Renewable Energy and Sustainability

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One of the most effective ways to achieve sustainability targets is to use renewable energy sources, such as wind, solar, biomass, biodiesel, ethanol, hydroelectric, and also tidal, since they contribute to reduce energy dependence on fossil fuels, reduce greenhouse gas (GHG) emissions, reduce environmental pollution, and improve the efficiency of the electrical grid.

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One of the most effective ways to achieve sustainability targets is to reduce energy consumption, along with its many adverse consequences. There are two fundamental ways to do so: employ energy saving measures or use renewable energy (RE) to generate power. As these energy-related measures contribute so heavily to sustainability, investors find RE technologies very attractive. Discovering and implementing new technologies are important steps in the provision of cheap, reliable, ecologically sound, and accessible energy around the world [1].

The initial concept of sustainability was associated with environmental concerns, focused specifically on the preservation of resources. This has now become a milestone for the entire business community. For example, Herbohn et al.[2] warned of the risk of extinction of iconic species or loss of entire ecosystems and water resource threats. Among the most widely acknowledged definitions of sustainability is the so-called triple bottom line (TBL), in which economic, social, and environmental responsibility are emphasized[3].

One of the most effective ways to achieve sustainability targets is to reduce energy consumption, along with its many adverse consequences. There are two fundamental ways to do so: employ energy saving measures or use renewable energy (RE) to generate power. As these energy-related measures contribute so heavily to sustainability, investors find RE technologies very attractive. Discovering and implementing new technologies are important steps in the provision of cheap, reliable, ecologically sound, and accessible energy around the world[1].

It is also known that the use of RE has a positive impact on environmental sustainability. According to Franzitta et al.[4], the use of renewable energy sources, in particular wind, solar, biomass, and also sea waves, will reduce energy dependence on fossil fuels, reduce greenhouse gas (GHG) emissions, reduce environmental pollution, and improve the efficiency of the electrical grid. There is another source of RE which is the tidal power that besides contributes to reduce the dependence on fossil fuels it has a negative hydro-environmental impact since the tidal turbines alter ambient flow patterns because of the extraction of Kinetic energy[5].

Ness[6] introduced the model of economic development described as "take, make and dispose", whereby the exploitation of raw materials and non-renewable energy provided the basis of development of world economies, which in turn led to unprecedented growth. Unfortunately, this linear economic model highlights the economic goals at the expense of environmental and social dimensions, pushing the world to its physical limit. In fact, this linear model threatens the very stability of economies and the integrity of ecosystems that are vital for human survival. In this line, Yuan et al.[7] focused on the Chinese case and argued that the rapid economic growth of this country supported in the linear economic model has made the country a leading world economic power, increased the wealth of the population, and brought unprecedented business and employment opportunities. The downside is that all of this has provoked serious natural resource depletion and environmental pollution. In addition, recognizing the importance of China adopting a circular economy model, Feng and Yan[8] suggested implementing a framework to change the economic paradigm. Su et al.[9] pointed to environmental deterioration and scarcity of resources as two of the most urgent problems that must be tackled. They emphasized the importance of greater efficiency in the use of materials and energy to achieve a circular economy. Organizations find themselves compelled to implement strategies concerned simultaneously with the economic growth and sustainability as a way of addressing the challenges associated to the climate change, resource scarcity, dependence

on fossil fuels, uncertainty in government regulations, high competitiveness, and globalization[10]. In this context, the pure economic business perspective of companies is evolving to one that includes more regard for sustainability, adding social and environmental concerns to their operations as a result.

Energy for sustainable development has been one of the most popular topics in the literature and promises to remain a popular topic in the future also attending to COVID-19. The pandemic has created the biggest global crisis, sending shock waves through health systems, economies, and societies around the world. Faced with an unprecedented situation, governments are focused on bringing the disease under control and reviving their economies. However, the energy sector is also severely affected by this crisis, which has slowed transport, trade, and economic activity across the globe, bringing the generation of energy from fossil fuels to a breaking point. Global energy demand dropped to levels not seen in 70 years and the International Energy Agency (IEA) has estimated that overall energy-related emissions will decrease by 8% for 2020. This represents an important advantage for the environment but also a challenge for the renewable energy sector. It will be interesting and strategic in future works to explore the influence of COVID-19 on the renewable energy sector.

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