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The Importance of Sustainable Development And The Benefits of Renewable Energy

Giga Tvauri
Invited Professor, Grigol Robakidze University, Georgia

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Abstract

Global warming, climate change, and excess carbon emissions are the issues that serve as the main challenges of the modern and civilized world. In September 2015, world leaders unanimously adopted Sustainable Development Goals which governments began to implement step by step. In 2017, Georgia made 17 goals of sustainable development a national priority. The development of renewable energies is in line with several goals of sustainable development. It is directly related to the 7th goal. Universal access to affordable, reliable, stable, and modern energy is reflected in economic, ecological, and social aspects. At the same time, the energy sector ranks second in carbon emissions. Therefore, harnessing and developing renewable energies is the best way to deal with climate change. The purpose of the paper is to study the importance of renewable energies and sustainable technologies for the country's economy and how sustainability affects the environment and society. The research includes the implementation of sustainable technologies and their impact, both on a specific entity and the country's long-term economic perspective.

Keywords: Sustainable development, sustainable technologies, renewable energy, climate change

Introduction

Global warming is the long-term heating of Earth, which started in the pre-industrial period, late 19th century. The main reason for Global

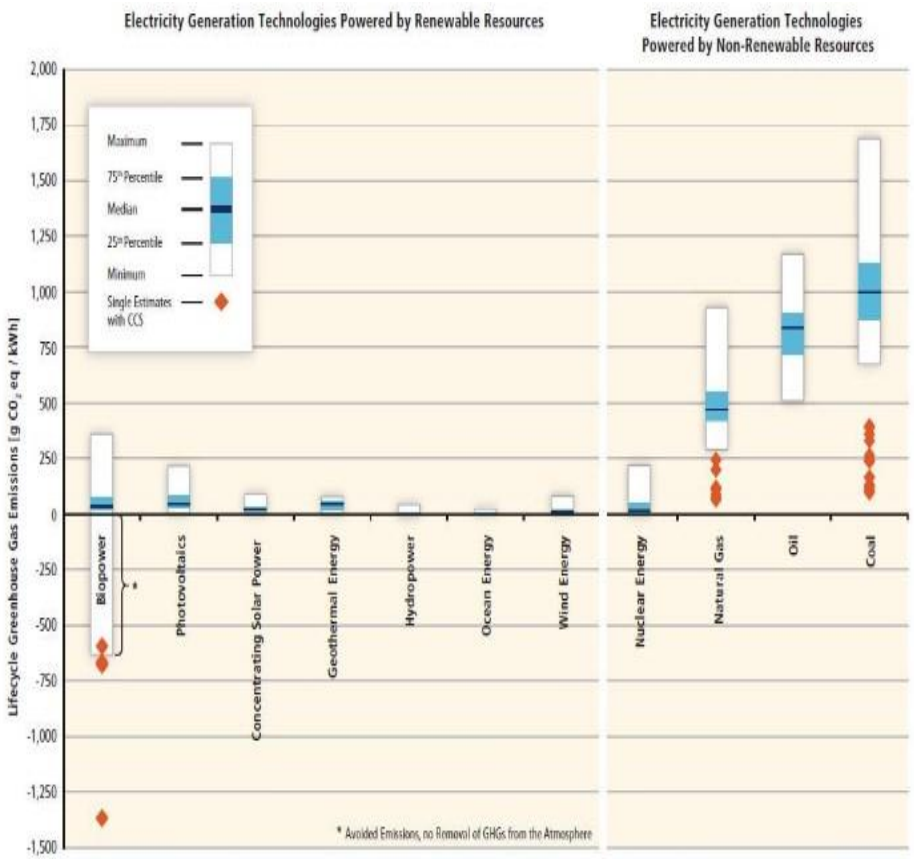
warming is fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth’s atmosphere.

According to NASA (2023), since pre-industrial times, human activity is estimated to have increased Earth's average global temperature by about 1 degree Celsius, a number that is currently rising at 0.2 degrees Celsius per decade. All this leads to desertification and destruction of biodiversity.

What is renewable energy and why do we need it? Renewable energy is energy that is derived from a different natural source instead of a source that causes further environmental damage (Beridze, 2010). The difference between renewable energy and nonrenewable energy is that renewable energy can be constantly replenished; it’s easily replaceable and can be sourced easily in comparison to non-renewable energy.

According to a number of studies Intergovernmental Panel on Climate Change (IPCC, 2022), is confirmed that by the year 2100, the earth will exhaust its reserves of fossil fuels (Chhantyal, 2023). By this time, developed countries will switch to 100% renewable energies. Countries are investing in sustainable technologies to maximize renewable resources and replace traditional energy with renewables.

Often renewable energy also has an emission. renewable energy sources produce little to no global warming emissions. Even when including “life cycle” emissions of green energy (i.e., the emissions from each stage of a technology’s life manufacturing, installation, operation, and decommissioning), the global warming emissions associated with renewable energy are minimal. A significant role here could play a fintech development (Charaia et al., 2021; Lashkhi et al., 2022).



Sustainable development goals are fully shared by 193 countries of the world. However, different countries face different challenges in meeting the Sustainable Development Goals.

Therefore, the goals of these countries are common, but there are different challenges for each. As mentioned, the most important part of sustainable development is the reduction of carbon emissions. Countries deal with this challenge in different ways.

As an example, I will cite two completely different countries. These are Germany and Kazakhstan.

Germany is the largest economy in Europe (Delfs, Dezem, 2022). Kazakhstan is a post-Soviet space whose government has ambitious plans to transition to green energy.

According to the announced policy of the German government, the country's energy sector will switch to 100% renewable energy in 2035 (Popp, Czyzak, 2023). The country intends to achieve all this by utilizing renewable resources as much as possible and developing green hydrogen (e3g.org).

Years ago, the transition of one of the world's largest energy producers, Kazakhstan, to 100% green energy was almost unthinkable. However, the country's government announced a 100% elimination of carbon emissions by 2060. As part of the transition to green energy, the country undertakes to install 2.9 GW power wind by 2035 and 3.1 GW power solar plants. As part of this plan, the Kazakh government will plant an additional 2 billion trees by 2025 (bloomberg.com).

Georgia can learn a lot from the experience of these countries. The reason for bringing these two countries is their difference. With their examples, of their achieved progress, Georgia can more easily achieve the goals of sustainable development.

Georgia is rich in renewable resources. According to the data of the Ministry of Economy and Sustainable Development, the country has a large resource for the utilization of hydropower, solar, and wind energy.

These three types of energy are the main types of renewable energy in the world today. With the information taken from the official structures, the resources and utilization rate of Georgia will be presented. According to the Republic of Georgia Country Report, water resources are one of the most important natural resources of Georgia. There are 26060 rivers with a total length of 58987 km. Small rivers with a length of less than 25km and a total length of 50480 km are the base of the hydrographic network. Georgia's territory is divided into two main regions: The Black Sea basin and the Caspian Sea basin. Total natural river runoff from the territory of Georgia is 56.4 km3 and to the territory (from Armenia and Turkey) - 8.74 km3. Thus, total water supplies amount to 65.4 km3.

According to official data from the Ministry of Economy And Sustainable Development of Georgia (2019), the country uses 22% of its hydro resources. Studies have confirmed that at least 300 rivers are suitable for hydro generation.

As for the utilization of wind energy in Georgia, studies prove that the installed capacity of wind energy is estimated at 1,500 megawatts. According to the data of 2023, the country has not utilized even 1% of this resource. Georgia has the greatest potential for converting solar energy into electricity. Officially, there are 280 sunny days a year in Georgia. In terms of the number of sunny days/radiation, Georgia is significantly ahead of the largest producers of solar energy in Europe (solargis.com).

In 2022, Georgia consumed 14.8 billion kilowatts of energy. Of this, the energy received from non-renewable resources was 23% (output of thermal plants). 10% of consumed energy was imported. While the full utilization of Georgia's hydro resources alone exceeds 50 billion kilowatts.

These statistics clearly show the economic and environmental benefits that a country can achieve by utilizing renewable resources. If we

look at this issue from a social aspect, the country's budget can generate a lot of income by selling excess energy abroad, which could help it in fighting local and global challenges, such as inflationary (Gamsakhurdia et al., 2017; Tsutskiridze, Charaia, 2023; Dilanchiev, Taktakishvili, 2021), Coronomic, public debt-related (Charaia, Papava, 2020; 2021) or other issues. Moreover, the price of electricity is constantly increasing globally.

Conclusion

Implementation of development goals brings many positive results. Two main reasons were identified in this work. The first is climate change caused by carbon emissions. The second is the danger of running out of fossil fuels, which today the largest part of the world economy is built and it must be replaced.

The 2 countries mentioned above are moving towards the same goal in different ways. Georgia has the largest renewable energy resources. Effective steps are needed. If we want to develop renewable energies and thereby achieve the goals of sustainable development, license fee benefits should be reduced. Besides, new banking preferential products should be introduced. Investors should be offered acceptable terms. There should be less regulation than in other countries. This is an incentive for them to bring their investments to Georgia. There is a need for educational work with the population because all this should become a universal national goal.

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