

Comparison of investment costs of various electric power generation plants

The investment costs listed below are adjusted to effectively usable full-load hours per year instead of to peak output. Approximately 95 percent is assumed for nuclear and coal-fired power plants, and approximately 50 percent is assumed for gas-fired power plants (which has now dropped below that for gas!). Wind power plants achieve only approximately 25 percent onshore and 50 percent offshore since wind doesn't blow continuously and wind speed is not always constant. Photovoltaic plants achieve approximately 12 percent on average in Germany since the sun doesn't always shine and sunshine intensity is not always uniform.

The relatively high investment costs for wind power and photovoltaics are due to the comparatively lower percentage of annual full-load hours. However, this disadvantage is compensated for by the low operating costs.

Power plant, system	Investment costs approx. [euros/kW]	Comments
Nuclear power plant	5,500–12,000	Modern nuclear power plants with four cooling circuits, protection against plane crashes and terrorism, and melt-through protection are likely more expensive.
Coal-fired power plant	1,200–2,000	The security efforts are substantially lower for this type of plant than for a nuclear power plant.
Gas-fired power plant (combined cycle)	550–1,000	Unlike a coal-fired power plant, no combustion and steam generation systems are needed. Combined cycle is more expensive than gas alone.
Hydroelectric plant	2,000–13,000	In this case, the costs greatly depend on the size (high dam wall) and the construction expenses. Newly developed shaft hydroelectric plants are the least expensive in this respect.
Wind power plant	4,000–10,000	The least expensive are onshore plants directed into the wind; offshore plants are the most expensive due to the high foundation and installation costs. It is hoped that costs can be reduced by up to 40 percent by 2018.
Photovoltaic power plant	8,000–12,000	The costs in this case essentially depend on the plant size (bigger is less expensive).

Sources: DEA (Deutsche Erdöl AG), IEA (International Energy Agency), Fraunhofer