



The Impact of Using Natural Resources Energy on Increasing Environmental Health and Reducing Building Maintenance Costs

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Abstract

Climate change, the growth of energy consumption, and the insecurity of fossil energy sources became a global energy challenge with the first alarm in 1970 and with the recurrence of the 1984 and 2005 crises on a global scale, affecting the work of researchers and programs of governments and policymakers. As the trend continues in today's world, the spread of environmental pollution on the planet has added to it. Accordingly, the present study aims to investigate the state of energy to date and pay attention to the providence of studies by international organizations and institutions. The building sector accounts for about 40% of the world's energy consumption, with a high share of greenhouse gas emissions. The results show that in order to control the challenges and reduce the factors being affected by this sector in energy consumption and the environment, creating a suitable environment for the use of renewable energy in architecture is essential and can be an effective solution to overcome these challenges.

Key Words: Building, New Energy, Environmental Pollution, Fossil Fuel.

Introduction

The increase in population and the greater need for energy as industry evolves and changes in lifestyle have created the ground for increased energy demand. This increased demand has created the challenge of scarcity of land resources, especially in the fossil energy sector. The most important part of today's challenge is global warming, which is affected by increased pollution and increased greenhouse gas emissions, which has introduced a new policy on energy supplies.

The global status of energy

A number of factors, such as population growth in the world, industry and

technology developments, have increased energy demand and consumption globally. The economic world desperately needs energy to continue competing and to survive its development, but this demand for energy ignores the scarcity of resources and all the alternatives to that energy and creates energy crisis. Statistics show that with increasing demand and consumption of fossil fuels, environmental threats from greenhouse gas emissions have increased and caused a global crisis for all countries. On the other hand, the land resources of this type of energy are limited and expiring in the world.

The world population in 2015 was around 7349 million and is expected to reach 8501 million by 2030 (United Nations New York, 2015). As the world's population grows, the demand for energy increases, and this increases energy consumption and more resource exploitation. One of the requirements for the creation and development of national security in different countries of the world has been the effort to

achieve energy capture and sustainability, and this has become the source of competition and the emergence of war in many countries. In (Figure 1), energy consumption on a global scale is not only not decreasing, but also increasing more rapidly. Diagram of world energy consumption prediction by 2300 indicates future increase in world energy consumption.

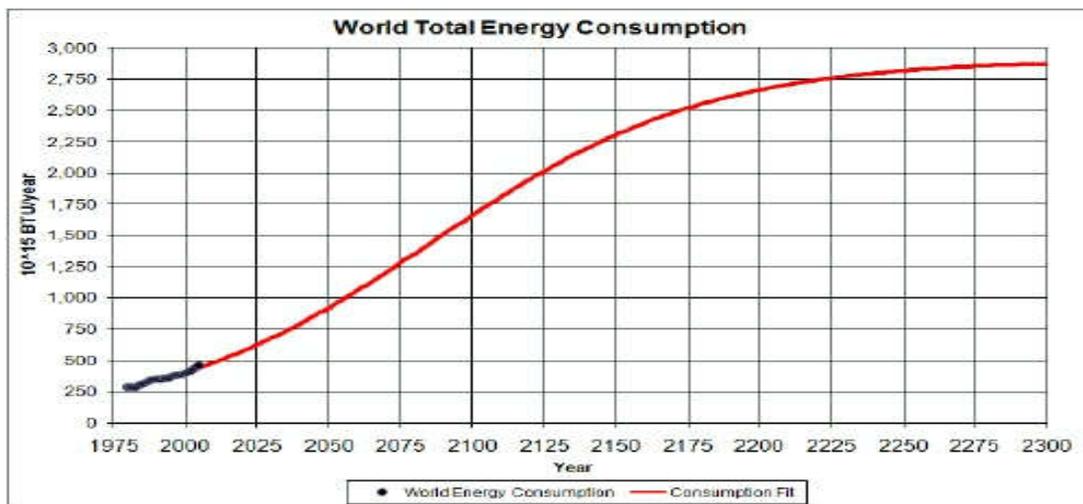


Figure 1. Diagram of world energy consumption increase prediction (Future World Energy,2016)

Types of energy sources in the world

In general, the world's energy resources are divided into two categories

A. Non-renewable energy sources, including fossil fuels (oil, gas and coal) and nuclear energy.

B. Renewable energy sources, including solar, wind, hydro, geothermal, biomass and tidal energies.

Energy is the foundation and basis of the life of industrial economies and plays an essential role in the economic development of the world. In (Figure 2), forecasts show energy consumption by 2015 and planning to supply energy by 2040, which is particularly important given the circumstances.

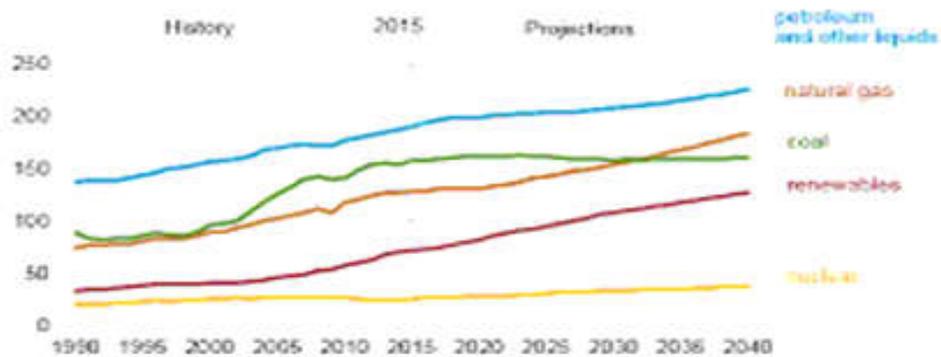


Figure 2. Global energy consumption considering its sources (IEA, 2019)

Non-renewable energies

Fossil fuels that are the world's main source of energy will not be available until about 2300.

According to (Figure 3), it is predicted that fossil fuel resources will expire by 2300. Most energy consumption will happen in the next half century.

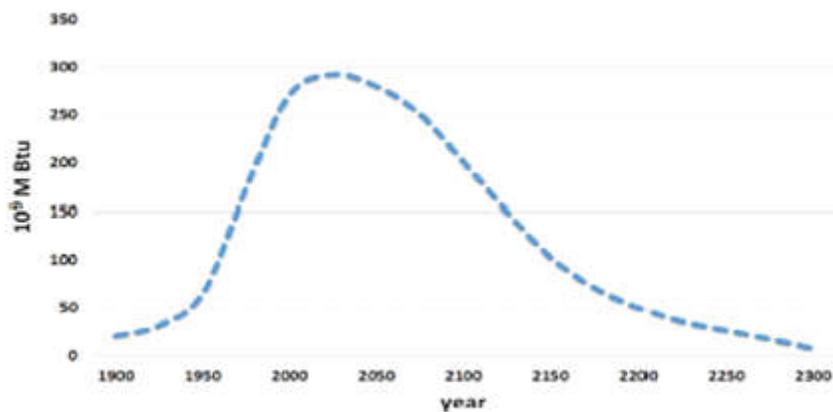


Figure 3. World fossil fuel energy (Roper, 2012)

Energy deficits will be in the coming years by extrapolating world energy consumption and extracting coal, crude oil, natural gas and uranium.

The calculation of the energy produced by nuclear reactors is very small compared to the predicted energy consumption and the energy available from the three fossil fuels. Therefore, the only way to fill energy

shortages beyond fossil fuels is renewable energies, such as solar and wind.

Renewable energies

These include biomass, hydropower, geothermal, solar, wind and marine energy. Renewable energy is one of the primary, internal and clean energy sources, that is, the endless energy sources (Roper,2000)

The most important advantage of renewable energy applications is the reduction of environmental pollution. This advantage can only be achieved by reducing emissions of air pollutants by replacing renewable energies for electricity generation (Kalogirou, 2004)

Solar energy is also one of the least polluting sources of energy. Solar energy, along with other renewable energies, can dramatically reduce greenhouse gas emissions over the next few decades to help limit climate change. Other stimuli, such as the desire of people in remote cities and regions that have less access to modern energy sources, are also important, and can also be a safe fence against fossil fuel price fluctuations (IEA, 2011).

4. World energy demand in different sectors of energy consumption

The current state of energy sources and its outlook by 2050, despite the increasing trend of energy consumption over the 50-year

timeframe in question, illustrates the dominant share of the architectural sector of future global consumption. Anticipating this increasing trend, the crisis resulting from their consumption will increase the environmental crisis.

Energy demand in the world is growing significantly. Total energy consumed worldwide was about 13699 million tons of crude oil equivalents in 2014. While the total energy consumed in 1973 was 6101 million tons of crude oil equivalent, indicating an increase of more than two times over the years for energy consumption from various sources, especially fossil fuels (Ibid)

The figure for global energy demand in (Figure 4) for all sectors from 2000 and projections by 2050 indicates a significant increase in the share of the construction sector compared to other sectors such as industry, transport and other sectors.

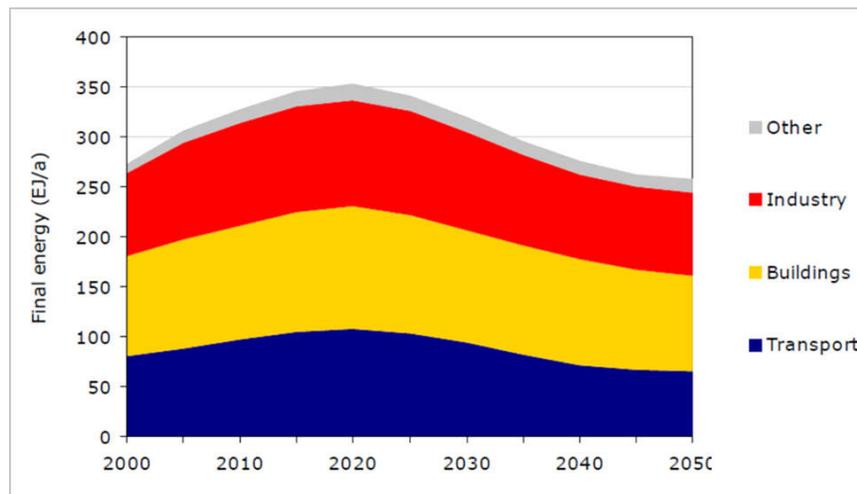


Figure 4. Global energy demand in all sectors from 2000 and projections by 2050

As it can be seen in the figure above, the construction sector currently has the highest

demand for energy than other sectors, and this ratio will not change much in the future, which necessitates the need to pay attention



to the control of energy consumption in architecture over other sectors. Of course, energy consumption is the result of its use for economic development in the world. If energy is not consumed, development will not happen. This need in the construction sector, like other sectors, needs to be developed along with increased efficiency and productivity.

5. Energy consumption in the building

The amount of energy consumed in architecture includes the amount of energy consumed in heating and cooling systems, the supply of hot water and lighting systems, electrical appliances, and the preparation of food in the kitchen. Global statistics show the architectural sector's high share of energy consumption. In order to reduce and conserve energy in architecture, the adoption of new technologies is of particular importance.

5.1. Outlook of energy demand in architecture

Statistics show that the building is one of the largest energy-consuming sectors in the world. Buildings, as one of the most energy-consuming sectors in the city, account for approximately 40% of the world's annual energy consumption. In different countries due to their different characteristics, this sector accounts for a different share in energy consumption. In the UK, for example, more than half of all energy consumed is in the buildings. The share of energy consumption in buildings in the other EU countries and the US is 41% and 36%, respectively (Steamers, 2003).

Energy consumption and primary energy demand are summarized in (Figure 5) for the final consumption segments (billion tons), in which the significant share of energy consumption in the construction sector is high, indicating the need for attention to replacing clean energy sources.

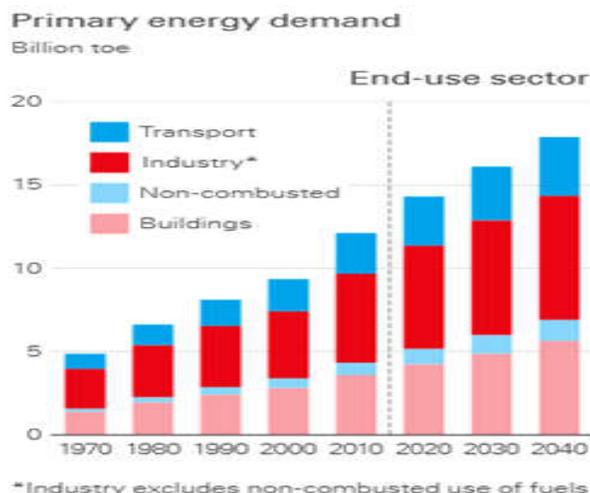


Figure 5. Energy consumption and demand for primary energy for final consumption segments (Billion Tons) (BP Energy Outlook, 2019)

CO2 emissions in architecture

As the demand for energy in the building sector and the use of fossil energy sources in this sector was an increase in the world. Despite the turn towards new energy, the threat has an upward trend, and this is a warning to the global community regarding increased environmental pollution in architecture. Currently, approximately 40% of the world's energy is used to generate electricity. The consequence of this energy consumption to generate electricity has accounted for approximately 40% of greenhouse gas emissions, specifically CO₂ related to fossil energy consumption in the electricity sector (IEA, 2016). Increased use of underground resources has an inverse relationship between resource consumption and increased storage of these resources and their consequences. Undoubtedly, planning for production and consumption can control and optimize energy consumption of these resources compared to the world.

Today, air pollution, global warming and climate change are major concerns in the world. This is due to the exponential emission of greenhouse gases, such as carbon dioxide, methane and nitrous oxide resulting from the massive combustion of fossil fuels as the world population grows (Mboumbouen, 2016). Earth's pollution has caused many deaths each year, which is affected by this type of pollution and greenhouse gas emissions.

The ecosystem has been heavily contaminated by emissions of various greenhouse gases and pollutants generated by the burning of easily accessible fossil fuels commonly used to meet global energy demand.

The CO₂ emissions from the energy consumption in the building sector in indicate the continuity and increase of

carbon-based fuels in this sector, and the trend of increasing energy consumption considering the 18-year period indicates the continuation of the devastating impact on world development in the ecosystem.

Considering the share of the building sector in increasing the use of fossil fuels and its impact on increasing the pollution of the earth, it is necessary to switch to renewable energies. Because these types of energy have unlimited and available resources and are not only not a threat to environmental pollution, but a development and exploitation capability for this sector.

Countries have been forced to use environmentally friendly renewable energy to prevent and overcome the negative environmental impacts caused by excessive use of fossil fuels. Solar energy is one of the best renewable energy that its use to supply human energy needs has no negative impact on the environment (Bhandari & Nwaoho, 2013).

Impact of energy production and consumption on the environment

The most important consequences of energy production and consumption in the world are the increase in CO₂ emissions from combustion of fossil fuels, major changes in climatic conditions, increased global warming, and increased global emissions. These contaminants undoubtedly have a significant impact on the health of living creatures, economic and social issues.

The purpose of energy management is to reduce and rationalize energy consumption in a way that is economically justified and does not lead to negative effects on welfare and comfort (Plessis et al., 2013).



Conclusion

Increased production affected by rising demand and energy consumption in line with the world's growing population and the depletion of its expanding energy resources and future, and increased environmental pollution have more than ever raised human concern and created an energy crisis. Developments affected by the growth and development of technology in the direction of economic prosperity and development have increased the level of human expectation to the point that limiting the pace of economic development needed today by human beings is more difficult than energy supply. In this paper, an attempt was made to express the status of available energy and its availability and developments affected by the use of non-renewable energy in architecture as well as the environmental consequences of their use on the planet. Undoubtedly, the origin of global climate change, polar ice melting, rising sea levels, and massive storms around the world are due to environmental changes. Understanding the types of renewable energies is essential, and today's human beings know that it is necessary for tomorrow to properly manage energy consumption, improve the method and amount of energy consumption and the destruction of underground resources, while properly utilizing energy sources and controlling and reducing them. The current process of energy consumption should be managed and the energy crisis should be controlled. Using alternative resources for economic development and increasing social welfare are important in this regard. The world should turn to new and renewable energy sources that are readily available in order to meet its energy needs with the

support and guidance of international institutions.

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