**Slide 1: The innovation of renewable energy**

**Slide 2: Introduction**

Renewable energy refers to energy derived from sources that are naturally replenished, such as sunlight, wind, rain, tides, waves and geothermal heat. Innovation is highly required because it helps in advancing technologies, global shift to sustainable energy and addressing climate change. The current energy landscape heavily relies on fossil fuels, such as coal, oil, and natural gas. This dependency has significant environmental consequences, including air and water pollution, greenhouse gas emissions leading to climate change, and habitat destruction. The pie chart on the right shows the percentage of different sources of energy used for fulfilling global energy demand. The graph shows that renewable sources have the least percentage, which poses a challenge to improve and come up with innovations in renewable energy.

**Slide 3: Types of renewable energy**

The types of renewable energy include solar power, wind power, hydropower, geothermal energy and biomass.

**Slide 4: Advancements in solar energy**

Advancements have been made in solar energy and our focus is going to be on India. According to Thakur et al. (2022), the advancements include solar water pumping systems, solar crop dryer systems and solar water desalination systems. These advancements have boosted India’s agriculture sector. As a result, the Indian government has put into place policies and incentives in promoting solar energy adoption in agriculture.

**Slide 5: Wind power innovations**

For wind power, innovations have been on the offshore wind turbines where they have improved the aerodynamics of turbine blades. Based on Asim et al. (2022), analytical, empirical and numerical studies have been conducted to optimize blade design for heightened energy capture. This has led to increased wind energy extraction and improved turbine efficiency. In addition, rigorous investigations have been conducted to address dynamic turbine response and ensure structural robustness in a bid to advance wind power.

**Slide 6: Emerging trends in renewable energy.**

The emerging trends in renewable energy include energy storage technologies, smart grids and use of artificial intelligence in energy management. Energy storage technologies store excess renewable energy which can be used when the demand is high, ensuring a steady and reliable power supply. Smart grids use digital technology to improve energy distribution, enabling an efficient two-way communication between the suppliers and users for optimized electricity usage. Artificial intelligence analyses data in energy systems to predict consumption, optimize generation, and automate processes to increase efficiency in renewable energy usage.

**Slide 7: References**

1. Asim, T.; Islam, S.Z.; Hemmati, A.; Khalid, M.S.U (2022).. A Review of Recent Advancements in Offshore Wind Turbine Technology. *Energies*, *15*, 579. https://doi.org/10.3390/en15020579
2. Thakur, A. K., Singh, R., Gehlot, A., Kaviti, A. K., Aseer, R., Suraparaju, S. K., ... & Sikarwar, V. S. (2022). Advancements in solar technologies for sustainable development of agricultural sector in India: a comprehensive review on challenges and opportunities. *Environmental Science and Pollution Research*, *29*(29), 43607-43634.