Advances in Renewable Energy Technology in 2024

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ADVANCES IN RENEWABLE ENERGY TECHNOLOGY IN 2024

# Introduction

Due to the pressing need to address climate change, the world continues to push the energy sector towards cleaner, renewable sources of energy that will have less impact on nature and our environment. For this reason, the research in energy technologies continues to make impressive advancements in how energy is collected, processed, and stored. In 2024 we will continue to see this trend in greater momentum, with more consumers choosing renewable energy to sustain their homes and businesses, driving forward more research and developments in technologies such as Solar and Wind.

# World Energy Data

By evaluating world energy data, we can see that renewable energy's power and consumption has increased significantly over the past few years. While fossil fuels continue to have the highest share in primary energy consumption, renewable energy consumption continues to increase and spread across the globe.[[1]](#footnote-3264) This indicates that renewable energy consumption is gaining momentum for consumers, and with that comes the need for technologies that can sustain this global trend.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| OECD | 0.17 | 0.20 | 0.22 | 0.25 | 0.27 | 0.30 | 0.33 | 0.40 | 0.43 | 0.50 |
| NON-OECDD | 0.07 | 0.09 | 0.10 | 0.12 | 0.15 | 0.19 | 0.23 | 0.29 | 0.33 | 0.45 |
| EU | 0.10 | 0.11 | 0.12 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.17 | 0.19 |
| WORLD | 0.24 | 0.28 | 0.32 | 0.37 | 0.42 | 0.49 | 0.56 | 0.69 | 0.76 | 0.95 |

*Table 1: Renewable energy consumption in Gtoe (Gigatonne of oil equivalent)*

As can be seen in Table 1, the amount of renewable energy in primary energy consumption has increased significantly over the course of ten years as bio-power, solar power, geothermal power, photovoltaic power, and wind power technologies have become more efficient and advanced. As our knowledge of climate change and its subsequent negative impacts continue to develop, these sources of power continue to be at the forefront of energy research.[[2]](#footnote-2605)

# Government Regulations

We are also beginning to see an increasing number of industrialized countries providing public financing of renewable energies. With government regulations changing around oil-based energy in favor of renewable energy, the creation of jobs surrounding these technologies continues to drive forward advancements in the systems that provide businesses and consumers with energy that does not impact our planet. [[3]](#footnote-7436)

# Recent Advancements

Other improvements in technology, such as artificial intelligence, are being used to improve renewable energy technologies such as solar-based circuits. Fabrication of transparent solar cells can be used in many applications, as these solar cells have more than one layer of light-capturing materials and have a higher efficiency than traditional solar cells. Innovative photovoltaic modules can be laid on roads and can power LED lamps and melt snow. This is another of the innovative technologies that continue to be developed.[[4]](#footnote-14694)

# Conclusion

The potential for future advancements in renewable energy in 2024 can be seen in the growing number of advancements we see every year. It is unlikely that the world will focus its research on fossil fuel technologies as renewable energy becomes a global effort to save our planet from the repercussions of using these old energy systems.

1. [Oguz Ozan Yolcan, World Energy Outlook and State of Renewable Energy: 10 Year Evaluation, Innovation and Green Development, Vol. 2, Issue 4, December 2023](https://www.sciencedirect.com/science/article/pii/S2949753123000383) [↑](#footnote-ref-3264)
2. [Samuel Hitz, Estimating Global Impacts from Climate Change, Global Environmental Change, Vol 14, Issue 3, October 2004](https://www.sciencedirect.com/science/article/abs/pii/S0959378004000378) [↑](#footnote-ref-2605)
3. [Economic Impacts from the Promotion of Renewable Energy Technologies: The German Experience, Energy Policy, Vol. 38, Issue 8, August 2010](https://www.sciencedirect.com/science/article/abs/pii/S0301421510001928) [↑](#footnote-ref-7436)
4. [Recent Developments and Future Advancements in Solar Panels Technology, Journal of Physics: Conference Series, Vol. 1495, December 2019](https://iopscience.iop.org/article/10.1088/1742-6596/1495/1/012018/meta) [↑](#footnote-ref-14694)