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RENEWABLE POWER GENERATION COSTS IN 2021

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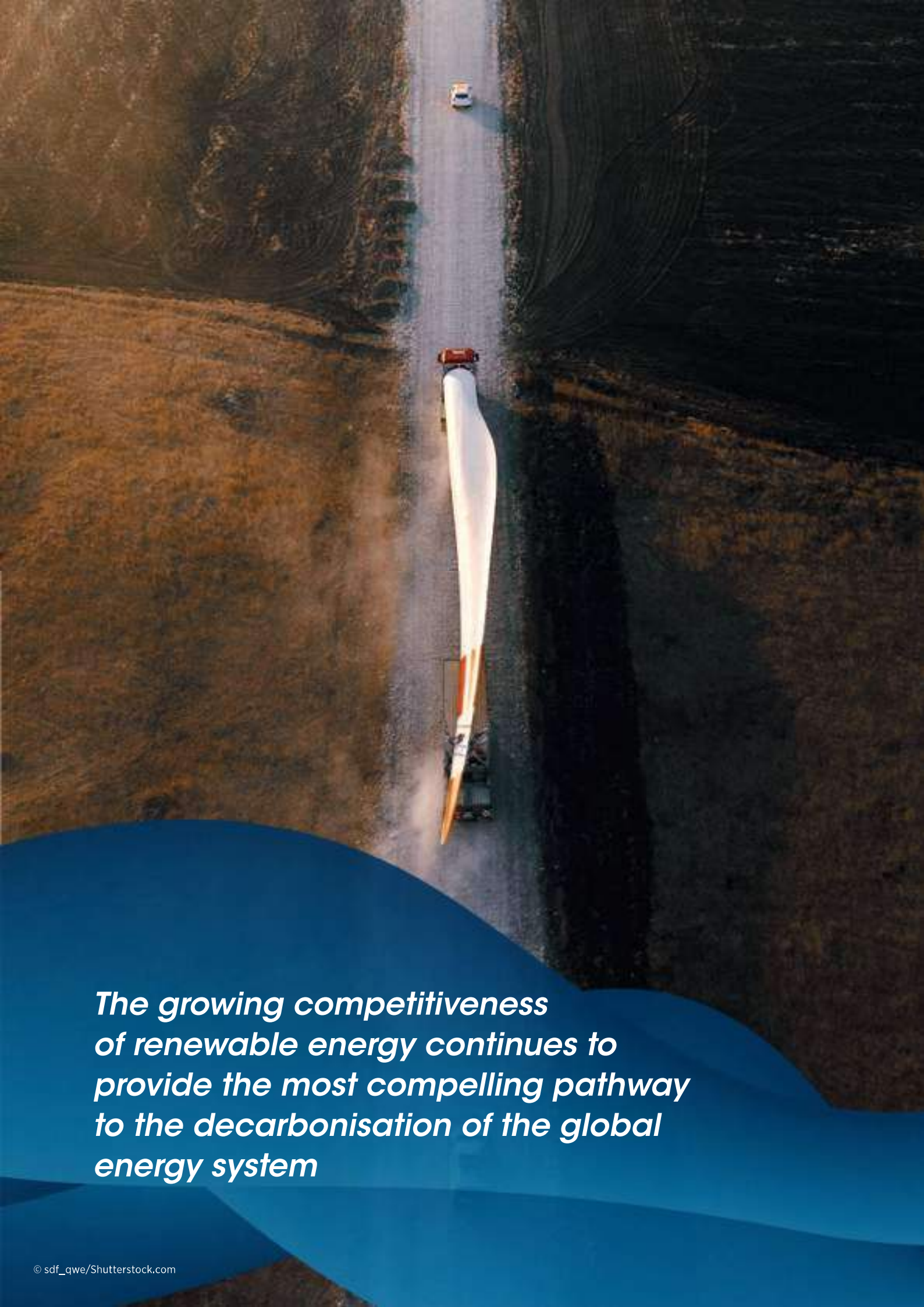

The growing competitiveness of renewable energy continues to provide the most compelling pathway to the decarbonisation of the global energy system

FOREWORD

Francesco La Camera

Director-General
International Renewable Energy Agency

The competitiveness of renewables continued to improve in 2021, with data from the IRENA Renewable Cost Database indicating an ongoing decline in the cost of electricity generated by renewables and affirming their essential role in the journey towards a net zero future.

Renewables represent a vital pillar in the global effort to reduce and ultimately phase out fossil fuels, increasing national resilience in the face of fossil fuel price volatility.

High coal and fossil gas prices in 2021 and 2022 have further undermined the competitiveness of fossil fuels, making solar and wind even more attractive. With the unprecedented surge in European fossil gas prices, new fossil gas generation in Europe will increasingly become uneconomic over its lifetime, bringing the high risk of stranded assets.

Conversely, the world has witnessed a seismic shift in the competitiveness of renewable power generation options since 2010. The global weighted average levelised cost of electricity (LCOE) of newly commissioned utility-scale solar PV projects declined by 88% between 2010 and 2021, while onshore wind fell by 68%, Concentrating Solar Power (CSP) by 67% and offshore wind by 60%.

Rising commodity and renewable equipment prices are passed through into project costs with a lag, given the time difference between a financial investment decision and the commissioning of a project. Given this, the global weighted average costs of solar photovoltaics (PV), as well as onshore and offshore wind power fell in 2021.

The levelised cost of electricity from solar PV fell by 13%, whilst onshore and offshore wind fell by 15% and 13%, respectively, compared to 2020.

Almost two-thirds – or 163 gigawatts (GW) – of newly installed renewable power in 2021 had lower costs than the world's cheapest coal-fired options in the G20, confirming the critical role of cost-competitive renewables in addressing today's energy and climate crises.

The global weighted average LCOE of new utility-scale solar PV and hydropower was 11% lower than the cheapest new fossil fuel-fired power generation option in 2021, and 39% lower for onshore wind.

Cost reductions were not universal, however, as the weighted average total installed costs of utility-scale solar PV increased year-on-year in 3 of the top 25 markets, and in 7 for onshore wind in 2021.

Furthermore, geothermal and bioenergy remained, on average, more expensive than the cheapest fossil fuel-fired option globally – albeit highly competitive in some non-OECD regions.

IRENA's data also suggest that some material cost increases are yet to be passed through into equipment prices and project costs. If materials prices remain elevated, the price pressures in 2022 will be more pronounced and overall costs may rise.

Nonetheless, extremely high fossil fuel prices mean that any plausible scenario for renewable cost increases are outweighed by the extensive economic benefits of new renewable capacity overall.

This only strengthens the conclusion of IRENA's *World Energy Transitions Outlook 2022* that low-cost renewable energy provides the most compelling pathway to the decarbonisation of the global future energy system and the achievement of both the 1.5°C target and the goals of the Paris Agreement.

If ever there was a year to dramatically increase the deployment of renewable power generation, it is 2022. Renewables will reduce fossil import bills and average electricity system costs, and lessen the damaging impacts of high electricity prices on consumers and industry. This year's fossil fuel price crisis demands a response; renewables and energy efficiency provide the answer, bringing unprecedented benefits for consumers, the environment and the global economy.

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