

# About IHA



The Gries run-of-river hydropower plant, under construction in Germany. Credit: Verbund.

The International Hydropower Association (IHA) represents organisations and individuals committed to the responsible and sustainable development and operation of hydropower.

Since IHA was founded almost 25 years ago the hydropower sector has more than doubled in size from 625 GW in 1995 to over 1,300 GW today. IHA's membership operates over 450 GW of current capacity.

Our mission is to advance sustainable hydropower by building and sharing knowledge on its role in renewable energy systems, responsible freshwater management and climate change solutions.

When delivered responsibly, sustainable hydropower offers clean, affordable and reliable electricity, while meeting our basic needs for water, irrigation, flood and drought control.

As the world's largest producer of renewable energy, hydropower also ensures global decarbonisation goals remain within reach, while complementing variable renewables through its flexibility and storage.

[Find out more: hydropower.org](https://www.hydropower.org)

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# Foreword

Hydropower is an essential service now and in the future. This report shows how, despite slowed capacity growth, hydropower generation increased by 2.5 per cent in 2019, and it continues to be the world's largest source of renewable electricity with multiple non-power benefits.

During the Covid-19 crisis, hydropower has kept the lights on in homes, businesses and hospitals. Its flexibility was best demonstrated in perhaps the largest electricity experiment the world has even seen in April 2020, when India's hydropower sector restored electricity to tens of millions of households following a 31 GW fall in demand for a lights-out Covid-19 vigil. Once the current health emergency is under control, policy makers will need to be bold and move quickly with massive stimulus packages to ensure a full recovery. We need to make sure that we 'build back better'.

There is now more than 1,300 GW of installed hydropower capacity globally. According to the International Renewable Energy Agency (IRENA)'s Global Renewables Outlook 2020, this figure will need to grow by around 60 per cent by 2050 to help limit the rise in global temperature to well below 2 degrees Celsius above pre-industrial levels. Such growth would help generate some 600,000 skilled jobs over the coming decade according to IRENA and would require an estimated investment of US\$1.7 trillion.

Additional capacity does only have to come through building new hydropower projects:

- With some 600 GW of existing capacity older than 30 years, significant opportunities exist to upgrade and modernise the world's hydropower fleet;
- There are also tens of thousands of non-powered dams and it is vital we tap these unused resources;
- Pumped storage capacity should more than double and this growth is vital to support variable renewable energy.

Policy makers and planners need to initiate new projects now, due to the longer planning cycles for hydropower construction. This report highlights where the needs and opportunities are the greatest.

For the energy sector as a whole, the Covid-19 crisis has caused unprecedented volatility and uncertainty. Electricity demand and prices have plunged by up to 20 per cent in some markets. The sector is undergoing a huge involuntary transformation which can be shaped for a more sustainable future. Nonetheless this report highlights the relative stability, resilience and reliability of the hydropower sector.

The crisis has again showed that preventing an emergency is far better than responding to one. The events of the past few months must be a catalyst for stronger climate action, including greater development of sustainable hydropower.

However, for this to happen, hydropower's contribution in maintaining system reliability has to be properly recognised, incentivised by policy makers and appropriately valued by the market. This report highlights the tools, trends and topics to inform good policy and investments for governments, financial institutions and companies. We hope you find it useful and we stand ready to assist you in the energy transition.



**Roger Gill**  
IHA President



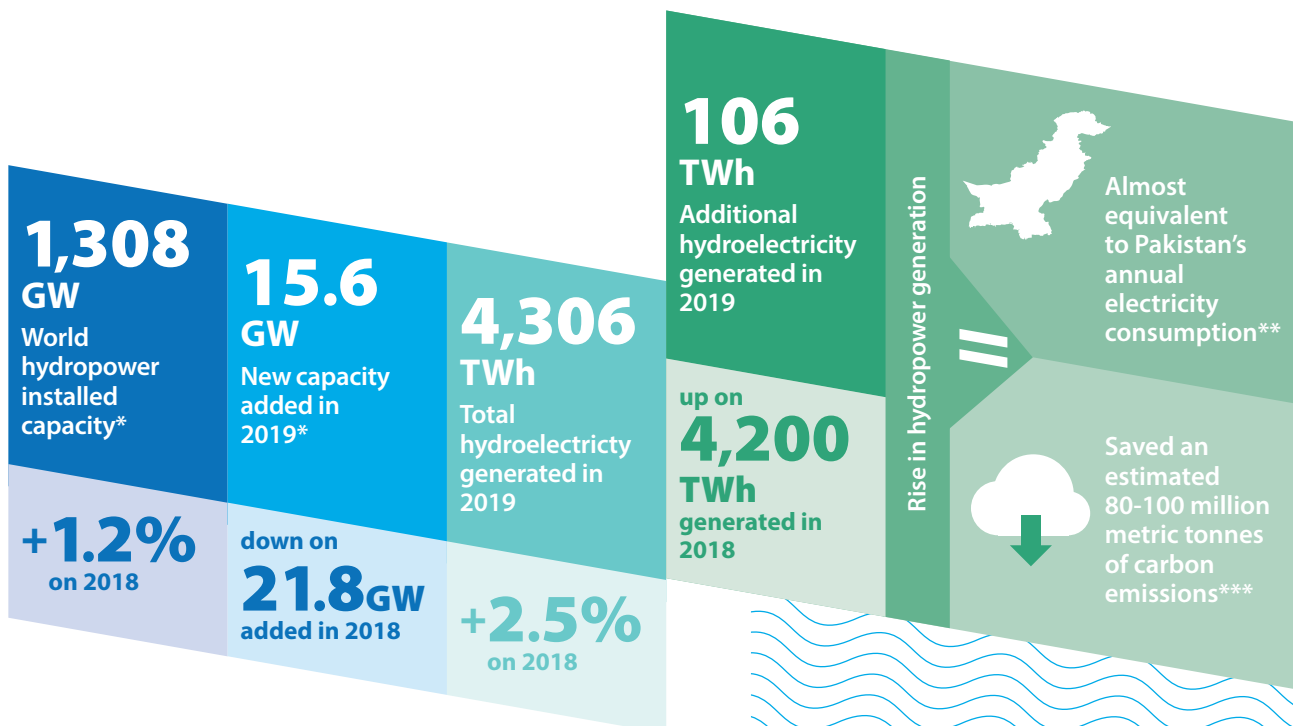
# Executive Summary

Now in its seventh edition, the 2020 Hydropower Status Report is published at a time of great global uncertainty caused by the Covid-19 pandemic. Although the crisis has not affected hydropower to the extent witnessed in the oil and gas markets, the impact on the sector has been far from insignificant.

This report, compiled by IHA and its team of researchers and analysts, finds that:

- Covid-19 has underlined the hydropower sector's resilience and its critical role in delivering clean, reliable and affordable energy, especially at times of crisis.
- A bold and ambitious green recovery plan involving significant investment in sustainable hydropower and other renewables will be needed as part of the policy response.
- Clean electricity generation from hydropower achieved a record 4,306 terawatt hours (TWh) in 2019, the single greatest contribution from a renewable energy source in history.
- Projects totalling 15.6 GW in capacity were put into operation in 2019, although this was down on the amount added in 2018.

- Total global hydropower installed capacity reached 1,308 gigawatts (GW) in 2019. This represents a rise of 1.2 per cent, down on the five-year annual average of 2.1 per cent and well below an estimated 2.0 per cent annual growth required to meet Paris Agreement targets.
- Fifty countries added hydropower capacity in 2019. Those with the highest individual increases in installed capacity were Brazil (4.92 GW), China (4.17 GW) and Laos (1.89 GW).
- India overtook Japan as the fifth largest world hydropower producer with its total installed capacity now standing at over 50 GW.
- The 11,233 MW Belo Monte project in Brazil became fully operational in 2019, while other major projects include the 1,285 MW Xayaburi project in Laos, followed by the 990 MW Wunonglong and 920 MW Dahuaqiao projects in China.
- There was a decrease in the growth of pumped storage hydropower installed capacity in 2019 due to project delays in China. However, growing interest in new pumped storage projects has been observed across the world.



\*Including pumped storage hydropower.

\*\*Approximate based on Pakistan's total electricity consumption of 110 TWh in 2018 (IEA).

\*\*\*IHA calculation if additional 106 TWh on 2018 had been generated instead by coal.