

# GREEN ENERGY IMPACT FOR SUSTAINABLE DEVELOPMENT

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## **Abstract**

*In this study we are suggesting some renewable energy sustainable growth approaches. In this regard, seven green energy approaches are taken into account to assess the impact ratios for the market, technology, and implementation. We derive a new parameter as the renewable energy effect ratio based on those ratios. In addition, depending on the green energy effect ratio and the green energy consumption ratio determined using real energy data from literature, the green energy sustainability ratio is obtained. Three cases are listed in order to check certain parameters. Consequently, the sectorial effect ratio may be considered more significant and should be kept as constant as possible in the implementation of a green energy policy. In addition, the sustainability ratio of green energy is rising with an increase in the ratios of technical, sectorial, and application effects. Therefore, policymakers and other authorities will promote investment in renewable energy supply and move towards green energy substitution of fossil fuels for a more environmentally friendly and sustainable future.*

**Keywords:** *Green energy, Sustainable development, Fossil fuel, Renewable energy source..*

## **I. INTRODUCTION**

Energy is a central element in the discussion of sustainable development's cultural, social and environmental aspects. The form of energy is fossil-based oil, usually comprising coal, petroleum, natural gas, etc. Many forms are renewable energy. Fossil fuels are not, as is understood, renewable. The key negative consequences of fossil fuels should be implemented first in order to clarify and figure out the need of renewable energy solutions for green energy supply and development [1].

Renewable energy is energy obtained from renewable resources that are replenished naturally on a human scale, such as sunlight, wind, rain, tides, waves, and geothermal heat. Renewable energy is also supplied in four main areas: power generation, air and water heating / cooling,

transportation, and rural (off-grid) energy services. Green energy is renewable energy and includes green electricity. This means it is produced with little-to-no impact on the environment and does not dispense greenhouse gases into the air which contribute to global warming, the way fossil fuels do. Green energy sources include wind, geothermal, hydroelectric, and solar. Wind and hydropower generate energy by moving air and water, while geo-thermal and solar sources generate energy by heat. But all are supplying safe energy and protecting the environment. As mentioned above, green energy sources do away with greenhouse gas emissions into the air. These sources are also sources of renewable energy-meaning that they are not made from finite materials such as fossil fuels. The diverse sources of green energy mean that more locations across the world have the ability to produce this renewable energy. This means that more energy can be gathered right here in the United States, making the nation less dependent on foreign countries for resources.

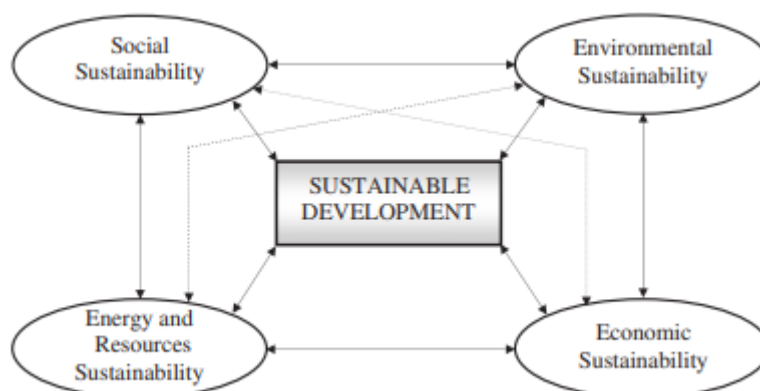
Renewables contributed 19.3 per cent to the global energy consumption of humans and 24.5 per cent respectively to their electricity production in 2015 and 2016. This energy consumption is divided by 8.9% from traditional biomass, 4.2% from heat energy, 3.9% from hydroelectricity and the remaining 2.2% from wind, solar, geothermal and other forms of biomass. In 2015, worldwide green energy investments amounted to over US\$ 286 billion. In 2017, global investment in renewable energy amounted to US\$279.8 billion, with China accounting for US\$126.6 billion, or 45 percent of global investment, the US\$40.5 billion, and Europe \$40.9 billion, respectively. Globally, the renewable energy industries employ an estimated 7.7 million jobs, with solar photovoltaic being the main renewable employer [2]. Renewable energy systems are becoming increasingly more efficient and cheaper, and their share of overall energy demand is increasing. As of 2019, more than two-thirds of newly built electricity capacity worldwide was renewable. Growth in coal and oil consumption could end by 2020, owing to increased renewable and natural gas consumption [3].

## II. FRAMEWORK FOR SUSTAINABLE GROWTH

Below are some key steps in the study and model creation which are supposed to speed up the use of renewable energy technologies and incorporate green energy strategies:

### ➤ Main basis:

We need to draw upon a logical / systematic structure as the key basis of this study to establish renewable energy strategies for sustainable growth. In a recent report the main factors influencing sustainable development and their interdependencies have been outlined. As seen in Fig, they introduced sustainable development as the confluence of sustainability of energy and resources, economic sustainability, environmental sustainability, and social sustainability, and explored their interrelations. Fig. 1 Research is taken as the principal basis for this analysis and the creation of the model[4].



**Fig. 1 Factors Affecting Sustainable Development and Their Interdependences**

A cost-effective and reliable supply of energy is obviously the prerequisite for social and economic growth in the industrial and non-industrial sectors. Energy is also important to human well-being and to the quality of life. Energy production and use, however, create major environmental problems (at global, regional and local level), which can have severe implications and even threaten the long-term survival of the ecosystems of the earth [5].

➤ **Green energy and sustainability:**

Sustainability has been described as a key to addressing current environmental, economic and growth challenges. Green energy will play a significant role for sustainable development in meeting energy needs in both industrial and local applications. Therefore, a high priority for sustainable development in a country should be given to developing and using green energy strategies and technologies [6]. The world's need for sustainable energy production is increasingly growing. Widespread use of green energy sources and technologies in both developing and developed countries is critical for achieving sustainability in the energy sectors. For three primary purposes, renewable energy resources and technology are a central constituent of sustainable growth [7].

➤ **Essential factors:**

These factors will help to define and achieve the green energy strategies and technologies that are needed for sustainable development. Green energy technologies are primarily influenced by strong and influential developments which are embedded in fundamental human needs. In accordance with this, the increasing world population demands the concept of green energy technologies and their effective implementation. Briefly, the essential criteria and their interrelations as required for carrying out the best green energy system and selecting the most appropriate green energy technology/technologies for sustainable growth [8].

Earlier innovation studies have concluded that market demand is the dominant driving factor in the innovation process, i.e. innovations are in some sense "called for" or "triggered" in response to demands for the satisfaction of certain classes of "needs." In particular, market demand incentives are also of great importance when providing investment incentives for

firms compared with the level of technological capabilities, since major investments are urgently needed in innovation processes [9]. In this respect, the scale and the level of market demand prices were considered to be two important drivers of innovation in renewable energy. Although the stimulating effect of market demand for innovation has been widely recognized by some literature, the latest literature indicates that different factors trigger different stages of innovation. In particular, market demand and regulations have a greater driving effect on the early stages of innovation, while firm size, technology push (R&D) and the green capabilities of the company have a greater impact on either of them innovation Development or Implementation Stages [10].

### III. CONCLUSION

In this analysis, the sustainable development green energy strategies are investigated, and some main parameters are established. The results of the impact ratios of technical, sectorial, and functional applications on the renewable energy impact ratio and the sustainability ratio of green energy are extensively studied. Then, we can extract some relevant comments as follows:

- The fossil fuel consumption and green energy consumption are projected to exceed Mtoe 13807.2 and 2694.9 by the year 2050, respectively. This increase means we will continue to rely on fossil fuels.
- It is estimated that the renewable energy utilization ratio is 12.31 per cent while the fossil fuel utilization ratio is 87.69 per cent in 2004. Based on the projected results, the renewable energy utilization ratio was predicted to hit nearly 16.33 percent and the fossil fuel utilization ratio will decrease to nearly 83.67 percent by 2050.

To summarize, green energy strategies will make a major contribution to the economies of countries where abundant green energy is generated. Therefore investments in renewable energy supply should be promoted for the future of world nations by governments and other authoritative bodies that wish to provide a renewable alternative to fossil fuels for strategic purposes.

### IV. REFERENCES

- [1] K. Vijayaraghavan, "Green roofs: A critical review on the role of components, benefits, limitations and trends," Renewable and Sustainable Energy Reviews. 2016.
- [2] Verizon Business, "2014 Data Breach Investigations Report," Verizon Bus. J., 2014.
- [3] C. Vezzoli et al., "Energy and sustainable development," in Green Energy and Technology, 2018.
- [4] K. Y. Foo, "A vision on the opportunities, policies and coping strategies for the energy security and green energy development in Malaysia," Renewable and Sustainable Energy Reviews. 2015.
- [5] T. H. Oh, S. Y. Pang, and S. C. Chua, "Energy policy and alternative energy in Malaysia: Issues and challenges for sustainable growth," Renewable and Sustainable Energy

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Reviews. 2010.

- [6] S. Kumar, A. Gupta, and A. Arya, Triple Frequency S-Shaped Circularly Polarized Microstrip Antenna with Small Frequency-Ratio. 2016.
- [7] S. P. Singh and P. Singh, "Effect of temperature and light on the growth of algae species: A review," Renewable and Sustainable Energy Reviews. 2015.
- [8] K. L. Ong, G. Kaur, N. Pensupa, K. Uisan, and C. S. K. Lin, "Trends in food waste valorization for the production of chemicals, materials and fuels: Case study South and Southeast Asia," Bioresource Technology. 2018.
- [9] E. N. Kumar and E. S. Kumar, "A Simple and Robust EVH Algorithm for Modern Mobile Heterogeneous Networks- A MATLAB Approach," 2013.
- [10] Y. Zhang, J. Wang, F. Hu, and Y. Wang, "Comparison of evaluation standards for green building in China, Britain, United States," Renewable and Sustainable Energy Reviews. 2017.