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The Industrial Sector's Sustainability is altered by New Energy Investments

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Description

Nowadays, it is becoming increasingly important for the Turkish industrial sector to make use of renewable energy. Newly planned investments in energy demonstrate the trend toward renewable energy. This study uses sustainability indicators to discuss on going energy projects as well as the energy appearance of the Turkish industrial sector over the past two decades. Based on advanced energy analysis, the Turkish industrial sector's sustainability index measures the transformation of energy resources and the environmental impact of production processes. This index was around 2.03, and it got better before staying the same with a few small changes. The sustainability index may change depending on whether the on-going fossil, nuclear, and recommended investment scenarios for renewable energy are met. The industrial sector's sustainability will not significantly improve as a result of any of the on-going investments; As a result, there must be a significant shift toward using more renewable energy right away. Encouragement of investments in solar or wind energy micro grids is crucial because they have the potential to significantly boost sustainability indicators. The Turkish industrial sector has changed its mind about renewable energy and is now willing to invest in it. Because it is primarily influenced by the economic climate in Turkey, this situation is unique [1].

Producers have been forced to invest in renewable energy as a result of the currency's steadily rising exchange rate. The purpose of this study is to assess the future goals for the utilization of renewable energy and to seek the cause of this change in the energy utilization history of the Turkish industry sector. Society faces both opportunities and challenges from renewable energy. In Turkey, 30.6% of the total energy used was allocated to the industrial sector, followed by the transport sector (24.5%), the residential sector (21.4%), the commercial and public services sector (12.9%), non-energy use (6%), agriculture/forestry (4.5%), and fishing (0.1%). Energy-based evaluation may be used to determine the sustainability level of energy utilization. Exergy analysis makes it possible to make the most of the energy that is available. These kinds of analyses have already been done for a lot of different industries, like the construction, food manufacturing, chemical, and agricultural industries. The Danish industrial sector's exercise efficiency ranged from 12 to 56 percent in sector-by-sector evaluations. Industrial air compressors were the equipment that used the most energy, and their exercise efficiency ranged from 5.27 percent to 21.94 percent [2].

Numerous moving parts in air compressors are subjected to high friction, resulting in high irreversibility. Miranda and others industrial energy consumption increased from 1350 PJ in 2000 to 1591 PJ in 2015, with average energy and energy efficiencies of 78% and 23%, respectively. Similarly industrial sector's energy efficiency was approximately 40%. Advanced energy analysis revealed that the sustainability index ranged from 2.21 to 2.32 and the depletion numbers ranged from 43 to 45 percent in the industrial sector of Bangladesh. The literature already contains excellent sector-based energy analyses focusing on the Turkish industry. However, this study will attempt to discuss the impact of international and national fluctuations (global crisis, subsidy mechanism, price variation, etc.) by integrating sustainability indicators with this knowledge. on the needs and energy requirements of the industry sector. Investment decisions in energy and policies are impacted by these fluctuations. New investments in renewable energy are significant because they play a crucial role in Turkey's strategy for meeting its obligations under the Paris Agreement [3].

Indicators of sustainability may aid in measuring and comprehending the transformation of energy utilization in the Turkish industry sector. The evolution of sustainability indicators over the past two decades is examined in order to propose strategies for enhancing the utilization of energy resources and lowering emissions. A fresh assessment of the Turkish industrial sector is required for new energy investments. In conclusion, sustainability indicators are used to evaluate five potential future scenarios that encompass both planned and on-going renewable energy projects. The methods used are discussed in the following section. Displays insights and outcome contains the remarks for the conclusion. The transformation of Turkish industry system's energy resources is the subject of this study. This change demonstrates the growing use of renewable energy sources. There are a number of reasons why renewable energy sources should be used. First, the majority of industrial fossil fuels are imported from other countries. The primary factor contributing to Turkey's current account deficit is this. In addition, Turkey's dependence on energy-rich nations grows as a result of its importation of fossil fuels. Second, the price of imported fossil fuels has increased in recent years, which raises the price of industrial production. Thirdly, renewable energy is steadily growing. The Turkish people want the government and businesses to use more renewable energy. Consequently, the Turkish government has and continues to encourage investment in renewable energy in the nation. Using sustainability indicators, the trend of investing in renewable energy was discussed in this study [4,5].

Conclusion

Utilizing sustainability indicators, the Turkish industry sector's recent history of energy utilization transformation is evaluated. The same method might be used to predict how that transformation will develop in the future. In order to predict the near future, five distinct possible scenarios are taken into consideration. The first scenario assumes that all on-going investments in energy will be successful. In this scenario, Turkey's energy efficiency and sustainability index will be 2.04 and 0.51, respectively. The second scenario assumes that only investments in renewable energy are successful. Others are held back. The country's sustainability index and exercise efficiency will be 0.53 and 2.12, respectively, in this scenario. In this scenario, where only the on-going nuclear power plant projects should be successfully completed and the other on-going projects should be stopped, the highest SI value may be achieved, but this does not appear to be an option. On the other hand, Turkey's desperately needed renewable fraction will rise to the highest level, 0.20, and its non-renewable fraction and nuclear energy factor values will fall to their lowest attainable values if the country can produce 20% more electricity in micro grids powered by renewable wind and solar energy and all on-going energy investments are successful. The findings indicate that it will be challenging for decision-makers to find an immediate solution when evaluating the on-going projects in terms of their potential impact on environmental indicators.

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Conflict of interest

No potential conflict of interest was reported by the authors.

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