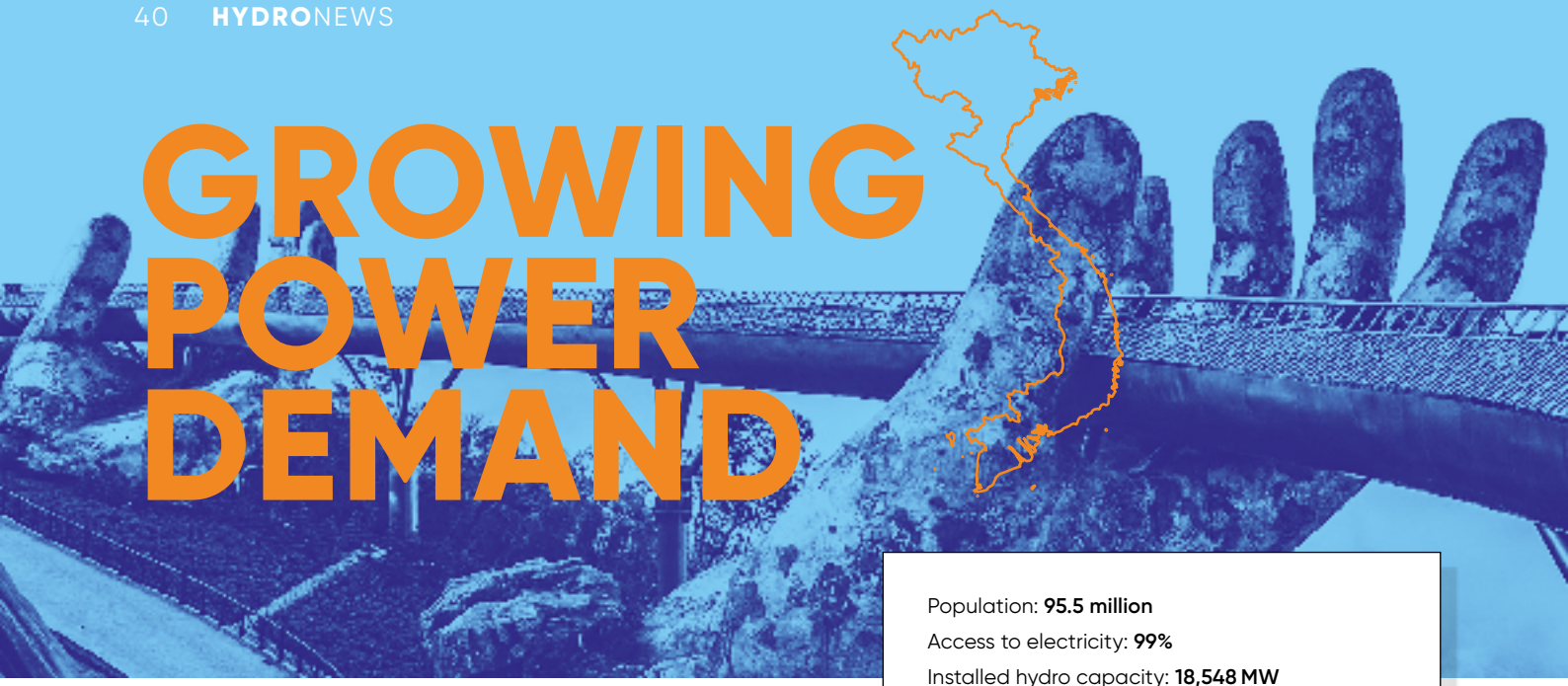
# GROWING POWER DEMAND



*Vietnam is ranked as one of the fastest developing economies in the world, maintaining annual GDP growth rates of 6.5-7% throughout the last decade. With a total operational capacity of about 20,000 MW, Vietnam has successfully tapped more than 75% of its technically feasible hydropower potential of 123 TWh/year.*

## GENERAL FACTS

Population: **95.5 million**
Access to electricity: **99%**
Installed hydro capacity: **18,548 MW**
Hydropower under construction: **2,200 MW**
Share of generation from hydropower: **37.7%**
Hydro generation per year: **83,000 GWh**
Technically feasible hydro generation potential per year: **123,000 GWh**

**ANDRITZ Hydro:**
Total installed / rehabilitated units: **95**
Total installed / rehabilitated capacity: **1,950 MW**
Location: **Hanoi**
E-Mail: **contact-hydro.vn@andritz.com**

**Nhan Hac, Nghe An Province, 55 MW**

Vietnam is now focusing on renewables, chiefly solar, wind and biomass, with hydropower as an efficient tool for grid balancing.

According to Vietnam Power Development Plan No. 8 (PDP-8), which is due to be promulgated by the end of 2020, to help meet the 10% average annual increase in power demand, total hydropower capacity will increase to 30 GW by 2030.

PDP-8 also indicates that 20% of Vietnam's electricity is to be supplied by renewables by 2030. An additional 16,000 MW of renewable capacity is anticipated under this plan. However, with rapid growth of variable renewable resources causing grid fluctuations, high grid loads and bottlenecks, this is posing a major challenge for Vietnam's power system. Expansion and strengthening of the transmission grid are required, alongside the development of more responsive reserve power capacity. About 2,200 MW of medium, large, and pumped storage hydropower capacity is currently under construction and development. This includes the expansion of Hoa Binh (480 MW), Ialy (360 MW) and the country's first pumped storage capacity, 1,200 MW in Bac Ai District in Ninh Thuan Province.

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### ANDRITZ HYDRO IN VIETNAM

For more than 15 years, ANDRITZ has been serving the Vietnamese market through a representative office in the capital Hanoi. In 2016, a full legal entity – ANDRITZ Vietnam Co., Ltd. – was established. Our competence is demonstrated by the high-quality equipment and services delivered, with about 95 units and total installed capacity of almost


Hoa Binh, Da River, 1,920 MW

2,000 MW supplied to the country by ANDRITZ over the years.

**Pac Ma,** Lai Chau Province: A contract for the supply of four Bulb turbines of 40 MW each, including turbine governors, generators, excitation and control system, was won by ANDRITZ. Commissioning is scheduled for the first half of 2021. Pac Ma will be the largest Bulb-type hydropower plant in South East Asia.

**Thuong Kontum,** Kontum and Binh Dinh Provinces: A contract was awarded to ANDRITZ for the supply of the complete electro-mechanical equipment, including two 110 MW high-head Pelton turbines with speed governors, generators with digital excitation, and auxiliary systems. This hydropower plant is due to be commissioned in the first half of 2020 and will generate about 1,000 GWh per year.

**Nhan Hac,** Nghe An Province: In 2016, ANDRITZ won a contract for the supply of two Francis units (each 27.5 MW) for Nhan Hac A and one Kaplan unit with 4 MW for Nhan Hac B, including all auxiliary equipment and accessories, as well as design, manufacturing, and commissioning. Commissioning of all three units successfully took place in mid-2018. The Nhan Hac A units are the largest small hydro units in the country, providing peak power to improve grid stability of the regional network.

**Da Cho Mo,** Lam Dong Province: In 2018, ANDRITZ was contracted to supply and install two horizontal Francis turbines, generators, and electrical and mechanical auxiliary systems for this mini hydro plant. Successful commercial operation of both units started in October 2019. The plant is strategically important. It connects to the local national power grid and will also increase the head, helping to regulate and improve irrigated fields for local cash-crop farmers.

**Hoa Binh,** Hoa Binh Province: In 2015, ANDRITZ won a contract for the design and supply of equipment and technical services for a major upgrade of automation, control and instrumentation systems in this plant. The last two paired units were completed in December 2018, 30 days ahead of the contractual schedule. The 8 × 240 MW Hoa Binh hydropower plant achieved its highest ever annual power production of 12,290 GWh in 2018.

AUTHORS

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**Hoa Binh, Da River, 1,920 MW, Inauguration ceremony August 2019**

**Thuong Kontum, Dak Snghe River, 220 MW**

**Pac Ma, Da River, 160 MW**