IRENA
International Renewable Energy Agency

HIGHLIGHTS

RENEWABLE POWER GENERATION COSTS IN 2020

- The trend in cost declines continued for solar and wind power in 2020, despite the impact of the global pandemic and the disruptions caused by the spread of COVID-19 virus. In 2020, the global weighted-average levelised cost of electricity (LCOE) from new capacity additions of onshore wind declined by 13%, compared to 2019. Over the same period, the LCOE of concentrating solar power (CSP) fell by 16%, that of offshore wind fell by 9% and that of utility-scale solar photovoltaics (PV) by 7%.

Total installed cost, capacity factor and levelised cost of electricity trends by technology, 2010 and 2020

	Total installed costs (2020 USD/kW)			Capacity factor (%)			Levelised cost of electricity (2020 USD/kWh)		
	2010	2020	Percent change	2010	2020	Percent change	2010	2020	Percent change
Bioenergy	2 619	2 543	-3%	72	70	-2%	0.076	0.076	0%
Geothermal	2 620	4 468	71%	87	83	-5%	0.049	0.071	45%
Hydropower	1 269	1 870	47%	44	46	4%	0.038	0.044	18%
Solar PV	4 731	883	-81%	14	16	17%	0.381	0.057	-85%
CSP	9 095	4 581	-50%	30	42	40%	0.340	0.108	-68%
Onshore wind	1 971	1 355	-31%	27	36	31%	0.089	0.039	-56%
Offshore wind	4 706	3 185	-32%	38	40	6%	0.162	0.084	-48%

- Renewable power generation costs have fallen sharply over the past decade, driven by steadily improving technologies, economies of scale, competitive supply chains and improving developer experience. Costs for electricity from utility-scale solar PV fell 85% between 2010 and 2020.
- The cost of electricity from solar and wind power has fallen, to very low levels. Since 2010, globally, a cumulative total of 644 GW of renewable power generation capacity has been added with estimated costs that have been lower than the cheapest fossil fuel-fired option in each respective year. In emerging economies, the 534 GW added at costs lower than fossil fuels, will reduce electricity generation costs by up to USD 32 billion this year.
- New solar and wind projects are increasingly undercutting even the cheapest and least sustainable of existing coal-fired power plants. IRENA analysis suggests 800 GW of existing coal-fired capacity has operating costs higher than new utility-scale solar PV and onshore wind, including USD 0.005/kWh for integration costs. Replacing these coal-fired plants would cut annual system costs by USD 32 billion per year and reduce annual CO_2 emissions by around 3 gigatonnes of CO_2.
- This comprehensive cost study draws on cost and auction price data from projects around the world and highlights the latest trends for each of the main renewable power technologies.

These highlights are taken from "***Renewable Power Generation Costs in 2020***"
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