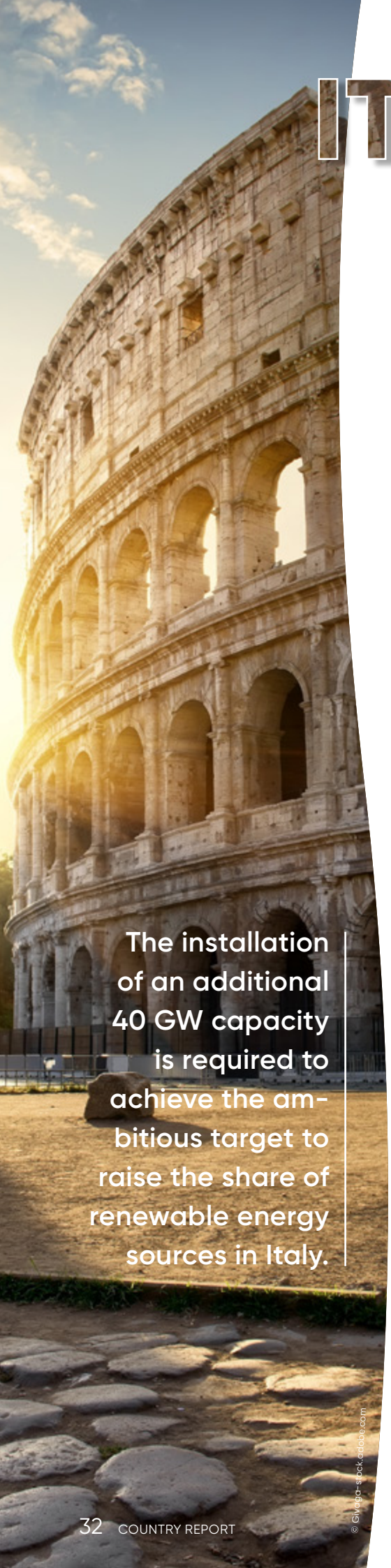


ITALY

SUSTAINABLE GROWTH

With its advanced economy ranking eighth largest in the world and fourth largest in Europe, Italy is one of the world's most developed countries. Although highly industrialized it has a large and competitive agricultural sector – it is the world's largest wine producer, for example. Italy also has high-quality automobile, machinery, food, design and fashion industries. Today, the country plays a prominent role in global economic, military, cultural and diplomatic affairs. Culturally, Italy is home to 54 World Heritage Sites, the most in any country, and is the world's fifth-most visited tourist destination.

The average annual production of electric power in Italy is about 53.5 GWh, ranking it fourth highest in Europe. Electricity production from hydropower accounted for almost 13% of the national total in 2017.

There are a total of 4,274 hydropower plants in operation, of which 460 have an output of more than 30 MW and more than 3,000 less than 1 MW. Most hydroelectric plants are found in the mountainous north of the country, which is blessed with an abundance of water. The bulk of the nation's hydropower capacity was installed before 1975. Since then, while there have been no major new installations, electricity demand has nonetheless increased significantly. Most of this new demand has been met by growth in the use of fossil-fueled generation capacity, which is the main source of electricity production today. However, the share of renewables, such as wind and solar, is growing.

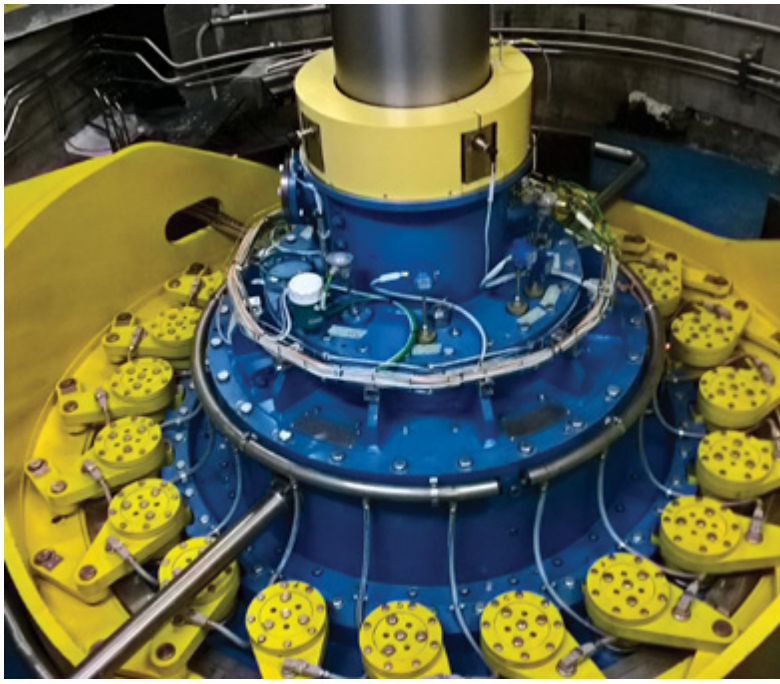
Italy has set an ambitious target to raise the share of total electricity consumption generated from renewable energy sources to 55% by 2030. This goal can only be achieved with additional installed renewable energy capacity estimated at some 40 GW. A national energy strategy aims to see all coal-fired plants decommissioned by 2025 and for renewables to increase to meet the resulting loss of capacity. New initiatives to support renewables, mainly focusing on small and mini hydro, are expected to further boost sustainable growth and improve grid stability.

The installation of an additional 40 GW capacity is required to achieve the ambitious target to raise the share of renewable energy sources in Italy.

ANDRITZ HYDRO IN ITALY

The long success story of ANDRITZ Hydro in Italy began with the foundation of the Silvio Pretto S.A. company in 1884. Since then, more than 2,200 hydropower units with a total capacity of 12 GW have been installed or rehabilitated. Today, the ANDRITZ Hydro operation in Italy is responsible not only for the domestic market, but also for many projects in South America, especially Peru and Chile. Highly skilled ANDRITZ Hydro engineers and staff make the Italian operation a world leader in hydropower service and rehabilitation. Within the last two years, an ANDRITZ Control Center for our operation and maintenance activities has been established in Schio featuring advanced monitoring and control features. It is based on the Metris

Chievo Dam, Adige River, Verona, five StrafloMatrix units



San Pancrazio, South Tyrol

DiOMera platform and is available for the whole ANDRITZ Hydro Group as it can be remotely connected to hydropower installations worldwide. A dedicated O&M team can provide all the required services related to the daily and/or the medium-term operational activities of customer plants. (→ see article page 31)

SAN PANCRAZIO, SOUTH TYROL

After almost 60 years of operation the turbine at the San Pancrazio hydropower plant was due for rehabilitation. A contract awarded to ANDRITZ comprised a new vertical shaft Francis turbine and a new generator. In addition, the scope of supply included automation and excitation systems, as well as low- and medium-voltage equipment. Due to the excellent design of the new generator, its capacity was increased from 35 MVA to 41 MVA – a total of 17% over the original installation. Design, manufacturing and installation were all executed on time and in May 2018 the hydropower plant was successfully recommissioned.

MORASCO, PIEMONTE

For the Morasco hydropower plant ANDRITZ performed an overhaul of the first unit's 26 MVA generator. The scope of work included a new generator stator core and winding, generator bus ducts, medium-voltage connection, and generator control cubicle – including the partial discharge monitoring system. Additional equipment included the shaft eddy current system, generator and bearing temperature measurement system and, finally, bearing instrumentation. Moreover generator disassembly (including asbestos disposal) and reassembly was included as part of the scope of the contract, as well as installation. Since mid-2018 this refurbished generator unit has been producing renewable electrical energy for the region. Refurbishment of the second unit at Morasco has begun in March 2019.

NEW TURBINE RUNNER SUPPLY FRAME CONTRACT

ANDRITZ is supplying five Pelton and two Francis runners for various hydropower plants throughout Italy for the country's largest electricity supply utility. Also within the scope of the contract are additional minor rehabilitation programs and site activities.

PONTE ACQUA, BERGAMO

Since mid-2018 the small Ponte Acqua hydropower plant has been online supplying 1.9 MW to the grid. Under the terms of a refurbishment contract, ANDRITZ supplied a new horizontal shaft Pelton turbine, a new generator, spherical inlet valve, the governor hydraulic power unit (HPU), as well as automation and excitation systems and medium-voltage equipment.

PUBBLICO CONDOTTO, LUCCA

In 2017, ANDRITZ supplied one Kaplan turbine unit to this mini hydropower plant, which powers an existing paper mill. The Pubblico Condotto plant is an important Mini Compact hydro reference for a double-regulated ADT-type unit installed directly by ANDRITZ Hydro Italy.

TO KNOW

GENERAL FACTS

Population: **60,551 Mio.**
Access to electricity: **100%**
Installed hydro capacity: **22,838 MW**
Share of generation from hydropower: **12.8%**
Hydro generation per year: **38,000 GWh**
Technically feasible hydro generation potential: **>65,000 GWh**

ANDRITZ HYDRO IN THE COUNTRY

Installed and/or rehabilitated capacity: **12,433 MW**
Installed and/or rehabilitated units: **2,266**
Locations: **Schio**

Source Facts:The World Bank, IHA, CIA Factbook, Hydropower & Dams World Atlas 2018