SHURA Energy Transition Center

SHURASTAT
Energy transition in numbers

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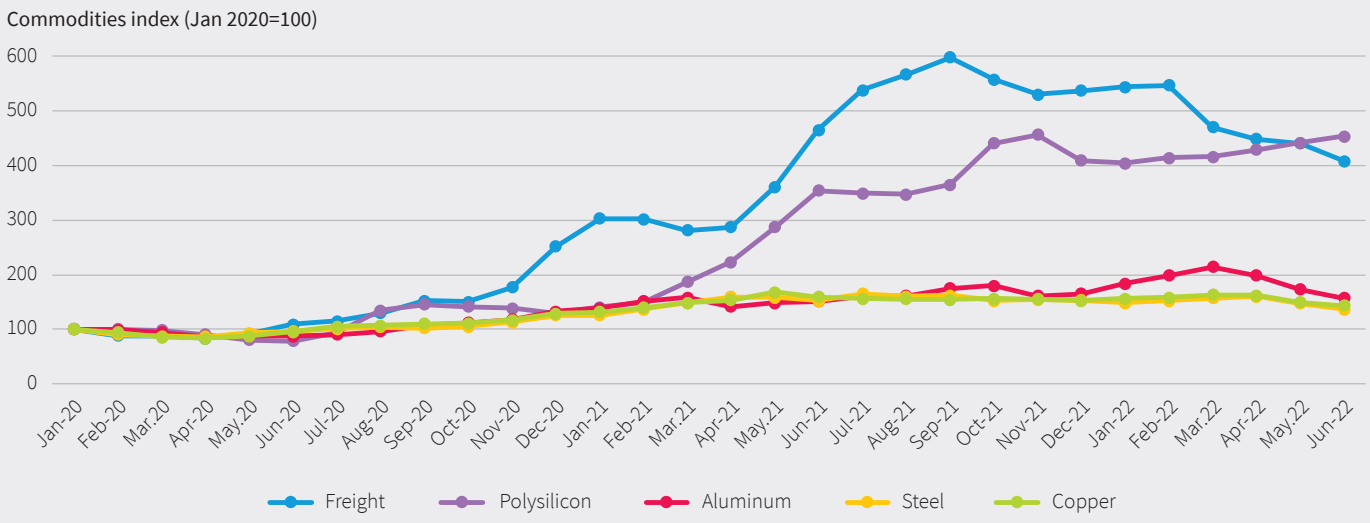
Global supply chain problems and the increase in commodity prices and freight costs, which started with the Covid-19 pandemic and continued with the Ukraine war, are reflected on the investment costs of renewable energy technologies. The price of polysilicon, which is the main raw material used in PV solar panels, has increased nearly fourfold since the beginning of 2020. Prices of steel, copper and aliminum, which are among the raw materials used in both PV solar and wind power plants, have increased by approximately 36%, 40% and 60% respectively. In addition to commodity prices, freight costs grew by nearly 4 times since 2020.

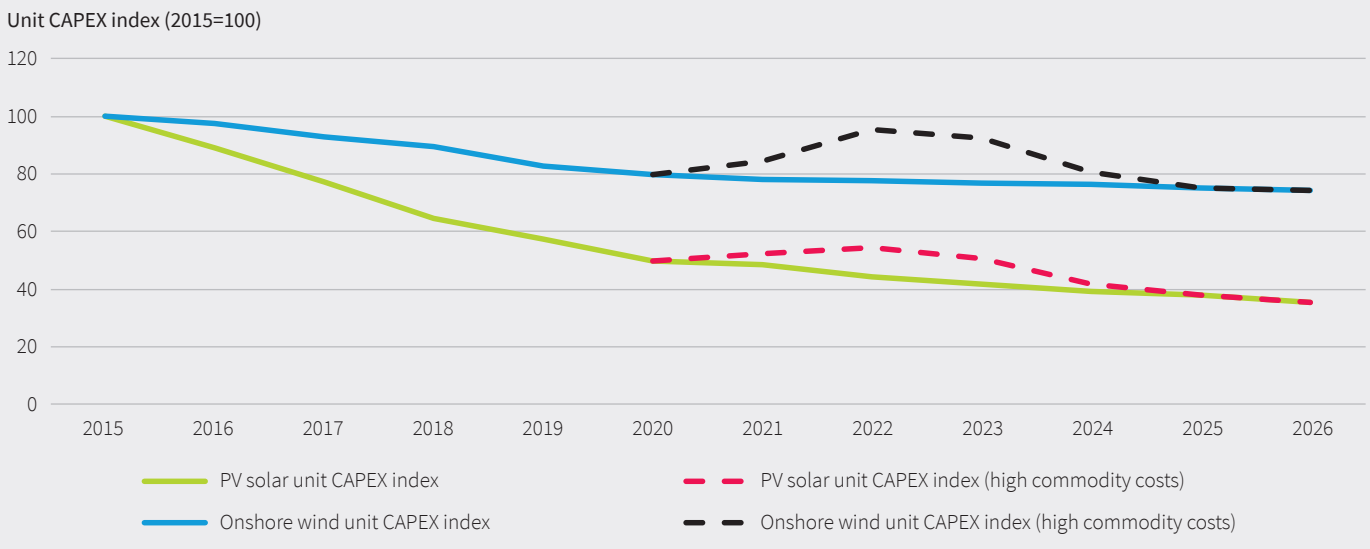
Monthly commodities and freight cost index: 2020 - 2022



Reference: IEA (2021), PV-Magazine (2022), WB Commodity Outlook (2022), Statista (2022)

According to analysis by the International Energy Agency (IEA), the rising commodity and freight prices cause increases in the investment costs of PV solar and wind, which were in a declining trend in the last decade. If the increase in the prices of raw materials, commodities and freight continues, the unit CAPEX for the commissioning of new PV solar and wind power plants will increase by approximately 15% on average.

Estimated Impact of high commodity prices on CAPEX for PV solar and wind (2015-2026)



*Reference: IEA (2021). * Onshore wind data exclude China*

According to the IEA, despite the rise in commodity prices, the long term feed-in-tariffs applied in renewable energy power plants enable them to compete in the spot market. However, if the high raw material price trend continues, power sale bid prices for new renewable energy capacities may also go up.

Monthly European natural gas and coal price trends (2004-2022)

Comparison of LCOE values for the newly commissioned PV solar and onshore wind power plants in 2021 with respect to the fuel-only costs of coal and natural gas power plants

Kaynak: IRENA (2022)

- Due to technological improvements and economies of scale, the unit cost of electricity produced from solar and wind power plants continues to decrease. However, the increase in commodity prices and freight costs in turn increase the unit CAPEX values.
- Setbacks in supply chains due to the pandemic and political conditions can also lead to delays and cost increases in new capacity installations.
- However, in line with the countries' net-zero carbon targets, the continuation of the high prices in fossil fuels and the decline in new fossil fuel power plant investment demand, competitiveness of renewables is expected to be sustained.
- **Fluctuations in fossil fuel prices indicate that countries that for countries highly dependent on imported fossil fuels, such as EU countries and Türkiye, rapid deployment of renewable energy solutions to access low-cost, clean and reliable energy sources will be the best investment for the future.**
- **In order for renewable energy to be offered to end-users at competitive prices, improvements in technologies of both wind and PV solar should continue and suitable access to commodities required for the investments should be ensured.**