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Social responsibility is a tool to encourage investment in renewable energies and achieve sustainable development in Algeria - a reading of reality and hope

Mayouf Houda[1], Naima Barek[2], Tagarert Yazid [3]
[1] University of Souk Ahras (Algeria), mayouf.houda@yahoo.com ;
[2] University of Souk Ahras (Algeria), naimauniver8@yahoo.fr ;
[3] University of Oum El Bouaghi (Algeria), yazitagraret400504@gmail.com

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Abstract:
This research paper aims to shed light on the need to achieve sustainable development and protect the environment through a systematic approach as part of the social responsibility program, because it is extremely important in encouraging investment in renewable energies as a direction to achieve sustainability, and this focuses on the most important measures taken by Algeria as a first step In the path to encourage investment in renewable energies as an alternative to the rentier economy and towards the embodiment of sustainability
Key words: Algeria, social responsibility, renewable energies, sustainable development, investment in renewable energies.

Corresponding author: Naima Barek, naimauniver8@yahoo.fr

1. INTRODUCTION

After the discovery of fossil energies (like oil, gas...), most of the countries have taken an advantage of them since this will help in the development of industrial and economic activities which have lost the nature of their balance. So, technological and administrative across the world and those who are concerned with social responsibility for institutions remarked that there is a need and necessity to protect the environment through a search for other clean sources at the lowest costs. Hence, the adoption of investment policy in renewable energies has become an imperative, due to the economic and social goals it has achieved and as a way to realize a sustainable development by protecting the environment and preserving its resources for future generations.

As it is the case for Algeria, like other countries that strive to achieve the requirements of sustainable development in all its terms. The application of the term 'sustainable development' has focused all its efforts on the investment for increasing renewable energies.

For this reason, a question is to be asked and stated as follows: what is the effective role of social responsibility in directing the Algerian investment in relation to the field of renewable energies for achieving sustainable development?

In order to answer this question, we divided the study into the following axes:

_ Social responsibility,

_ Renewable energies in Algeria,

_The role of social responsibility in stimulating Algeria's investment in renewable energies in order to achieve sustainable development.

2. Social responsibility

2.1 Definition of social responsibility: There are many definitions related to social responsibility, and the most important of them is stated as follows:

Social responsibility means that businesses, in addition to maximizing shareholder value, should act in a manner that benefits society (Thus, Holmes,1976), in a study of executive attitudes to social responsibility, finds that the strongest response was that "A key part of ethical responsible business is finding ways to minimize any negative social impacts along the entire supply chain business communities".

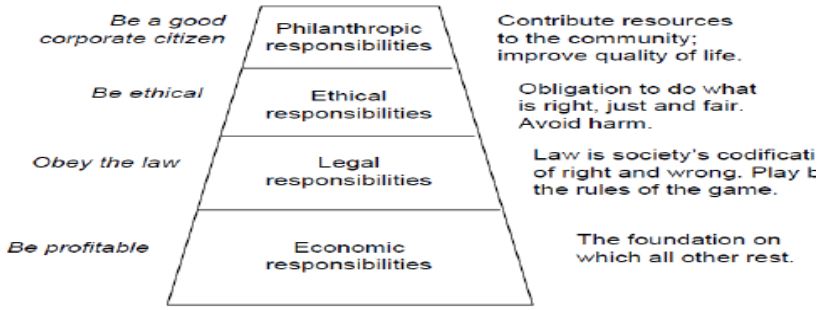
It's incumbent on the leader to set the direction for the company-to have a plan in the face of uncertainty. One way that CEOs try to reduce strategic uncertainty is to focus on options with the firmest business cases. Research shows, however, that this approach delivers another sort of outcome (Lance Moir, 2001, 03).

However, Corporate Social Responsibility has emerged as a response to the increasing demand of societies to have more responsible, ethical, transparent and respectable public and private organizations. However, these corporate strategies cannot be a reality without a parallel evolution on individual responsible behaviors, aligned with the claimed premises and values that are gaining space in the social and economic fields (Shafiqur Rahman, 2011, p: 170).

2.2 Fields of social responsibility

Carroll (2006) suggested four elements of social responsibility: ethical, legal, economic and philanthropic. This set of four responsibilities creates a foundation or infrastructure that helps to delineate in some detail and to frame or characterize the nature of businesses' responsibilities to the society of which it is a part. :

Fig1*:* The pyramid of CSR (Caroll ;2006)



Source:(Nisar Ahamad Nalband and Saad Al Kelabi ;2014 ;p236)

In the following, an explanation of the dimensions of social responsibility according to (carroll): (wahiba moukadam,2014,p80)

- The economic dimension: where the business organization engages in economic activities to achieve efficiency and effectiveness, it uses resources in a rational way to produce goods and services of high quality, and the returns are distributed fairly to the various factors of production. By doing this, you assume economic responsibility.
- The legal dimension: This includes the conscious and voluntary commitment to the laws and legislations governing various aspects of society. Whether in investment, wages, work, environment, competition, etc.
- The ethical dimension: in which the business organization takes into account the ethical aspect of all its decisions and its path in the industry in which it operates, in order to avoid any harm to society.
- The philanthropic dimension: which includes charitable donations, gifts and social assistance that serve the community and not for profit, as the organization may adopt in this framework a basic issue of society and work to support and follow it.

3. Renewable energy in Algeria

3-1: Rectifiers Renewable energies in Algeria: Algeria abounds in several components as the largest country in Africa and the third country in the world.

3-1-1: Solar Energy: Algeria possesses enormous natural capabilities, as it is considered one of the largest countries rich in solar energy sources in the world, considering that the solar field covers an area of 2,381,743 km2 at a rate of 3,000 solar hours per year.

Table (01): Solar energy distribution in Algeria

Regions	The coastal highlands	highlands	the desert
The space	04	10	86
Average sunshine duration (hours / year)	2650	3000	3500
Rated power (kWh / m2)	1700	1900	2650

Source :(Ministry of Energy and Mines: "A Guide to Renewable Energies".2007)

We notice from the above table that the rate of sunrise in coastal areas is in the range of 2650 hours per year, which is equivalent to 1700 kilowatt hours per square meter during the year while it reaches 3000 hours per year in the high plateaux and 3500 hours in the desert, which is equivalent to 2650 kilowatt hours per day in M2 during the year, and thus solar energy can be adopted in all parts of the country.

So the solar power is the most important in Algeria, but it is the most important in the Mediterranean basin: (Meddahi Mohamed, 2015. P117)

• 169,440 terawatt hours / year, 5,000 times Algerian electricity consumption.

• 60 times the 15 European consumption (15) estimated at 3000 terawatt hours per year.

• Future average energy in kWh / m2 / year: coastal highlands 1700, highlands 1900 and desert 2650.

Rectifiers Wind energy: Algeria is distinguished from all countries by a diverse climate, bordered by the Mediterranean Sea to the north and possessing a coast of 1,200 km, and it also contains high plateaus. Plains with a continental climate, the average wind speed ranges from 2 to 6 m/s. It is a good capacity for pumping water.

3-1-2 : Wind energy: Wind energy varies from region to region, which depends on the climate as well. Algeria's climate differs clearly between the northern and southern halves. The northern half gains an ideal location because it is on the Mediterranean Sea, and has the Atlas Mountains and other high plains. However, the north wind is not as strong as the south wind. The speed of the south wind ranges between 4 m / s - 6 m / s, while the Sahara accounts for more than 70% of the total area of Algeria helps in providing strong winds and thus providing good energy .(Lokman Hadji ;2016)

Algeria is characterized by a diverse climate, in the north which is bordered by the Mediterranean Sea and thus a coast that extends over a distance of 1,200 km, in addition to mountainous terrain that includes the Atlas and Desert Atlas series, interspersed with the high plateaux and plains with a continental climate, where the average wind speed ranges from 2 -6 m / s. It is a suitable energy for pumping water, especially in the high plains.

3-1-3 : electricity energy :According to Sonelgaz, Energy demand is growing at an average of 8% annually in Algeria, between 2001 and 2013, electricity production increased from 26,250 GWh to 57,397 GWh. Energy sources for generation operations varied, with gas accounting for 92.42% and finally hydropower generation only 1.08% of the total. Natural gas is not only required to improve the economy but to provide full access to and transfer of electricity to the citizens. This increase in demand must be responded to by increasing

the amount of production, and this of course requires huge investments, in addition to transportation and distribution infrastructure..(Lokman Hadji.2016 ;p16)

-Algeria's renewable electricity goals: Algeria has set short-term renewable electricity targets as relative values for power generation in general, for 2017, and this is what the Algerian Commission for Electricity Regulation (CREG 2008) published a 5% target for renewable electricity. In the long term, by 2030. (Bernhard Brand and Jonas Zingerle :2010)

3-1-4 : Hydro energy : Algeria has good total flows of about 65 billion cubic meters. Rainfall periods are limited and are considered the most important obstacles to hydroelectricity. The assessment of useful and renewable energies is currently about 25 billion cubic meters. There are more than 50 dams currently in operation, and the total capacity of the 13 largest dams About 269 MW.(Kamel Abdeladim and all ;2014 :4120)

3-1-5 : Geothermal : Algeria has at least 200 hot springs, a third of which is above 45 ° C and the temperature reaches 988 ° C. The highest temperature is 118 ° C in the southeastern part of the country. Although exploration began in 1967, few studies have been conducted to assess geothermal potential.(Y. Himri and all ;2009 ;1586)

3-1-6 : Photovoltaic energy :Photovoltaic solar energy systems can provide electricity to pump water, to power communications equipment, to supply electricity for a single home or business, or to form large arrays that supply electricity to thousands of electricity consumers, PV arrays can be installed quickly and can be any size.(N. Madjoudj and M. Dahmane ;2017 ;484)

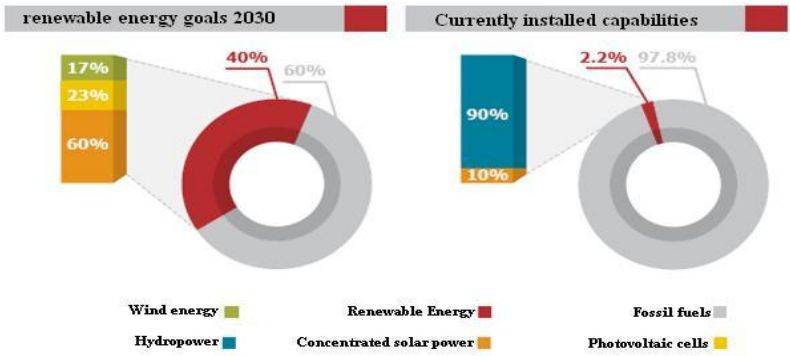
3-2: Renewable energy targets until the beginning of 2030: Algeria has set a number of objectives related to the development of renewable energy, as shown in the following table and figures:

Table: 02: the objectives of developing renewable energy in Algeria

	Wind energy	Photovoltaic cells	Concentrated solar power	total	Target date
Wm	10	6	25	41	2013
Wm	50	182	325	557	2015
Wm	270	831	1500	2601	2020
Wm	2000	2800	7200	12000	2030

Source :(Regional Center for Renewable Energy and Energy Efficiency;2012;p1)

Figure 02 : objectives of developing renewable energy in Algeria:



Source :(Regional Center for Renewable Energy and Energy Efficiency; 2012;p1)

Both the above table and figure above indicate that by the year of 2013, Algeria produced around 10 megawatts of wind energy, 25 megawatts of solar energy, and is planning to reach 270 megawatts of wind energy production, 182 megawatts of photovoltaic cells, and 1500 megawatts of solar energy by the commencement of 2020. Algeria now is attempting to eliminate obstacles for achieving 12,000 megawatts of renewable energy for the 2030 agenda.

4. The role of social responsibility in stimulating Algeria's investment in renewable energies and achieving sustainable development

Like other countries, Algeria has found itself obliged to invest in renewable energies in order to achieve sustainable development, and this is a planning for post-hydrocarbons.

4-1: sustainable development

The term of sustainable development is an organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend on. Madjoudj and M. Dahmane ;2017 ;p489)

"Sustainable development" measure ensuring stately living conditions with regard to human rights by creating and maintaining the largest available options for freely defining life plans. The assumption of fairness through and amidst present and future generations should be taken into account in the use of ecological, economic and social resources. Putting these needs into practice entails comprehensive protection of bio-diversity in terms of ecosystem, species and genetic diversity, all of which are the vital foundations of life.(Marco Keiner ; ETH Zürich ;2005 ;p3)

'The United Nations Environmental Program for Sustainable Construction has defined sustainable development considering ecological, socio-economic and cultural aspects as a basics for the construction industry (Madjoudj and M. Dahmane ;2017)

4-2: Measures taken by Algerian government to both adopt social responsibility and develop renewable energies for achieving sustainable development: The importance of renewable energies has become evident for Algeria and has in turn forced it to go into and try to be able to do it, by means of establishing economic bodies and institutions interested in developing renewable energies:

- **CDER** Center for Renewable Energies;

- **UDES** Solar Equipment Development Unit;
- **UDTS** Silicon Technology Development Unit.

Whereas in the energy sector, the Ministry of Energy and Mines created:

- **APRUE** National Agency for the Promotion and Rationalization of Energy Use.
- **CREDEG** Electricity and Gas Research and Development Center.
- yet, in the agriculture sector, we find:
- The High Commission for the Development of Steppe (**HCDS**).
- For the appreciation of the different efforts, the Ministry of Energy and Mines set up a joint venture between Sonatrach, Sonelgaz, and Group Sim called: New Energy Algeria in 2002. Its ambitious tasks are as follows:
- Development of renewable energy resources;
- Accomplishment of the projects related to renewable energies, including a 150-megawatt project for the exploitation of solar energy in Hassi Raml, and a 10-megawatt air hangar project in Tindouf;
- The use of solar energy in rural lighting in Tamanrasset and the south-west.

The New Energy Algeria aims at :

- Creating jobs;
- Greater utilization of available capacities;
- Reducing the share of fossil energy in the national energy output;

- a better contribution to reducing carbon dioxide emissions to the atmosphere;
- Development of national industries**.**

4-3: National Program 2011-2030: Integrating renewable energy into the national energy mix is a major challenge in terms of saving fossil resources, diversifying the branches of electricity production and contributing to sustainable development. So thanks to the 2011-2030 National Program for Renewable Energies, those energies are at the heart of both energy and economic policies pursued by Algeria, particularly through the development of solar and wind energy on a large scale, and the introduction of biomass branches (valuation of waste recovery), geothermal and terrestrial energy, and Solar thermal development. (National Investment Promotion Agency;2019)

During the period (2015-2030) the capacity of the renewable power program to be implemented to meet the needs of the national market is estimated at 22,000 MW, of which 4,500 MW will be achieved by 2020.

This program is distributed according to the technological sectors as follows: (National Investment Promotion Agency;2019)

- Solar energy: 13 575 MW.
- Wind power: 5 010 MW.
- Thermal power: 2000 MW
- Biomass: 1000 MW.
- Co-generation of power: 400 MW.
- Geothermal power: 15 MW

Algeria distributed this program to a group of technology sectors and in stages shown through the following table***:***

Table 03: Distribution of the program by technology sectors

Sector	Production (MW)
solar energy	13575
Wind Energy	5010
Thermal energy	2000
Biomass	100
Cogeneration	400
Geothermal energy	515

Source:(CDER, Strategic action plan of the epst CDER by 2020)

The implementation of this program will make it possible to realize by 2030 a share of renewable energy of virtually 27% in the national outcome of electricity production.

The volume of natural gas saved by the 22 000 MW in renewable energy, will arrive at roughly 300 billion m3, which is equivalent to 8 times the national consumption of 2014.

In accordance with the regulations in force, the implementation of this program is opened to national and foreign investors.

The implementation of this program benefits from the considerable and multifaceted contribution of the State, which specifically interferes through the National Fund for Renewable Energies and Cogeneration (FNERC).

To support the implementation of this program, the Algerian government set up the "Algerian Institute for Research and Development of Renewable Energies" as well as a network of research and development centers such as the Research and Development Center for Electricity and Gas, the Research and Development Center, National Agency for the Use of Energy Promotion and Rationalization, Renewable Energy Development Center, Solar Equipment Development Unit.

4-4: Plan for Developing Investments in Renewable Energies:
Renewable energy capabilities will be established according to the specificities of each region: (National Investment Promotion Agency, 2019)

- The South region, to hybridize the existing power stations and supply scattered sites, given the availability of space and the significant solar and wind.
- The Highlands area, due to their sunshine and wind potential with the possibility of acquiring land.
- Coastal areas, according to the real estate containers availability, with the exploitation of all spaces, such as roofs, balconies, buildings, and other unused spaces.

The renewable energy development strategy is escorted by the establishment of a National Research Program in Renewable Energies, whose main scientific goals are: evaluating renewable energy sources, controlling and optimizing Conversion, transforming and storing of these energies as well developing a required know-how, ranging from the study to the construction of the installations on site.

5. CONCLUSION

Today, we live in a world where individuals have become more aware of the importance and necessity of preserving the environment. This forced all governmental and private institutions to take measures towards achieving sustainable development, by searching for clean, and immature energy sources characterized by continuous renewal for their investment, and harnessing all financial and human capabilities to conduct accurate scientific research and studies.

Investing in renewable energies makes the future the coming generations safer by preserving the environment and providing multiple job opportunities. Consequently, Algeria should devote more importance to invest in renewable energies through:
- Benefiting from the experiences of the leading countries in - investing in renewable energies.

-Supporting investment in renewable energies through fiscal and taxation policies.

-The state must be strict in implementing energy programs to be carried out in a highly efficient and timely manner.

-The state must require a percentage of the domestic manufacture of the equipment as well as in the tasks used in the construction of the tender, to help reduce costs and localize the technology

-support the universities and specialized research centers in order to achieve sustainable development by making optimal use of renewable energy resources;

- Educating all social groups of the importance of investing in renewable energies through all advertising means.

- The state must control the amount of energy produced from renewable sources in accordance to both the plan, and the priorities it sets at each stage of implementation.

-Providing guarantees for investors to recover their investments through long-term contracts in accordance with the tender law.

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