilization of the electricity transmission grid to the grid operator GRTE, Gestionnaire réseau de transport électricité (see art. 85), a subsidiary of the Sonelgaz group (art. 169).
- Article 35: According to this article, the system operator shall be an independent commercial company and an independent system operator, responsible for the dispatching of the electricity. Nevertheless, at present, the system operation is still performed by Sonelgaz (art. 172).
- Articles 41 and 42: The law introduces an independent “market regulator” (opérateur du marché) for organizing the commercial electricity trading. This agency shall be in the hands of a commercial company and be in charge both of handling the market operations and of communicating to market partici-

pants the obtained (marginal) market prices. Such market operator has not been introduced yet, and the law remains unclear about the details on how the electricity trading should be organized. Currently, the tasks of a market regulator are carried out by Sonelgaz (article 172).

- Article 73: Concessions for electricity distribution shall be given by CREG following a public tender process. Details are outlined in decree n°08-114. Although private actors might be involved in the electricity distribution, at present, all distribution companies are owned by Sonelgaz and these are: the Société de distribution d'Alger (SDA), the Société de distribution Centre (SDC), the Société de distribution Est (SDE) and the Société de distribution Ouest (SDO).

- Article 85: The export and import of electricity is explicitly allowed by the law. These activities can be performed by any legal or natural person. International electricity transactions must be confirmed by the regulatory commission (CREG), which can refuse export activities if they have strongly negative impacts on the national Algerian electricity supply. Power plants constructed exclusively for the export of electricity are exempted from this reservation (article 86) – a clause that opens a legal door for pure export projects.

- Article 111: This article assesses the creation of an independent electricity and gas regulatory commission (CREG), in charge of supervising the transparency and competitiveness of the Algerian electricity and gas market. CREG has three major tasks: (1) Providing and controlling the public electricity service; (2) Consulting the authorities about market regulation and organization; (3) Ensuring that laws and regulations are respected. CREG can be considered the central public authority in the Algerian electricity sector.

Following the new electricity and gas transportation law, Sonelgaz had to change its legal status and transformed into an industrial holding (société par actions - SpA). Today, Sonelgaz consists of various specialized companies (decree n°02-195, June 1st, 2002)⁽⁵³⁾ with legally unbundled activities (generation, transmission and distribution). As a new element of the reform, Sonelgaz SpA was also entitled to perform commercial operations (and equity investments) at the international level.

Since its approval, the law has undergone several modifications and implemen-

tations through various decrees⁽⁵³⁾⁽⁵⁴⁾. Such implementation process is still ongoing and not all the reform efforts have been successfully performed yet.

In 2005, thanks to the publication of the Decree on the regulation of fares and on the remuneration of transport, distribution, and marketing of electricity and gas, it was stipulated that the activities are remunerated on the basis of provisions that are objective, transparent and non-discriminatory, in the interests of consumers and operators.

During 2006, six decrees dealing with the production and transport of electricity, gas transportation, construction and operation of new facilities to produce free electricity were added to the regulatory framework. Production is subject to the granting of a license to operate issued by the CREG⁽⁵⁵⁾.

The Executive Decree No. 06-428 provides for specifications containing the rights and obligations of the producer of electricity.

The Executive Decree No. 06-432 establishes rights and obligations of the gas system on the basis of specifications.

In 2007, two executive decrees and three ministerial orders were published, which related to the conditions for supplying power, third party access to transmission and distribution of electricity and gas, setting the annual consumption level of electricity and gas for eligible clients in accordance with conditions linked to their return to the rates system, operating permits for the transmission of electricity, the authorization to operate the transportation of gas and determining the procedure for notification of the production of electricity.

In 2008, a new executive decree consolidated the opening to the private sector. Decree No. 08-114 set the rules for granting and withdrawing concessions for the distribution of electricity and gas and included the specifications concerning the rights and obligations of the licensee. It specified in detail also the conditions for granting or withdrawing concessions under the direction of the CREG.

A series of additional decrees deserve to be mentioned: the Executive Decree

(54) <http://www.creg.gov.dz/index.php/reglementation/lois>

(55) The procedure to request authorization to operate is governed by the Executive Decree No. 06-428 of 26 November 2006. The applicant must provide a file in 6 copies and send it to the commission (CREG), which should rule on the request within four months.

No. 07-293, laying down the terms of supply and access for third parties to the transmission and distribution networks for electricity and gas; the Executive Decree No. 09-25, setting the tools and methodology for the elaboration of the indicative program of the needs for means of electricity production; the Executive Decree No. 16-52 of February 1st, 2016, providing the technical rules for the production of electricity; the Executive Decree No. 10-138 of May 13th, 2010, defining the technical rules for the design, operation and maintenance of the electricity and gas distribution networks; and the Executive Decree no. 17-98 of February 26th, 2017, establishing the tender procedure for the production of renewable energies or cogeneration and their integration into the national electricity supply system.

3.4. Energy Efficiency and Renewable Energy

Being aware that North Africa is one of the regions that are affected the most by the consequences of climate change, Algeria included the environmental dimension in its economic development process and launched an ambitious sustainable energy development and energy efficiency program in 2000. The program foresees that solar energy production will increase up to 37% of the total national electricity production by 2030. Furthermore, the goal of the energy efficiency program is to gradually reduce energy demand of around 10% by 2030. Its realization will generate combined energy savings for 90 billion toe, including 60 billion toe in 2015-2030 and 30 billion toe, beyond 2030.

In particular, the tools for achieving these energy savings will be: (1) the improvement of the buildings' thermal insulation; (2) the development of solar water heating; (3) the promotion of cogeneration; (4) the development of solar cooling systems; (5) the conversion of simple-cycle power plants into combined cycle power plants, where possible; (6) the desalination of brackish water using renewable energy; (7) the replacement of all mercury lamps with sodium lamps and widespread diffusion of low consumption lamps; (8) the realization of air conditioning projects from solar energy; (9) the electricity generation from household waste; and (10) the conversion of vehicles to LPG / C and GN / C, acquisition and conservation of GN / C buses.

With the aim of implementing its climate change strategy, Algeria has established an appropriate legal and institutional framework. This framework is mainly based on three laws^{(53),(54)}:

- Law n. 99-09 of 28 July 1999 on energy management. This is the law that mainly governs the energy efficiency (EE) policy. Art. 3 introduces the rational use of energy and its optimization at different levels: production, transformation and final consumption in the industrial, transport, tertiary and residential sectors. Art. 4, instead, promotes the development of renewable energy, mainly solar and wind energy, biomass, and, to a lesser extent, geothermal and hydroelectric energy.
- Law 02-01 of 5 February 2002 is the main legislative text relating to the production of electricity from RES and concerns the distribution of electricity and gas through gas pipelines. This law established the legislative framework for the production of electricity in order to reform the Algerian electricity system. These provisions apply to all branches of production, including electricity from renewable sources and the quantities of energy to be sold on the market. The promotion of RES or cogeneration should be the subject of a call for tenders defined through legal channels.
- Law n. 04-09 of 14 August 2004, concerns the promotion of RES in the context of sustainable development on the basis of the general commitments illustrated in law n. 99-09 relating to energy management. It codifies Algeria's environmental mission to promote the internal development of RES and to eliminate greenhouse gas emissions. This law aims to "protect the environment by promoting the use of clean energy sources, to contribute to the fight against global warming by limiting emissions of greenhouse gas emissions", to "participate in sustainable development through the preservation and conservation of fossil fuels" and to "contribute to national policy planning by promoting renewable energy fields by generalizing their use" (art. 2).

In 2000, the National Energy Efficiency Program (NEEP) was implemented to finance investments in energy efficiency by the National Energy Efficiency Agency (APRUE) and its projects under the National Energy Efficiency Program (PNME). The allocated resources include taxes on natural gas and electricity, an initial government contribution of USD 1.15 million and additional income that may include taxes on energy-intensive equipment, penalties, loan

repayments, government subsidies and more. In 2014, a feed-in-tariff (FiT) was adopted, managed by the Electricity and Gas Regulatory Commission (CREG), with the aim of accelerating the diffusion of photovoltaic and wind power plants; in addition, various Funds have been created to finance investments in EE and RES.

The Ministry of Energy and Mines (MEM) is the main institution responsible for energy issues. SKTM (ShariketKahrabawaTaketMoutajadida) - Electricity and Energy Company Renewable, a subsidiary of Sonelgaz - is the executing company. Established in April 2013, SKTM is responsible for the isolated generation of electricity from conventional sources in the south of the country and the implementation of the renewable energy plan at the national level.

CREG is responsible for defining energy prices. As regards its specific roles with respect to renewable energies, CREG is responsible for the authorization procedures to benefit from feed-in tariffs for renewable energy producers. Other institutions involved in the promotion of renewable energies and EE are the Center for the Development of Renewable Energies (CDER) and the Agency for the Promotion of the Rationalization of Energy Use (APRUE).

In 2017, a new Ministry of the Environment and Renewable Energies was created.

Funds for renewable energy in Algeria

From 1999 onwards, Algeria has created and unified, through laws and executive decrees, special Funds in order to finance the development and the promotion of renewable energies and energy efficiency and has introduced a budget structure for the special accounts for these Funds.

1. National Fund for Energy Management (NFEM) established in 1999, by the law on energy management issued in 1999, in order to contribute to the financing of renewable energy projects.
2. National Fund for Renewable Energies (NFRE) established in 2009 with the Law n. 09-09 of December 30th, 2009, relating to the 2010 finance law. Article 63 establishes the Fund and creates the special account no. 302-131. Resources are provided by 0.5 per cent on the revenue of oil tax. NFRE provides financial support for actions undertaken under the “Renewable

Energy and Energy Efficiency Development Plan 2011-2030” and other eligible renewable energy projects.

3. National Fund for Renewable Energies and Cogeneration (NFREC), established in 2011 by Law n. 11-11 of July 18th, 2011, on the supplementary financial law for 2011.

After the establishment of the NFREC, Algeria implemented the regulatory framework for this Fund management policy through executive decrees and ministerial orders:

- Executive Decree no. 11-423 of 8 December 2011, which establishes the terms and conditions for the management of account no. 302-131 of the NFREC. It also modifies the operational procedures of the Fund by increasing revenues from 0.5% to 1% of oil royalties plus any additional contributions. Furthermore, it grants the Ministry of Finance authorization to jointly manage the expenses of this Fund with the Ministry of Energy for the purpose of financing operations and projects aimed at promoting renewable energies and cogeneration.
 - The Ministerial Decree of 28 October 2012, which establishes the methods for monitoring and evaluating the trust account no. 302-131 NFREC, as well as the nomenclature of revenues and expenses attributable to it. Furthermore, the Decree completes the Executive Decree of December 8th, 2011 and provides for the FiT for renewables energy to be financed by the 1% tax on the state’s oil revenues and other resources or contributions.
4. National Fund for Energy Efficiency and for Renewable Energies and Cogeneration (NFEEREC): initially established by Law n. 14-10 of 30 December 2014. Article 108 provides for the merging of the two special funds NFRE and NFREC into NFEEREC and is implemented by the Executive Decree n. 16-121 of 6 April 2016, which determines the operating methods of the special account no. 302-131 NFEEREC.

Other regulatory frameworks for renewable energy in Algeria are:

1. Feed-in Tariffs (FiT): it is a mechanism that has been established to accelerate the adoption of renewable energy sources. FiT can be defined as a

tariff incentive that involves tariff payments favourable to the entity that supplies electricity. These are managed by CREG.

- The FiT regime was established by the Executive Decree, n. 04-92 of March 2004. The purpose of the Decree is to diversify the production of electricity using renewable energies and cogeneration.
 - The FiT Application Executive Decree of 18 June 2013 establishes the administrative process and the conditions for benefitting from the FiT, and provides a list of eligible projects based on their technical characteristics and installed capacity.
 - The Ministerial Orders on the solar photovoltaic and wind power tariffs of 2 February 2014 establish the guaranteed purchase rates and the conditions for their application to the electricity produced by plants that use solar photovoltaic and wind.
2. The guaranteed certificate of origin: it is a pre-condition for benefitting from the FiT under the Energy Purchase Agreements (PPA). It was published in 2015 and classified as a financing scheme for renewable energy in Algeria. The Executive Decree for the guaranteed certificate of origin was published on 18 February 2015 and provides key information for independent power producers (IPP).

Further and very recent developments suggest that the energy transition occupies an important place in the new government program (February 2020) which aims to diversify energy sources through the development of renewable energies and the promotion of energy efficiency will become even more important for the new government

As part of the development of renewable energies, a program for the development of a capacity of 15,000 MW will be implemented by 2035, of which 4,000 MW by 2024. This will not only save nearly 240 billion cm of natural gas and thus avoid the emission of 200 million tons of CO₂, but will also promote the development of a network of SMEs in the entire supply chain.

The approach of energy efficiency policy, which will be encouraged in the various sectors, will focus on the following measures:

- the generalization of thermal insulation processes in new buildings
- the establishment of a national program for the conversion of vehicles to LPG c and the development of CNG for public transport vehicles
- to equip the public lighting network and public administrations with low-consumption devices
- the establishment of a regulatory framework that prohibits the import and production of energy-consuming equipment
- the expansion of the incentives system for investments in the sectors that allow the localization of the production of dedicated equipment and components

3.5. Foreign Investment Legislation

The energy sector is certainly one of the sectors to which the entry of a foreign operator remains difficult. However, according to Law n°. 03 of August 20th, 2001, there are no investment restrictions in economic activities related to the production of goods and services by public or private entities as there are no investment restrictions in sectors where the economic activity is subject to a concession/licence.

Nevertheless, since 2008 there are many FDI restrictions and the introduction of rule 51/49 established, for each new investment project in Algeria, that the majority of its capital (51%) must be held by local partners. Moreover, the Algerian government has endorsed protectionist economic policies (import quotas for several types of products). There have been several international calls (WB, OPEC, etc.) to implement reforms that could improve the climate of confidence for investors in the country.

To this aim, Algeria has launched a privatisation programme to enable other operators, including foreign operators, to enter the market in the various industrial sectors.

In 2016, the government announced that 66% of the shares of a state-owned

unprofitable company may be purchased by a private stakeholder, provided that it is predominantly owned by one or several Algerian citizens. At the end of 2017, Algeria repeated its intention to proceed to the privatisation - at least partially - of 1,200 public companies.

With respect to hydrocarbons, since March 2005, foreign companies have obtained the complete ownership of an oilfield. In 2017, the Algerian government softened the exceptional tax on profit (ETP) for foreign companies in this sector, after that it was clear that numerous foreign investors were discouraged by the legislative framework in force.

In order to encourage foreign investment, Algeria signed bilateral investment agreements with more than thirty countries.⁽⁵⁶⁾ These define the framework for the protection of foreign investment in Algeria for each of the signatories. For the countries of the European Union, the association agreement signed between the EU and Algeria regulates this issue.

Since July 2016, Algeria has introduced a new investment law (Law n. 09/2016, called Revised Investment Law), in which tax cuts and steps to reduce redundancy were decided. This law states that all imported goods and services intended for investment projects will be exempted from customs duties and value-added tax (VAT). Also, businesses will get a 10-year exemption from tax on property needed for a project, as well as a 3-year tax exemption on company profits once the project starts. Furthermore, the infrastructure needed for any investment project will be partially or totally financed by the government.

However, the law does not annul the limits for foreign shareholding to 49% of any Algerian-based company share capital, and up to 51% for the energy and hydrocarbons fields. The 2016 Finance Law clarified the broad scope of application of this rule as covering all foreign investment in the sectors of production of goods, services and importation.

The Revised Investment Law clarifies that the obligation to notify the Government prior to any transfer of foreign companies holding shares in locally incorporated companies is limited to transfers exceeding 10%. In this case, the Government can purchase all or part of the foreign shareholders' shares in the relevant Algerian company within the month following the notice to the

(56) <https://investmentpolicy.unctad.org/country-navigator/4/algeria>

Government, while the obligation for foreign shareholders to provide the Algerian authorities with details of their own shareholding - which was often not complied with - has been deleted.⁽⁵⁷⁾

At the end of November 2019, in the 2020 Financial Law, the Algerian Government has attenuated under the art 109 the so-called “51/49 rule”, by restricting the scope to the non-strategic business sectors in order to revitalize the country’s economic growth. Expected to start in 2020, the so-called 51/49 rule permits projects to benefit from financing and borrowings from regional and international financial institutions of which Algeria is a member. However, the list of strategic activities shall be determined by the Algerian executive regulations.

(57) <https://www.nortonrosefulbright.com/en/knowledge/publications/9d2a70a1/new-investment-law-in-algeria--an-overview-of-what-it-does-and-does-not-change-for-foreign-investors>

4. The Market Confidence

4.1. Questionnaire: Who and How?

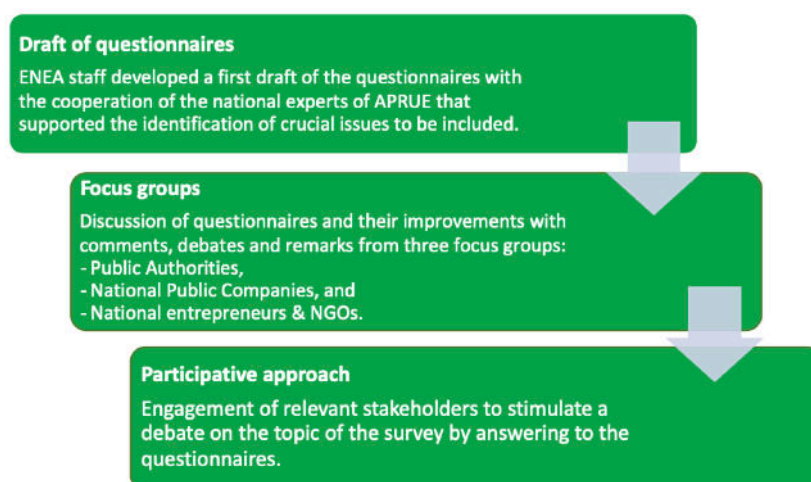
Attract investments within the country is crucial to boost a transition towards a new paradigm of sustainability both to respect the international commitments to fight climate change (i.e. Paris Agreement) and to assure the sustainability of the Algerian economy. To do so, it is necessary to discuss and involve relevant stakeholders in identifying those hurdles that impede a stable growth.

The better tool to have a broader point of view is a survey, with the main purpose of framing the economic and institutional context in which companies aiming to invest in RES and EE may operate in Algeria, both considering the relevant barriers and areas of excellence. Findings will guide the development of proposals for a functional and effective RES and EE quality market. The survey consists of two questionnaires tailored on two different stakeholders: local authorities, and Algerian and foreign companies interested in RES and EE investments.

4.1.1. Methods and Data Collection

The survey was carried out through two questionnaires, built with a three-step approach.

Figure 25 – Three-step approach



Box 1: The survey structure

The questionnaires were submitted on-line⁽⁵⁸⁾ to institutional stakeholders, local authorities and companies who operate, or intend to do it, on the Algerian energy market, through the provider Google Forms, which allows a simple and reliable collection of the responses. Before submitting the questionnaires, the target population was contacted by phone by the national experts to clarify the aim of the research and explain how to fill-out the questionnaires.

The questionnaires comprise of both open and multiple-choice questions with a Likert scale ranging from 1 (not important/significant) to 5 (very important/significant).

Questionnaire for local authorities

Considering the questionnaire tailored for local authorities, the main goal was to assess the effectiveness and adequacy of national and local policies to increase Foreign Direct Investments (FDI) in RES and EE. In particular, it explores how climate issues are integrated and addressed in the Algerian governance, the financial instruments available to disseminate RES and EE, the structure of electricity distribution and consumption, and the mechanisms implemented to promote the diffusion of RES and EE. Mixed with the other tools such as interviews, workshops and site visits, the responses to this questionnaire contribute to identify key success factors and barriers to the progress of RES and EE development in Algeria. The questionnaire is structured in the following 6 sections:

1. Climate governance
2. Financial incentives for RES and EE
3. Standardization, licensing and planning
4. Market for electricity production
5. Electricity consumption
6. Promotion and information

Questionnaire targeted to companies

Together with the one targeted to local authorities, a questionnaire for companies was arranged. The goal of the questionnaire was to acquire information on companies' point of view on the attractiveness of Algeria as a country to invest in. Specifically, companies were asked to indicate the significance of the obstacles to the promotion of RES and EE in Algeria by considering economic and financial aspects, technological and infrastructural barriers, institutional and regulatory barriers, and barriers linked to the lack of public awareness and information dissemination on the topic. Another objective is to characterize interviewed companies in terms of their past and future investment both in renewable energy and energy efficiency interventions. Moreover, the questionnaire investigates how companies manage risk transfer mechanisms in renewable energy and energy efficiency projects. The questionnaire is structured into 4 sections:

1. Profile of companies
2. Investments in Renewable Energy and Energy Efficiency
3. Barriers to investment
4. Risk Transfer mechanisms

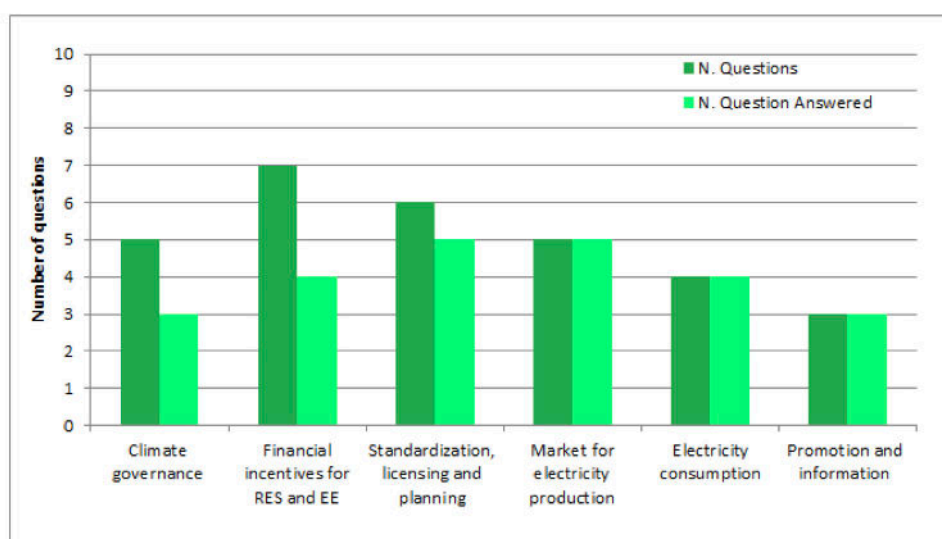
(58) Through the provider Google Forms, which allows a simple and reliable collection of the responses. Questionnaires are reported in Annex 2 and Annex 3. They are available here in English and French for local authorities; English and French for companies.

4.2. The Perspective of Public Authorities

The questionnaire for public authorities is made up of 6 sections for a total of 36 questions, that provided a broad perspective of what investing in RES and EE in Algeria entails.

The form was submitted to over 10 institutional stakeholders, both national and local authorities, with 5 completed questionnaire collected, ensuring at least one answer for each question in the questionnaire (see fig.26).

Figure 26 – Comparison between the number of questions asked and the number of answered questions per issue



4.2.1. Climate governance in Algeria

The first section is focused on climate-related issues and on how Algeria faced them.

The areas of the territory receiving more than 400 mm of rain per year are limited to a strip up to 150 km deep from the shoreline. According to respondents, climate variability and extreme weather events are serious challenges for the population, which suffers from the increased food insecurity and the slowdown of the country socio-economic development. Considering how the climate condition affects the well-being of the Algerian population and economy, respondents highlight how to this aim the political agenda includes

actions specifically elaborated to mitigate the challenging climate conditions characterising most of the national territory.

Respondents recall how Algeria has, therefore, formalized a national climate strategy in the National Climate Plan. It includes 156 actions, divided into three parts: adaptation measures, mitigation measures and a third part dedicated to the governance of the Plan. Its main goal is to strengthen the mobilization of water resources, to fight floods, to protect the coasts, to fight drought and desertification and to increase the resilience of ecosystems and agriculture to climate changes.

Additionally, respondents underline that the climate-related issues are integrated by the implementation of the National Energy Efficiency and Renewable Energy Program by 2030, adopted by the government in 2015. This program aims to achieve the following:

- 27% of national electricity production from RES by 2030
- reduce greenhouse gases by 200 million tons of CO₂
- generalize installation of efficient lighting
- dwelling thermal insulation between 2021 and 2030
- increased shares of LPG and natural gas in fuel consumption between 2021 and 2030

Considering bilateral or multilateral cooperation agreements on climate change mitigation, according to respondents Algeria, as a developing country, is not involved in the historical responsibility for the accumulation of greenhouse gases and, as a small emitter of greenhouse gases, its current responsibility is very limited. However, respondents state that climate issues are increasingly important in the political agenda in order to satisfy the legitimate expectations of economic and social sustainable development of its population, particularly young people.

Respondents highlighted how therefore, Algeria has adopted the United Nations Framework Convention on Climate Change. As part of the UNFCCC, Algeria could have access to financial resources, coming from both bilateral and multilateral partners, to clean technologies transfer system in concessional terms and to mechanisms to strength technical capabilities.

Algeria has also adopted the Paris Agreement on Climate Change, where it

has fixed an own resource reduction of its GHG emission by 7% on the basis of a 'Business-As-Usual' scheme, during the period 2021-2030.

4.2.2. Financial incentives for RES and EE in Algeria

The second sub-section of the questionnaire investigates local authorities' perceptions with respect to the availability of national subsidies and grants to support investments in RES and EE.

National subsidies and grants

According to respondents, subsidies, through the National Fund for Energy Management, Renewable Energies and Cogeneration, are available for local investors in the industrial, building (thermal insulation, high-performance lighting, solar water heater installation), public lighting and transport sectors. Additionally, investments are supported also for foreign investors.

Interested parties also declared that the information on financial support is clearly available through the Inter-ministerial Decrees of December 22nd, 2016 (the Executive Decree on the Fund dedicated to Renewable Energies (EnR), Cogeneration and Energy Efficiency (EE)) and its implementing texts, which define the level and modalities of funding. Specifically, these texts explicate:

- the classification of income and expenses chargeable to the trust account no. 302-131 entitled "National Fund for Energy Efficiency and for Renewable Energy and Cogeneration"–(NFEEREC)
- the terms and conditions for monitoring and evaluating the trust account no. 302- 131: "National Fund for Energy Efficiency and for Renewable Energy and Cogeneration" (NFEEREC)

Credit facility

Local authorities were asked about the availability of low-interest rates readily available to support RES production and EE implementation. While underlying the significance of the topic as a national priority validated at the Central Government level, respondents answered that currently low-interest rate credit is not supported by banks since there is not a specific regulatory framework.

Tax relief for RES

Respondents stated that there are tax reliefs for renewable energy producers and tax benefits for companies who decide to invest in RES. The main advantages derive by the Law n° 16-09 of August 3rd, 2016 relating to the promotion of investment. Additionally, the provisions of Article 37 of the Finance Act for 2019 allowed the “manufacturing of solar panels” to exploit the preferential tax regime known as CKD⁽⁵⁹⁾, by providing for reduced rates of Customs Duties and VAT (5% and 9% respectively), thus encouraging investors to move towards this still virgin sector as well as local integration.

Respondents recalled that before the Finance Act of 2019, photovoltaic cells (input) and photovoltaic panels (finished product) were classified under the same tariff subheading and were therefore subject to the same tariff treatment: a situation that has long discouraged any production investment initiative as it would be immediately destroyed by import of finished products. The measure introduced in the finance law on the proposal of the Ministry of Industry and Mines allowed a distinction between the cell as an input subject to 5% taxation and the photovoltaic panel as a finished product subject to 30% taxation, thus enhancing the competitiveness of domestic market of finished products, compared the imported ones.

Eventually, local authorities mentioned, in particular, the following measures:

- a 50% reduction in corporate income tax for investments in the wilaya of Adrar, Illizi, Tindouf and Tamanrasset for a period of five years
- the adjustment of allowable deductions for the determination of the taxable benefits for IBS
- a temporary exemption for corporate income tax or global revenue tax and TAP (tax on professional activity) for a period of five years with respect to significant investments in some industrial sectors and a 3% bonus on the interest rate applicable to bank loans in favour of significant investments in certain industrial sectors

Foreign Direct Investments in RES

Respondents underlined how according to the investment regulations in force

(59) CKD is the acronym for Completely Knocked Down. The term represents a technique that consists of exporting un-assembled products, in particular to avoid high customs duties and maintain technological added value for the exporter.

in Algeria, foreign direct investments are possible with the establishment of a joint venture (partnership) whose capital is held at 51% (minimum) by resident national shareholders.

Guaranteed tariffs for RES and EE

Respondents considered the presence of guaranteed tariffs for RES and EE, for renewable energy production from solar energy, photovoltaic, wind energy and cogeneration, recalling the Ministerial Decrees of February 2nd 2014 that fixes the guaranteed purchase rates for the electricity production from installations using the photovoltaic technology. The guaranteed purchase price derives from the tendering procedure for the purchase of electricity produced (kWh selling price) and generated by the beneficiaries of the special regime. Considering the duration of the tariffs, they are guaranteed for a period of 20 years.

4.2.3. Standardization, Licensing and Planning in Algeria

The third section of the questionnaire investigated the quality of grid connection and planning in Algeria.

With respect to the grid connection, respondents highlighted how the system is governed by the decree of February 21st, 2008. The Decree sets the technical rules for the connection to the transmission network and the rules of conduct of the electrical system, but an update of this decree is imminent.

Concerning the planning of renewable energy capacity, according to the Executive Decree n° 17-98 relating to the bidding process, respondents underlined that the government foresees a “request for proposals by auction” (Rfp or appel d’offres aux enchères) in order to achieve the construction and operation of renewable energies facilities generating from 10 GWh to 20 GWh and the sale of the electricity generated by these facilities as well as the sale of annual quantities of energy generated by cogeneration facilities with a nominal capacity not exceeding 12MW.

In order to promote renewable energy deployment, the respondents stated how renewable energy installation is generally standardized according to the international requirements defined in the specifications, while for other prod-

ucts used in the off-grid private installations, these depend on the manufacturer. Additionally, inter-sectoral analysis underlined that working groups are being set up for the development of Algerian standards (solar panels, solar water heaters, ...) by the Algerian Institute of Standardization (IANOR).

4.2.4. Standardization, Licensing and Planning in Algeria

The next questionnaire section investigates the market for electricity production from renewable energy in Algeria, with specific regard to small-scale producers.

Respondents recall that small-scale renewable energy producers have the priority in selling their generated energy, only if selected, following an invitation to a tender launched by CREG (according to the provisions of Executive Decree No. 13-218 amended by Executive Decree 17-166).

According to the results of the questionnaires, the Algerian regulation aims to encourage the growth of renewable energy, witnessed by the fact that Algeria has implemented a plan to increase RES capacity, reaching 37% of the installed capacity in 2030. The electricity production from RES is based on a tender procedure where the predominant evaluation criterion is the cost of the kWh produced. However, some local authorities emphasised in their answers the importance of supporting small-scale producers to increase the share of RES, also with, for example, subsidising domestic solar energy production.

4.2.5. Electricity Consumption in Algeria

The section analyses the consumers' point of view with respect to electricity prices.

Respondents, highlighted how, currently, consumers cannot choose among competitive electricity providers, given that there is a monopolistic system with only one electricity manager, which is the National Electricity and Gas Company (Sonelgaz).

According to the collected answers, as natural gas - the primary energy used in the conventional power plants - is transferred to producers at a price well below the international price, this does not take into account the inclusion of

full life-cycle costs (including environmental externalities and health impacts) in energy prices, thus the cost of RES is not competitive. Hence, the State compensates through the National Fund for Renewable Energy, Energy Control and Cogeneration, when the cost of kWh resulting from tenders is lower than the cost of conventional electricity.

4.2.6. Promotion and information in Algeria

The last section of the questionnaire investigates promotion and information activities with respect to RES.

Respondents stated that currently, there are not marketing campaigns promoting the production of renewable energy in Algeria at a national level. Therefore, on this topic, there is not enough information disseminated by the Government. However, interested parties stated that especially for EE, information and awareness campaigns accompany every single project. These activities disseminate information on the support provided by the Energy Efficiency Fund through the presentation of posters and the distribution of leaflets, radio and television campaigns.

Considering the availability of technical expertise and advice, collected answers highlighted how should be easy to access if a small producer wants to start generating renewable energy. In this view, local authorities claimed that CREG is accessible for all aspects on RES production of low capacity for grid-connected power; nevertheless, there is not a regulatory framework for off-grid producers of RES.

4.3. The Domestic Enterprises' Point of View

The questionnaire was submitted to enterprises potentially interested in investing in RES and EE in Algeria. The questionnaire is composed of 4 sections (see box 1).

Unlike the questionnaire for institutions, the questionnaire sent to companies is characterised by 25 questions, most of which are closed-ended.

The survey was sent to over 20 companies, collecting 3 answers from big companies with relevant size of total investments in RES and EE, both carried out and planned in the last and next three years. Thus, despite the few answers, the depicted picture represents a preliminary acceptable basis for further investigation, and relative findings were taken into consideration for final recommendations.

4.3.1. Respondents Characteristics

The first section investigates the main characteristics of the respondents: 66.7% of them are part of a group of enterprises. With respect to the main activities carried out, 33.3% of them are energy producers, while 66.6% are Service Companies (installation / project developer and operation). Considering the technology type, two companies stated that they work on RES, while one deals with solar energy and energy efficiency in the industry. All respondents have recently created enterprises, as their incorporation was made in the last 10 years. With respect to customers, companies work with both national and foreign enterprises. Considering the suppliers, all respondents have international suppliers, while two of them work also with national partners.

4.3.2. Investments in Renewable Energy and Energy Efficiency

The next section investigates the investments in RES and EE made in the last years and planned for the next future.

Concerning the investment related to the production of renewable energy from biomass, only one company has invested and will keep investing each year between €5-10 million. Considering the production of renewable energy from the wind, one company has invested (2016, 2017, 2018) and will invest (forecast 2019, 2020, 2021) each year between €5-10 million, while another respondent invested and is going to invest more than €10 million in the same periods. Eventually, one respondent is not investing in wind energy. Investments in photovoltaic energy have been made by all respondents. Specifically, one company in 2016 has invested between €3-5 million, in 2017 and 2018 more than €10 million, and will invest the same amount in 2019. Another company has invested in 2016 between €3-5 million, in 2017-2018 between €1-3 million, and will increase the investment each year from 2019 to 2021 till

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€10 million. Another company, in 2016 has invested more than €10 million, while next years and till 2021 will invest between €1-3 million. With respect to solar thermal energy, only one company has invested and will invest till 2021 less than €1 million, while the other respondents declared no past or planned investments.

Table 8 – Number of respondent companies that have made investment and plan investment in RES (answers for each year were allowed)

Million € investment per year	Past Investment (2016-2018)					Future investment (2019-2021)				
	0-1	1-3	3-5	5-10	Over 10	0-1	1-3	3-5	5-10	Over 10
Biomass				1					1	
Wind				1	1				1	1
Photovoltaic	2	1	1		1	1		1		1
Solar thermal	1					1				

Table 9 – Number of respondent companies that have made investment and plan investment in RES

	Past investment	Future investment
Biomass	1	1
Wind	1	2
Photovoltaic	3	2
Solar Thermal	1	1

The next part of the section examines companies' investment in energy efficiency. For EE investment in buildings, and industry, one company has invested between 2016 and 2018 less than €1 million, and will increase the investment to €1-3 million from 2019 to 2021. Another company has invested and will keep investing less than € 1 million. One company has not invested and will not invest. With respect to investment in lightning, the first company will invest in 2019 €1-3 million. The second, has invested between 2016 and 2018 less than €1 million, and its planning to raise the investment to €1-3 million in the next years. The third company in the period 2016-2020 has invested and will invest less than €1 million and will increase the investment to €1-3 million in 2021. Considering EE in heating and air conditioning only one company has invested and will invest till 2012 less than €1 million.

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Table 10 – Number of respondent companies that have made investment and plan investment in EE (answers for each year were allowed)

Milion € investment per year	Past Investment (2016-2018)					Future investment (2019-2021)				
	0-1	1-3	3-5	5-10	Over 10	0-1	1-3	3-5	5-10	Over 10
EE Industry	2					1	1			
EE Buildings	2					1	1			
EE Lighting	2						3			
EE Heating and air conditioning	1									

Table 11 – Number of respondent companies that have made investment and plan investment in EE

	Past investment	Future investment
EE Industry	2	2
EE Buildings	2	2
EE Lighting	2	3
EE Heating and air conditioning	1	0

4.3.3. Barriers to Investments

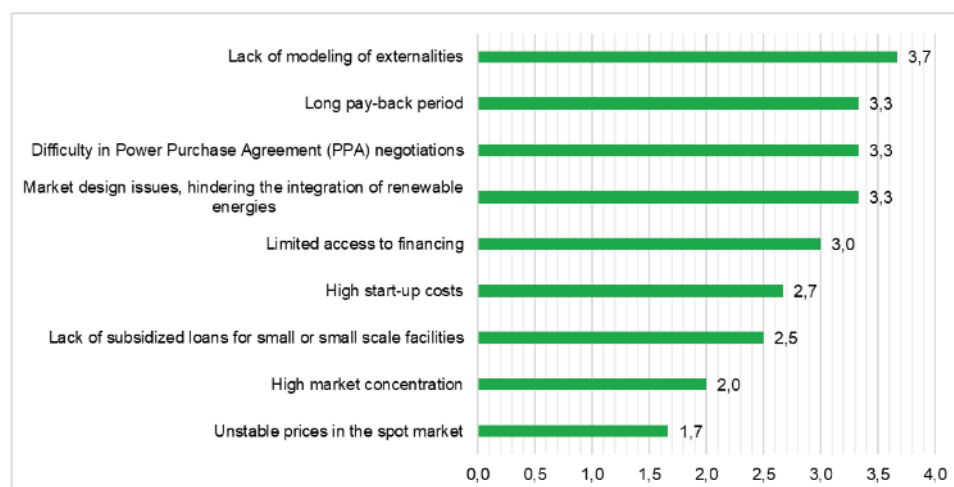
Considering the Algerian context, the next section of the questionnaire investigates the barriers that companies face when deciding to invest in RES and EE. The scale employed ranges from 1 (not significant) to 5 (extremely significant).⁽⁶⁰⁾

First, companies were asked about economic and financial barriers. None of the proposed barriers overcome the score of 4 (very significant barrier), with an average score of 2.8. The most significant barrier relates to the lack of expertise in modelling the potential financial externalities when deciding to invest (3.7), followed with a score of 3.3 by “Long pay-back period” of investments, “Difficulty in PPA negotiations” and “Market design issues, hindering the integrations of renewable energies”. Difficulty in accessing financing is considered a moderately significant barrier (3.0). Considering less critical barriers, “High start-up cost” scored 2.7, “Lack of subsidized loans for small scale facilities” scored 2.5, and “High market concentration” scored 2.0. The barrier recognized as less significant with a score of 1.7 relates to the potential instability of the prices in the spot market (fig. 27).

(60) Score: 1 “Not significant”; 2 “Slightly significant”; 3 “Moderately significant”; 4 “Very significant”; 5 “Extremely significant”.

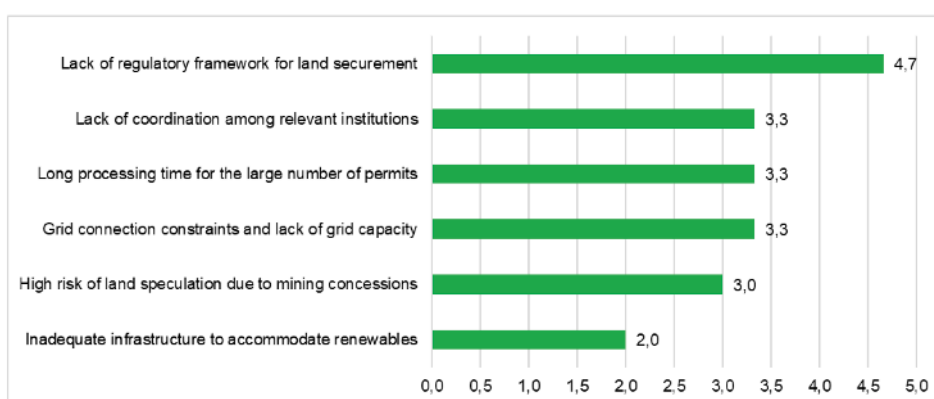
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Figure 27 – Economic and financial barriers to investments



Technological and infrastructural barriers were investigated in the next sub-section of the questionnaire. According to respondents, the most significant barrier refers to the lack of a solid regulatory framework for land securement, considered as an extremely significant bottleneck to investments in RES and EE (4.7). Other barriers were considered as moderately significant by companies, while “Inadequate infrastructure to accommodate renewables” was evaluated as slightly significant (2.0).

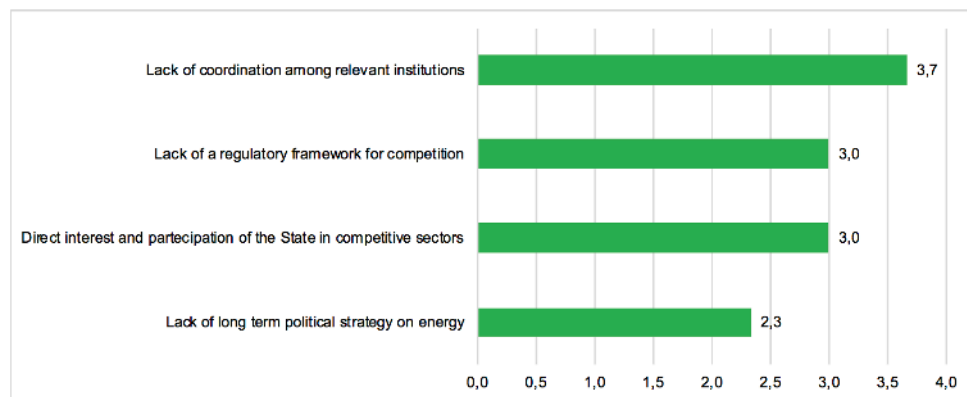
Figure 28 – Technological and infrastructural barriers to investments



Taking into account potential institutional and regulatory barriers, the most significant is the lack of coordination among relevant Algerian institutions with a score of 3.7. As for the “Lack of a regulatory framework for competition” and for the “Direct interest and participation of the state in competitive sectors,” companies considered them as moderately significant (3.0). Eventually, the

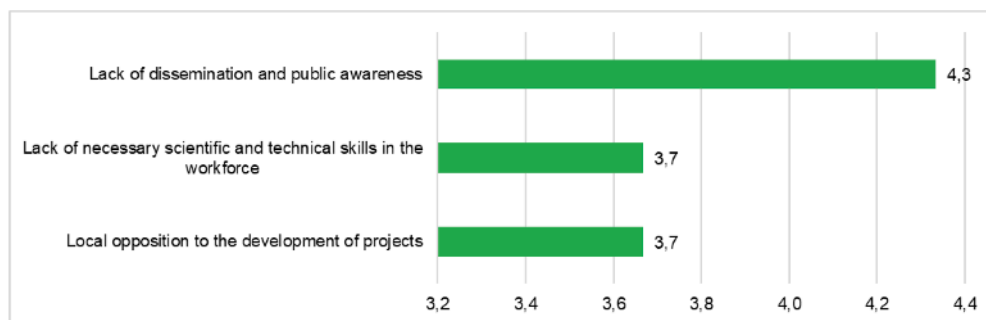
lack of a long-term political strategy on energy is not considered as a potential obstacle to investments (2.3).

Figure 29 – Institutional and regulatory barriers



The last sub-section examines those barriers potentially arising because of the lack of knowledge among the public on the topic. Companies consider the lack of dissemination of information on RES and EE a very significant barrier with a score of 4.3. Also, the scarcity of the necessary scientific and technical skills of the labour force is considered as an obstacle to investments (3.7), together with the potential opposition of local communities to the development of projects (3.7).

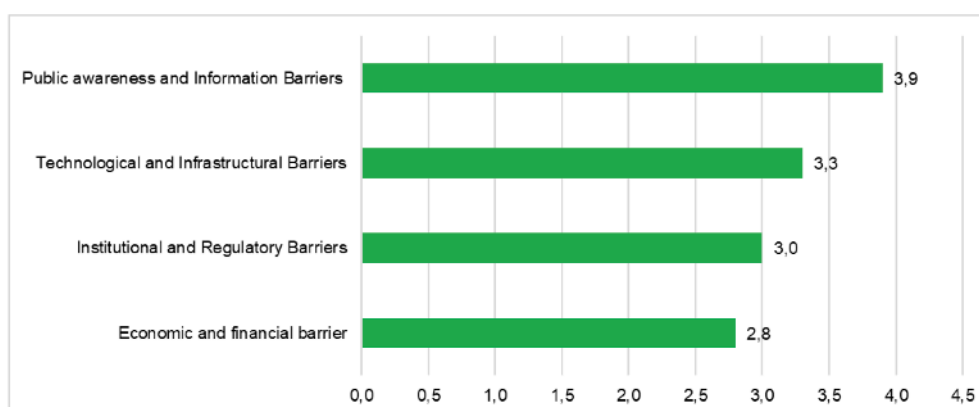
Figure 30 – Public awareness and information barriers



The figure below synthesizes the results of the questionnaire sections, showing the average score for each of the barriers categories. According to the respondents, the lack of dissemination of information and public awareness is the most critical barrier, with an average score of 3.9. It is followed by those obstacles deriving from technological and infrastructure aspects (3.3) and by

the presence of institutional and regulatory barriers (3.0). Finally, on average, those barriers linked to economic and financial issues are considered as less significant (2.8) compared to the others.

Figure 31 – Average scores for each of the barriers' categories to investment in RES and EE



4.3.4. Risk Transfer Mechanisms

This section explores the risk transfer mechanism employed by companies when investing in RES and EE. Risks have been divided into 6 categories. For each of them, companies were asked to indicate which risk transfer mechanism they have applied. Table 12 illustrates that a wide range of instruments are employed by companies to reduce the risk of investments ranging from insurances, financial products and other forms of risk reduction, such as captive companies.

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Table 12 – Risks and related-risk transfer mechanisms used by respondent companies (multiple choice allowed)

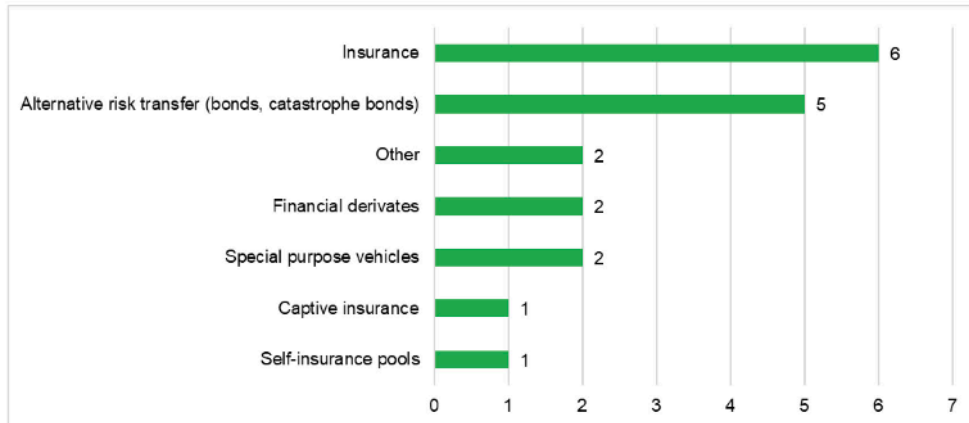
<i>Risk category</i>	<i>Risk transfer mechanism</i>	<i>Respondents</i>
<i>Financial</i>	Insurance	1
	Financial derivatives	3
	Alternative risk transfer (bonds, catastrophe bonds)	1
<i>Business/strategic</i>	Insurance	1
	Financial derivatives	2
	Alternative risk transfer (bonds, catastrophe bonds)	1
	Self-insurance pools	1
<i>Building and testing</i>	Insurance	3
	Special purpose vehicles	1
	Alternative risk transfer (bonds, catastrophe bonds)	1
<i>Operational</i>	Insurance	2
	Captive insurance	1
	Other	1
<i>Environmental</i>	Insurance	1
	Other	1
<i>Political/regulatory</i>	Insurance	1
	Special purpose vehicles	1
	Alternative risk transfer (bonds, catastrophe bonds)	1
<i>Market</i>	Alternative risk transfer (bonds, catastrophe bonds)	1
	Weather-related	1

According to respondents, “Insurance” is the broadest mechanism applied, in 7 out of the 7 risk categories. Furthermore, the “Alternative risk transfer mechanisms” were widely used, in 5 categories. With respect to “Special Purpose vehicles” and “Financial derivatives”, they are employed in 2 of the categories. In 1 category, “Self-insurance pools” and “Captive insurance” were applied. Eventually in 2 categories, companies declared to use “Other” risk transfer mechanisms (Table 13 and fig. 31).

Table 13 – Risk transfer mechanisms and corresponding number of risk categories in which they are applied

<i>Risk transfer mechanism</i>	<i>Number of risk categories in which is employed</i>
Insurance	6/7
Special purpose vehicles	2/7
Financial derivatives	2/7
Alternative risk transfer (bonds, catastrophe bonds)	5/7
Self-insurance pools	1/7
Captive insurance	1/7
Other	2/7

Figure 32 – Risk transfer mechanisms and corresponding number of risk categories in which are applied



5. Recommendations

The main barriers to investment in EE and RES depend on political, regulatory, economic and social factors.

Algeria is facing an important transition towards a path of sustainable development that, for a country strongly linked to the production of fossil energy, has formidable economic, social and political implications. More than 95% of Algeria's revenue comes from its oil and gas exports, but the country is facing the reduction of its own resources in presence of a highly fluctuating market that is reducing revenues compared to previous years. Moreover, domestic energy needs are constantly growing, with an annual increase of more than 6% since 2000. This rapid growth in the demand of energy is in line with the population growth, with the number of housing units, with the country's development projects and the major public works.

The energy supply needed to meet this ever-growing demand, in a context of declining resources and revenues, is a major challenge for the country. Even if economic reasoning suggests an upward revision of energy prices, which are too low in Algeria due to a high State subsidy, it remains a particularly sensitive issue to implement any measures to revise energy pricing, because of its social implications and risks which entitles particularly complex policy choices.

RES and EE can give a significant contribution to overcome the dilemma between a pricing policy that allows investment to be remunerated and the need to avoid social tensions and energy poverty. In other words, RES and EE can cope up with the expected growth in the domestic energy demand without being affected by volatility in fossil fuel prices, and without compromising revenues from oil and gas exports, but contributing to sustainable development policies and to the achievement of the GHG emissions reduction targets. This strategy cannot disregard the crucial role that can be played by public investment plans in the sector, along with the creation of market conditions that foster an adequate level of private investment by domestic and foreign companies.

As this report shows, the achievement of adequate levels of public and private investment in the RES and EE sectors is facing numerous and complex barriers and obstacles.

5.1 Policy and Institutional Recommendations

The Ministry of Energy is now committed to develop a clear energy efficiency policy to establish a coherent government strategy aiming to address low energy costs.

However, a strong coordination between the different sectors shall be achieved, as this would be desirable in order to enable Public Authorities to coordinate and harmonise their programmes in favour of a common energy efficiency strategy, in particular in key sectors such as construction, health, industry, tourism, transport and finance.

The synergy between the public and private sectors must be improved, since its weakness is still a major obstacle to the development of these energy markets. Public policies in the energy sector do not provide significant scope for the intervention of private operators yet.

Looking at the framework of a national energy efficiency and renewable energy programme, it is necessary to promote and to boost a policy of dialogue among public and private stakeholders, also through a public consultation and shared participation.

The current institutional set-up in Algeria, based on the strong centralisation at the State level, does not help the development of measures which, especially for energy efficiency, would require an important role for local authorities. At the moment, there is no dedicated public structure or institution to support the 1,541 existing local Authorities in Algeria, the Ministry of the Interior nor another energy institution, such as the APRUE. On the other hand, the roles of all the stakeholders in this sector must be clearly identified in order to facilitate investments in RES and EE.

The private sector could play a leading role in this sector by investing in energy efficiency and renewable energy at the municipal level (mosques, schools, public buildings, street lighting, etc.). This is an area that not only contributes to improving the quality of energy supply, but also encourages job creation and environmental protection through the reduction of greenhouse gas emis-

sions and pollutants. To date, the private sector is acting more as a service provider than as a full partner, thus considerably reducing the possibility of its intervention and investment in the medium and long terms.

With the publication of the aforementioned decrees on the feed-in tariff for solar and wind electricity, projects financed by the private sector investment should be able to emerge, and local Authorities will have a role to play in attracting these investors to their territory.

Appropriate measures should be set to enhance the infrastructure, like the national grid, in order to absorb all the energy generated from RES without affecting the quality of the power signal. The overall energy transition policy, which is high in cost, will induce the creation of new important markets. The numerous opportunities for industrial investment that emerge and the place given to innovation in this market call for considering promoting not only activities in the energy sphere but also related industries in order to mitigate the costs of the global policy.

5.2 Financial Recommendations

Higher Investment costs and length of pay-back times related to the implementation of RES and EE measures may be a financial and/or psychological constraint for investors, who may not understand the return on investment that will be generated by these costs.

This is particularly true in the social housing sector, which is very sensitive to financial issues. In this case, the State, through the Ministry of Housing, is the only authorized body to promote investments in energy efficiency.

The assessment of housing values should take into account not only the construction costs but also the operating costs of these dwellings. Because of the strong State subsidy on energy products, it is clearly demonstrated that the State would benefit more from the additional costs of energy efficiency measures introduced in the buildings, rather than subsidising the energy consumption of its inefficient dwellings with reduced thermal comfort.

Extra incentives should be given towards tax exemptions for energy efficient goods and projects.

Also, the lack of access to bank loans reduces the opportunities to start a project and excludes any possibility of financial arrangements. Finally, it is suggested to open the energy markets to both small and large investments, since the small investors cannot implement their own projects because large investors cover all the demand.

5.3 Information Recommendation

The lack of information on the current funding mechanisms and regulations prevents small and medium size enterprises, suppliers and installers (such as architects, engineers, etc.) and policy makers mainly at the local level to understand the benefits of energy efficiency, renewable energy and financing opportunities.

As a result, most operators and investors do not take these energy aspects into consideration in their projects, and therefore do not develop projects that contribute to energy efficiency and renewable energy development.

Energy efficiency must be promoted so as to avoid remaining a marginal and very little-known element for projects in all sectors. It is often seen more as a constraint than as an improvement that can have a significant impact on the profitability of the project.

The opening up of markets to ESCOs should be supported through standards and ad hoc measures as a tool to support the promotion of energy efficiency.

Renewable energy projects in municipalities are often more in line with a municipality's image strategy, rather than with an investment project per se. Therefore, it is strongly recommended to develop clear guidance for investment in - and interconnection of - RES projects.

The creation of an information centre and data bank for all RES projects would be welcomed, as well as a classification of RES and EE companies. This classification should be based on the feedback received from the customers of such companies. RES and EE companies should hire only qualified and certi-

fied engineers and technicians.

Further awareness campaigns should start up with the organization of workshops at all levels utilizing formal and informal, social media, etc. It needs to prepare dissemination campaigns and promotion of knowledge among citizens and in schools.

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Annexes

Annex 1:

The Matrix of the Main Legislative Provision on Energy Sector in Force

Law/Decree	Energy efficiency	Renewable energy	Conventional	Cross setting
Decree n°85-235, 25 th August 1985 creation of an agency for the promotion and rationalisation of energy	✓			
Law n. 99-09, 28 th July 1999 pertaining to energy management	✓	✓		
Law n. 99-11, 23 December 1999 on the bearing the law of 2000	✓			✓
Executive Decree n. 2000-90 relating to thermal regulations for new buildings	✓			
Law No. 02-01, 5 th February 2002, pertaining to public distribution of gas by pipeline	✓	✓	✓	✓
Presidential Decree n° 02-195, 1 st June 2002 on Société algérienne de l'électricité et du gaz «SONELGAZ SPA»			✓	
Executive Decree No. 04-149 of 19 May 2004 Establishing the procedures for setting up the National Energy Management Programme (PNME)	✓		✓	
Law No. 04-09, 14 th August 2004, pertaining to promotion of renewable energies in the context of sustainable development	✓	✓		
Executive Decree No. 04-314 of 25 September 2004 Amending and supplementing Decree No. 85-235 of 25 August 1985, as amended and supplemented, establishing an agency for the promotion and rationalization of energy use (APRUE)	✓			
Executive Decree No. 05-16, 11 January 2005 laying down specific energy efficiency rules applicable to appliances using electricity, gas and petroleum products.	✓			
Law n° 05-07, 28 th April 2005 relating to hydrocarbons			✓	
Executive decree n°05-182 of 18 May 2005 relating to the regulation of tariffs and the remuneration of the activities of transport, distribution and marketing of electricity and gas			✓	✓
Executive Decree n. 05-495 prescribing mandatory energy audits for large energy-consuming facilities	✓			✓
Executive Decree No. 06-428 of 26 November 2006 laying down the procedure for granting authorisations to operate electricity production facilities		✓	✓	✓

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Law/Decree	Energy efficiency	Renewable energy	Conventional	Cross setting
Executive Decree n° 06-432 of 26 November 2006 fixing the specifications relating to the rights and obligations of the gas transmission system operator			✓	
Executive Decree No. 06-433 of 26 November 2006 setting the composition and functioning of the Advisory Board of the Electricity and Gas Regulatory Commission (CREG)	✓	✓	✓	✓
Executive Decree No. 07-293 of 26 September 2007 setting the terms and conditions for the supply and access of third parties to the electricity and gas transmission and distribution networks			✓	
Executive Decree No. 07-310 of 7 October 2007 setting the level of annual electricity and gas consumption of the eligible customer and the conditions for the return of the eligible customer to the tariff system			✓	
Executive Decree No. 07-391 of 12 December 2007 setting the terms and procedures for the determination of the sale price, excluding taxes, of gas on the national market			✓	
Ministerial decree 21 st February 2008, fixing the technical rules connection to the electricity transmission network and the rules of the system electric		✓	✓	
Executive Decree No. 08-114 of 9 April 2008 setting the terms and conditions for the award and withdrawal of electricity and gas distribution concessions and the specifications relating to the rights and obligations of the concessionaire		✓	✓	✓
Executive decree n° 09-25 of January 25, 2009 fixing the tools and the methodology for the elaboration of the indicative programme of needs in means of electricity production		✓	✓	✓
Law No.09-09, 30 th December 2009, 2010 Financial law, including Article 64 on the establishment of the National Fund for Renewable energies and cogeneration (FNER)		✓		✓
Executive Decree No. 10-21 of 12 January 2010 amending and supplementing Executive Decree No. 07-391 of December 2007 setting the terms and procedures for determining the selling price, excluding gas taxes, on the national market			✓	
Law No.10-80, 30 th December 2010, bearing the law of 2011		✓	✓	
Executive Decree No. 10-138 of 13 May 2010. laying down technical rules for the design, operation and maintenance of electricity and gas distribution networks		✓	✓	✓
Executive Decree n°11-212, 2 nd June 2011 modifying and completing the presidential decree n°02-195 of June 1, 2002, relating to the statutes of the Algerian electricity and gas company named "SONELGAZ.SPA"			✓	
Law No.11-11, 18 th July 2011, bearing the law of supplementary financing for 2011, in particular Article 40 amending Article 63 of the Law No. 09-09		✓		

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Law/Decree	Energy efficiency	Renewable energy	Conventional	Cross setting
Executive Decree No. 11-423, 08 th December 2011, that sets terms and conditions for the running of earmarked account No. 302e131 with the title "National Funds for renewable energies and cogeneration"	✓	✓		✓
Ministerial decree 28 th October 2012, which specifies terms and conditions for the follow-up and assessment of FNER		✓		✓
Ministerial decree 28 th October 2012, that determines the bill of incomes and expenses to be debited from FNER		✓	✓	
Law No. 13-01, 20 th February 2013 including the definition of non-conventional hydrocarbons			✓	
Executive Decree No.13-218, 18 th June 2013, setting the conditions for granting allowances for the costs of diversification of production power		✓		
Executive Decree No. 13-424 of December 18, 2013 Amending and supplementing Executive Decree No. 05-495 of 24 Dhou El Kaada 1426 corresponding to December 26, 2005 on the energy audit of energy-intensive establishments	✓			
Ministerial decree 02 th February 2014, fixing the guaranteed purchase tariffs and the conditions for their application for electricity produced from installations using wind energy		✓		
Ministerial decree 02 th February 2014, fixing the guaranteed purchase tariffs and the conditions for their application for electricity produced from installations using photovoltaic energy		✓		
Ministerial decree 01 th September, 2014, fixing the guaranteed purchase tariffs and the conditions for their application for electricity produced from installations using the cogeneration energy		✓		
Law No. 14-10, 30 th December 2014, bearing the law of 2015, including Article 108 which provides for the merger of the two Funds. The National Fund for the Control of Energy (FNME) and the National Fund for Renewable Energies and Cogeneration (FNER)	✓	✓		
Executive Decree No.15-69, 11 th February 2015, laying down the procedures for certification of the origin of renewable energy and the use of such certificates		✓		✓
Executive Decree No. 15-206 of 27 July 2015 amending and supplementing Executive Decree No. 11-252 of 14 July 2011 laying down the modalities of operation of the special allocation account No. 302-137 entitled "National Investment Support Fund for Electrification and Public Gas Distribution"			✓	✓
Executive Decree No.15-319,13 th December 2015, fixing the rules for the operation of the special purpose account No 302-131 entitled "National Fund for the Energy Efficiency and for Renewable Energies and of cogeneration"	✓	✓		✓
Executive Decree No. 16-52, 1 st February 2016 fixing the technical rules of electricity production		✓	✓	✓

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Law/Decree	Energy efficiency	Renewable energy	Conventional	Cross setting
Executive Decree No.16-121, 16 th April 2016, amending and supplementing Executive Decree No. 15-319, 13 th December 2015, setting the terms and conditions of the account No. 302-131 entitled "National Fund for Energy Efficiency and for renewable energies and cogeneration"	✓	✓	✓	✓
Executive Decree No. 16-138 of 2 nd May 2016 amending Executive Decree No. 10-95 of 17 March 2010 laying down the economic rules for network connection rights and other actions necessary to meet customer demand for electricity and gas supply			✓	
Executive Decree No. 17-98, 26 February 2017 defining the tendering procedure for the production of renewable energies or cogeneration and their integration into the national electricity supply system	✓	✓		✓
Amendment to Executive Decree No. 17-98 of 26 February 2017 Defining the tendering procedure for the production of renewable energies or cogeneration and their integration into the national electricity supply system		✓	✓	✓
Executive Decree 17-168 of 22 May 2017 amending and supplementing Executive Decree No. 15-319 of 13 December 2015 setting the terms and conditions for the operation of Trust Account No. 302-131 entitled "National Fund for Energy Management and for Renewable Energy and Cogeneration"	✓	✓	✓	✓
Executive Decree No. 17-186 of June 3, 2017 supplementing Executive Decree No. 06-428 of November 26, 2006 establishing the procedure for granting authorizations to operate electricity production facilities				
Executive Decree No. 17-204 of 22 June 2017 supplementing Executive Decree No. 17-98 of 26 February 2017 defining the tendering procedure for the production of renewable energies or cogeneration and their integration into the national power supply system		✓	✓	✓

Annex 2: The Questionnaire of Public Authorities

Questionnaire for Public Authorities on Foreign Direct Investments (FDI) attractiveness in renewable and energy efficiency

The purpose of this questionnaire is to assess the effectiveness and adequacy of national and local policies to increase FDI in renewable and/or energy efficiency. Together with the other methods such as interviews, workshops and site visits, the responses to this questionnaire will then enable the team to identify key success factors and barriers to the progress of local renewable energy and energy efficiency development in Algeria. We are paying special attention to factors such as:

- Priority is given to RES (Renewable Energy Sources) and EE (Energy Efficiency) in the national energy policy
- National and local campaigns proactively providing information, technical advice and encouraging local renewable energy production and energy efficiency development
- Grid connection for producers – state of the grid, the possibility of connection, access procedures, conditions and prices
- Licensing procedures for small scale producers – the level of administrative complexity and financial costs, duration
- Capital costs for investment in production facilities, also in relation to the average incomes
- Availability of financial support for investments – grants, subsidies, access to credit
- Priority feed-in for renewable energy
- Feed-in tariffs and other forms of support
- Policy consistency as a factor for investment security
- Further possible factors that you may identify

All the questions refer to the production of renewable energy by wind, photovoltaic/thermal solar and biomass and energy efficiency implementation.



Climate Governance in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

1. Are climate-related issues a scheduled political agenda item?

.....

.....

2. Into which governance mechanisms are climate-related issues integrated?

.....

.....

3. Is there any bilateral or multilateral cooperation agreement on climate change mitigation action in Algeria?

.....

.....

4. If yes, which are the top 5 international country partners of Algeria?

.....

.....

5. And what kind of project are being implemented under such international cooperation?

.....

.....

6. Other comments. Please comment on any questions you feel are important.

.....

.....

Financial incentives for RES and EE in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

7. Are national subsidies and grants available for investments in RES and EE?

.....

.....

8. Is clear information on financial support readily available?

.....

.....

9. Is credit at low-interest rate readily available to support RES production and EE implementation?

.....

.....

10. Are tax reliefs offered to renewable energy producers?

.....

.....

11. If available, Are these favourable financial conditions open to FDI and under what conditions?

.....

.....

12. Are guaranteed feed-in tariffs set to encourage RES and EE?

.....

.....

13. If yes, how high are these tariffs? Are they guaranteed for a certain time period (how long)?

.....

.....

14. Further comments. Please comment on the overall financial framework, the stability/predictability of the policies, and refer to any further issues you consider important.

Standardization, licensing and planning in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

15. Is grid connection regulated and facilitated? Is the procedure complicated for small-scale producers?

.....

.....

16. How is transmission access regulated and facilitated? Is the procedure complicated for small-scale producers?

.....

.....

17. Is licensing simple and speedy, e.g. through one-stop shops?

.....

.....

18. Are building codes in place to promote renewables, e.g. solar panels on rooftops?

.....

.....

19. Are renewable energy equipment characteristics sufficiently standardized?

.....

.....

20. In general, do you consider that the administrative framework facilitates small renewable energy producers?

.....

.....

21. Other comments. Please comment on any questions you feel are important.

The market for electricity production in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

22. Are power purchase agreements in place whereby small renewable energy producers have priority in selling the energy they generate?

.....

.....

23. Is there guarantee for small producers that their energy would be purchased?

.....

.....

24. Is there a renewable portfolio standard in place (i.e. a quota for renewable sources among all electricity sources)? Which percentage for renewables?

.....

.....

25. Is competitive bidding for the production of renewable energy usually practiced?

.....

.....

26. In general, in order to increase the share of renewables, which type of producers should be supported the most: large scale or small scale?

.....

.....

27. Other comments. Please comment on any questions you feel are important.

.....

.....

Electricity Consumption in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

28. Can consumers freely choose among competitive electricity providers?

.....

.....

29. Can consumers opt to buy electricity from renewable sources if they wish to do so?

.....

.....

30. Are full life-cycle costs (including environmental externalities and health impacts) reflected in energy prices for all types of energy?

.....

.....

31. Do you think that electricity prices are transparent, i.e., that consumers understand exactly the sub-costs included in the energy price?

.....

.....

32. Other comments. Please comment on any questions you feel are important.

.....

.....

Promotion and information in Algeria

Please provide a reply only when you think the issues are very relevant. We are particularly interested in your own experience.

33. Are there marketing campaigns promoting the production of renewable energy?

.....

.....

34. Is technical expertise and advice easy to access if a small producer/consumer wants to start generating renewable energy?

.....

.....

**35. Which public image about renewable energy is conveyed in the press?
Please refer to political statements and messages in the media.**

.....
.....

**36. Other comments. Please comment on any questions you feel are
important.**

.....
.....

Annex 3: The Questionnaire for Companies

Questionnaire for entrepreneur / company potentially interested in investments in Algeria on Renewable Energy Sources (RES) and Energy Efficiency (EE)

The purpose of this questionnaire is to support the interviewers with a set of areas to be covered during the discussion with the selected company.



Confidentiality and disclosure of information

1. Do you authorize the publication of your company name and the questionnaire, considering that the document will be published in full form?

Only one answer

YES / NO

Introduction

2. Name of the company

.....

3. Is your company part of a group?

Only one answer

YES / NO

4. Activity

Complete all items that are applicable

- Producer
- Component producer
- Service Company (installation / project developer and operation)
- Other

5. Technology scope

Complete all items that are applicable

- renewable energy in general
- biomass
- solar
- energy efficiency in residential sector
- energy efficiency in industry
- other

6. Revenues

.....

7. Assets

.....

8. Employees

.....

9. Date of incorporation

e.g.: December 15th, 2012

.....

10. Customers

Complete all items that are applicable

- Retail
- Business
- National
- International

11. Suppliers

Complete all items that are applicable

- National
- International

12. Suppliers

Complete all items that are applicable

- Product
- Components

Investments in Renewable Energy and Energy Efficiency

13. For each year indicate the investments made and those planned in the production of renewable energy from biomass

Complete all items that are applicable.

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. For each year indicate the investments made and those planned in the production of renewable energy from the wind

Complete all items that are applicable.

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. For each year indicate the investments made and those planned in the production of renewable energy from photovoltaic solar energy

Complete all items that are applicable.

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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16. For each year indicate the investments made and those planned in the production of renewable energy from solar thermal energy*Complete all items that are applicable.*

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. For each year indicate the investments made and those planned in the energy efficiency of buildings*Complete all items that are applicable.*

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. For each year indicate the investments made and those planned in the energy efficiency of industrial processes.*Complete all items that are applicable.*

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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19. For each year indicate the investments made and those planned in energy efficiency in lighting*Complete all items that are applicable.*

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. For each year indicate the investments made and those planned in the energy efficiency in heating and air conditioning*Complete all items that are applicable.*

	2016	2017	2018	forecast 2019	forecast 2020	forecast 2021
0-1 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
more than 10 million euro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Barriers

Indicate the significance of the obstacles to the promotion of renewable energies and / or energy efficiency in Algeria (1 not significant - 5 highly significant)

21. Economic and financial barriers

Only one answer for each respective row

	1	2	3	4	5
Market design issues, hindering the integration of renewable energies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High market concentration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty in Power Purchase Agreement (PPA) negotiations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unstable prices in the spot market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Longer economic recovery periods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of modeling of externalities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited access to financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High initial investment costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of subsidized loans for small or small scale facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Technological and Infrastructural Barriers

Only one answer for each respective row

	1	2	3	4	5
Grid connection constraints and lack of grid capacity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate infrastructure to accommodate renewables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long processing time for the large number of permits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of regulatory framework for land securement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High risk of land speculation due to mining concessions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of coordination among relevant institutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Institutional and Regulatory Barriers

Only one answer for each respective row

	1	2	3	4	5
Lack of long term political strategy on energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct interest and participation of the State in competitive sectors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of a regulatory framework for competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of regulatory framework for the liberalisation of renewable energy and energy efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Public awareness and Information Barriers

Only one answer for each respective row

	1	2	3	4	5
Local opposition to the development of projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of dissemination and public awareness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of necessary scientific and technical skills in the workforce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Risk transfer mechanisms

25. What risk transfer mechanisms do you currently use in renewable energy and / or energy efficiency projects and for which risks? Please select all valid answers for each column (ie for each type of risk)

Complete all items that are applicable

	Financial risk	Business/strategic risk	Building and testing risk	Operational risk	Environmental risk	Political/regulatory risk	Market risk	Weather-related volume risk
Insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special purpose vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial derivatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative risk transfer (bonds, catastrophe bonds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-insurance pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Captive insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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