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Sustainable Development and Green Buildings in the State of Qatar

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Abstract— **Qatar's sustainable development has seen great interest since the country's independence in 1971 and to this day, it was the harvest of interest in the development of strategies and policies to achieve sustainable development, As well as the development of legislation and regulations and building the institutions concerned to achieve environmental, social and economic sustainability.**

This research will address the sustainable development and its applications in the State of Qatar;

It deals with the analysis of the most important indicators and the challenges of social, economic, environmental and institutional sustainable development in Qatar and indicates the strengths and weaknesses in it. At the end of the research will touch on one important sustainable development programs, a green building in Qatar.

Keywords- Energy; environmental; green buildings; sustainable development;

I. INTRODUCTION

Development economists use the term (Sustainability) an attempt to clarify the required balance between economic growths on the one hand and the preservation of the environment on the other hand.

Although the different pervasion definitions of this concept, it refers mainly to "provide the needs of the present generation without damage to the needs of future generations" this sentence implicitly indicates that the future growth and the quality comprehensive life depend substantially on the quality of the environment.

The bases of natural resources of a country and the feature of its air, water and land represents a joint heritage for generations as a whole. The tendency to destroy this gift randomly in pursuit of short-term economic goals leads to punishment generations present and future, in particular.

Sustainable development is an expression of development that is stable, and possesses communication factors. It is not one of the developmental patterns that the development thinkers attempt to highlight it such as development economic, or social, or cultural, or environmental, or institutional, but rather includes all these patterns, and it promotes the development of land and its resources and promote human resources and carried out, Also it is the development that takes into account the dimension of time and the right of future generations to enjoy the natural.

II. MATERIALS AND METHODS

The qualitative approach used in the paper relies on theories of certain researchers and case studies related to social rights in European countries.

III. RESULTS

Since the independence the State of Qatar focused on dimensions of economic, environmental and social that related to the sustainable development, through establishing several institutions and government agencies which are interested in programs, policies and strategies that aimed to achieve the sustainable development through its various dimensions, and has enacted a number of laws and legislations related to the applications of sustainable development, which has become an international requirement in light of the economic, political and social transformations that taking place in the international community.

It also reflects the interest of the State of Qatar to sustainable development in the text of Article (33) of the Permanent constitution which mentioned that "the state works to protect the environment and maintain the natural balance, in order to achieve comprehensive and sustainable development for all generations ", as well as through programs and initiatives and participation in the international conferences and forums related, the latest one was "The World Summit on Sustainable Development" which was held in Johannesburg, South Africa in 2002.

IV. DISCUSSION

Qatar has established a number of national committees concerned with pursuing sustainable development applications of various dimensions, here are the most important of these national committees:

1- Permanent Population Committee

2- Permanent Water Resources Committee

3- The National Committee for climate change

4- The National Committee for Integrity and Transparency

5- Committee for Clean Development

A. Indicators and the challenges of sustainable development in the State of Qatar

First: Social indicators and challenges

The Qatari society faces a number of challenges that should be addressed before it escalate and impede the social development in particular in the future, and the sustainable development sought by the state in general, the following are the most important challenges facing the Qatari society:

1- Population growth

2-The Demographics

3- Dependency ratios

4- Distribution of population

5- Qatari labor force

6- The rate of literacy and those with high school and university degree.

7- Sophisticated medical condition needs to continuously strengthen

Second: Economic indicators and challenges

Qatar's economy is facing a number of challenges that are reflected on economic performance and on economic development in the state, the following are the most important challenges facing the country's economy:

1- Inflation rates

2- The challenges of economic diversification

A- The contribution of oil and gas in GDP

B- Oil revenue percentage of total revenues

3- Activating the role of the private sector in economic activity

Third: Environmental indicators and challenges

Population growth and industrial development have led to damage to certain aspects of Qatari natural environment, particularly the depletion of natural freshwater sources and the emergence of some aspects of pollution in water, soil and air, which requires active efforts to reduce the encroachment on the natural environment, the following are the most important challenges facing the Qatari environment:

1- Groundwater Resources

2- Environmental Pollution

A- Seawater Pollution

B- Air pollution

D- Land and soil pollution

Fourth: Institutional indicators and challenges

Sustainable development in Qatar is facing a number of institutional challenges that affect the performance of the national economy and its competitiveness in light of significant changes and shifts in the world economy, the most important of these challenges include:

1- The lack of a national strategy for sustainable development

2- System of scientific research and development

B. Green Buildings in Qatar

Qatar scored the highest percentage in the world in terms of carbon dioxide emissions per person, and the reason is partly due to the construction boom taking place in this country. The construction sector in Qatar produces 13.5 percent of GDP, the growth rate in this sector reached to 18 percent last year "according to "IBM" Foundation for Research". In addition, the city of Doha, capital of the State of Qatar is one of the fastest growing cities in the world. But according to the correct measurements, it does not assume that this growth leads to higher pollution much.

By the year 2016, all government buildings must be subject to the standards of the global Sustainability Assessment System, its a set of standards which are developed by Qatar in 2009 to determine how to construct buildings of friendly to the environment. According to these standards the environmental impact assessment of each building will take place, from the amount of water and energy consumed per day, passing by the second carbon dioxide emissions from building materials, right down to the extent of carrying out recycling waste or proximity to public transport links. In this regard, Mr.Yousef Al-Horr, Founder and Chairman of the Gulf Organization's management of research and development, which is a government institution that developed a global system of criteria for evaluating sustainability, He says: the Global Sustainability Assessment System provides "the necessary flexibility to the climate and culture of the region." Some are doubting in necessity of provision of an evaluation system which was put by Qataris in the light of provision of a several comprehensive global evaluation systems. This is in addition to the fact that the Gulf Organisation for Research and development is totally a government organization. Here the question arises: Should government standards be assessing government buildings? the environmental standards such as standards of working in factories , or health standards in hospitals must be subjected to the evaluation of independent institutions.

C. Some positive news

One of the most prominent examples of Sustainable development in Qatar, „Mushaireb heart of Doha" its a project of rebuilding the heart of Doha's historic city according to traditional Qatari engineering standards and a high level of environmental standards project. The project will transform an area of 31 hectares to the world's largest collection of buildings on the developments pioneered degree in Energy and Environmental Design. In this context, The Engineer Abdullah Hassan Mahashdi ,Executive Director of Msheireb Properties, explaining to us that the project of „ Mushaireb heart of Doha „ seeks to get 97 gold certification in the

Leadership in Energy and Environmental Design, as well as the achievement of several Platinum certifications buildings."

The roofs of buildings „Mushaireb heart of Doha" project will be provided by 5200 of solar panels, 75 percent of the hot water heating will be heating by solar energy, also at least 20 percent of the building materials will be used in the project will be made from recycled materials. Also the treatment sewage will be used in cooling , irrigation and in rinse the toilets. The traditional construction methods of the Middle East will help in cooling the city: the streets will be narrow so as to provide shade (which encourages people to walk instead of driving) ,the buildings will be painted by white or sandstone colors to reflect the sun's rays. As well as the contribution of smart technologies „buildings will be designed to give us information about its sustainable performance on an ongoing basis, and this is what enables us to modify the system to achieve the highest possible level of sustainability over the life of the building."

Although they outsource by latest technological equipments, it seems that the cost of sustainable buildings will be less expensive in the long term. It should be noted here that the headquarters of RasGas company for Supplying liquid natural gas, in the West Bay area of Doha, meets the leadership certification standards in the energy and gold Environmental Design, and uses „strategies of sustainable design such as a reduction of artificial lighting ratio through occupancy sensors , the sun light and extensions of effective water to reduce water consumption. „ the collective data from the building since 2011 shows the percentage of the provision of electricity consumption which amounted to 37 percent and the ratio of water saving reached to 53 percent compared to the former Headquarters of the company, so the company has been able to save nearly 448 thousand US dollars a year.

V. CONCLUSION

As a result of international pressure imposed on it, Qatar is striving to prove that they catch up with sustainable building. As the first polluter in the world, Qatar must apply the hardest procedures to keep way the construction boom in luxury buildings from the energy-consuming and water excessively, and trend towards green building method which consumes energy more effectively.

Green buildings not only provide construction and environmental sustainability, but also offer a lot of benefits for building owners and users. The low costs of construction, low costs operating, recreation and the healthiest internal environment, as well as the lower maintenance costs and long life, all these are the characteristics of green building.

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Sustainable engineering is no longer just a marketing term for whitening image of the real estate market in Qatar, which is gradually becoming a guidance for investors and engineers, leading to the emergence of truly impressive projects.

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