

OPERATIONAL REVIEW

TRANSMISSION & DISTRIBUTION

Throughout 2021, TAQA's Transmission & Distribution activities delivered growth through infrastructure development and technological enhancements, achieving efficiency gains across our services.

2021 was a year of transition and modernization for TAQA's Transmission & Distribution business line, the sole provider of power and water for the Emirate of Abu Dhabi.

In 2021, the Transmission & Distribution business continued to show a strong operational performance both in power and water.

Our transmission power asset availability was at 99.03%, and the transmission water asset availability was at 97.76%, both above the regulatory requirement, whereas service availability – which measures our ability to meet customer demand, was 99.99%.

In distribution, the duration of service interruptions continued to decrease to an average of 81.2 minutes, a 3.4% improvement compared to 2020.

2030 Strategy Transmission & Distribution Targets

Invest an additional AED 40 billion by 2030 to maintain and grow our UAE Regulated Asset Base

Focus on operational excellence, optimization and digitalization across the entire value chain

Strengthen the position of energy services to further demand-side management, enabling public and private entities to realize energy-saving targets



Breakdown of revenue for Transmission & Distribution*



Financial performance

The Transmission & Distribution business model is stable with predictable cash flows based on the long-standing regulatory framework and consistent strong performance.

Our Transmission & Distribution revenues rose to AED 25.9 billion in 2021, up 5% from 2020. The business line contributed AED 4.46 billion towards Group net income, representing a rise of 13% against 2020.

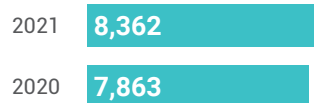
Capital expenditure increased by 30% in 2021 to AED 3.5 billion, from AED 2.7 billion in 2020.

Transmission & Distribution highlights (AED million)

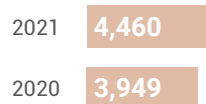
Revenues



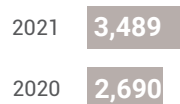
Adjusted EBITDA



Net Income



CAPEX



*Before inter-company revenue

OPERATIONAL REVIEW

TRANSMISSION & DISTRIBUTION (continued)

Business Focus

In 2021, Transmission & Distribution business was focused on three core areas:

- 1 Network growth
- 2 Sustainability
- 3 Building capabilities

80,000+ km
of power networks

19,000+ km
of water pipelines

1 million+
individual end-user
connections

Network growth

To support the solid operational performance and the necessary growth of the power and water network, in 2021 TAQA invested AED 1.3 billion in the development of our transmission networks, and AED 2.1 billion in expanding and strengthening our distribution networks for power and water.

Sustainability

TAQA is committed to the UAE's sustainability goals for 2030 and 2050. This is demonstrated by the initiating and execution of several initiatives in 2021.

Building Retrofits Program

Our building retrofits program, which is managed by Abu Dhabi Energy Services (ADES) is a core element of our energy efficiency program. In 2021, ADES continued to be actively engaged with key government building owners to develop a solid pipeline of projects to reduce energy consumption. ADES is mandated with the execution of the Building Retrofits Program of the Abu Dhabi Government Demand Side Management and Rationalization Strategy (DSM) 2030, aiming to further progress the Emirate's efforts to achieve environmental sustainability, rationalize electricity and water usage and reduce CO2 emissions.

By 2030, ADES aims to save 2.7 terawatt hours of electricity and nine million cubic meters of water by working with business and government entities to identify savings opportunities, provide financing and commission projects by selecting the most suitable contractors in the market. These energy efficiency opportunities through retrofitting are paid back through savings in utility bills.

Customer behavioral change program

Launched in 2017, Tarsheed is a customer behavioral change program aimed at helping reduce Abu Dhabi's water and electricity consumption per capita by 20% by 2030 by interacting with residential and non-residential customers across Abu Dhabi and Al Ain. 2021 initiatives included an air conditioning rebate program to promote usage of high star rated air conditioners among UAE nationals, promotion of water rationalization in over 1,000 mosques by replacing inefficient faucets, the publication of a homeowner's irrigation manual to encourage optimal water consumption in home gardens and a summer campaign that encouraged customers to follow energy savings tips during hot months.

We have commenced a major IT transformation program to adopt cloud computing, including the deployment of advanced analytics and AI tools to support TAQA becoming a digital utility.

Water sustainability

TAQA is partnering with the Environmental Agency of Abu Dhabi to improve the quality and increase the sustainability of Abu Dhabi's groundwater through a large-scale project that will increase the use of treated wastewater. In close partnership with the Abu Dhabi Agriculture and Food Safety Authority (ADAFSA), this project aims to expand ADDC's recycled water network, with 150 km of additional pipeline to deliver 86 MIGD to more than 4,000 farms.

In addition, the Transmission & Distribution business is working closely with a number of government organizations to further improve water sustainability.

Building our capabilities for the future

TAQA has accelerated its digital adoption, increasing network planning capabilities with state-of-the-art demand forecasting tools and moving to a more automated operating model with the introduction of enhanced network management systems.

In addition, we have commenced a major IT transformation program to adopt cloud computing, including the deployment of advanced analytics and AI tools to support TAQA becoming a digital utility. This includes the connection of real-time automated digital metering throughout Abu Dhabi with a focus on providing improved customer service offerings.

Our drive for further cost optimization in 2021 led to a supply chain transformation program to re-position Transmission & Distribution procurement for improved value and process efficiency. This has contributed to substantial savings across a range of CAPEX and OPEX contracts, while simultaneously building strategic sourcing capability across Transmission & Distribution supply teams.

TAQA conducted a strategic maintenance review in 2021 and based on the outcomes, initiated a maintenance transformation program comprising 12 distinct initiatives to improve transmission and distribution reliability and cost effectiveness across our operating companies between 2022 and 2031, leveraging digital capabilities, deploying advanced monitoring systems, enhancing staff skills and implementing advanced analytics across our asset base for power and water.

In 2021, we opened the possibility for our customers to use multiple means of payment, streamlined our communication techniques and integrated key accounts into a direct debit system. This resulted in a total collection of AED 14.8 million in 2021, a 15.7% improvement over 2020.

OPERATIONAL REVIEW

TRANSMISSION & DISTRIBUTION (continued)

Operational Highlights

Transmission business

In 2021, TRANSCO delivered power and water through its electricity network of 9,968 km and 3,552 km of water pipelines, ensuring reliability in line with the highest international benchmarks.

TRANSCO recorded a 16,588 MW peak demand for power, representing an increase of 2.4% over 2020, and an 811 MIGD peak demand for water, proving our continued readiness to meet customer requirements.

Infrastructure developments: During this year, TRANSCO completed 23 projects worth AED 3.3 billion, including:

- Supply and installation of new 132/11kV substation at Shakhbout City
- 132kV cable connections for new Shakhbout City substation
- Supply and installation of new 132/11kV Khalifa City re-development substation
- 400kV cable works between Saadiyat and Abu Dhabi islands
- 400kV switching station at Al Dhafrah and associated works
- 400kV overhead lines from Bab to Dhafrah and 400kV overhead line works around Al Dhafra and Faya

Integrating first water to the network: TRANSCO received the first potable water from the Al Taweelah Reverse Osmosis Water Production Plant – one of the largest RO plants in the world.

Completing Abu Dhabi's longest underground cable route: TRANSCO successfully completed the development and commissioning of eight underground utility tunnels with 400kV cable circuits. The completion of the tunnels enables electricity to flow underground between the Bahia area on Abu Dhabi Island and Saadiyat Island, spanning 22 km.

First digital substation in the GCC: The 132/11kV substation in Shakhbout City will supply power to new developments in the area. The revolutionary system improves operational performance and occupational safety, while providing environmental benefits by reducing carbon emissions.

Regional first connecting offshore assets to the grid: A partnership between TAQA and ADNOC Group aims to connect ADNOC's offshore assets to the Abu Dhabi onshore national power grid via subsea cables. The project is the first of its kind in the region and will enable offshore decarbonization.

Load Dispatch Center (LDC) carve out: Effective January 1, 2022, TRANSCO transferred control of systems operations to EWEC following a decision by Abu Dhabi Government in 2020 for all system supply planning and dispatch to remain with the government. This was carefully prepared and executed without any service interruptions. As a subsidiary of TAQA, TRANSCO will remain focused on its primary role as a transmission asset owner, mandated with the critical function of planning, constructing, operating and maintaining high-voltage power and bulk water transmission networks within the Emirate of Abu Dhabi and beyond.

Case Study

Barakah Nuclear Energy Plant

In April 2021, commercial operations began at Unit 1 of the Barakah Nuclear Energy Plant (NPP) – the UAE's first nuclear power station – marking the seamless integration and synchronization of this new clean energy source into the UAE grid via its power network.

TRANSCO played a critical role in the project, which was the result of more than ten years of collaboration with Emirates Nuclear Energy Company (ENEC) and Nawah, making sure the right infrastructure was in place for a secure and stable grid in advance of operations.

TRANSCO has also successfully energized the Dhafra 400kV switching station, which connects the western and eastern electric transmission power network to facilitate power evacuation from Barakah (5.56 GW), and existing power plants located in the Western Region.

Barakah's first unit commencing its commercial operations marks a major milestone in the UAE's journey to realize its clean energy goals. Our contribution to this major UAE milestone goes hand-in-hand with our vision to be a leader in the development, operations and maintenance of high-voltage power and bulk water transmission networks within Abu Dhabi and beyond as well as a critical player in the UAE's energy sector.

Distribution business

Optimizing distribution: ADDC and AADC engaged with Siemens Spectrum to provide a new Advanced Distribution Management System (ADMS) to move from its traditional grid operations technology system to an optimized, actively managed distribution system leveraging data from the Internet of Things (IoT), situational awareness, and 2D/3D virtualization and Distributed Energy Resources (DER) management integration.

World-class utility workforce management solution – ‘Energy Max’, a GE and Salesforce product, optimizes field-level operation and technician requirements across Abu Dhabi Emirate, increasing response times in emergency cases.

Managing operations and maintenance of Abu Dhabi and Al Ain irrigation network: A service-level agreement with Abu Dhabi Agriculture and Food Safety Authority (ADAFSA) to take over operations and maintenance responsibility for the irrigation network across Abu Dhabi and Al Ain.

Mega project to provide recycled water to more than 4,000 farms: Partnership with the Environment Agency Abu Dhabi (EAD) to develop a network to distribute desalinated water in the Liwa region and expand the recycled water distribution network by laying 150 km of infrastructure across the Emirate of Abu Dhabi to more than 4,000 farms.

Electricity Tariff Incentive Program (ETIP) extension: ADDC and AADC supported an Industrial Development Bureau initiative by the Abu Dhabi Department of Economic Development, aiming to boost the industrial sector and enhance energy saving practices for companies with high-level automation.

New payment solutions: Through a strategic agreement with Abu Dhabi’s Department of Finance (DoF), ADDC and AADC also rolled out a new payment mechanism to integrate Abu Dhabi Government entities under the DoF by harmonizing information.

Network reliability: ADDC and AADC saw improvements in network reliability indicators compared to 2020, with a combined 3.4% improvement in average outage duration for each customer served (SAIDI) and a combined 8.2% improvement on average number of interruptions a customer would experience (SAIFI).

Region's first fully automated tanker filling station: The station at Ain Al Faydah will serve up to 1,400 tankers per day to meet the high demand of AADC customers, providing accurate control of continuous water supply to ensure quality service.

Advanced metering infrastructure: AADC and ADDC entered a ten-year contract with Etisalat to upgrade and manage the company's Advanced Metering Infrastructure (AMI) by providing seamless connectivity to enhance the efficient operation of more than one million smart meters.

Our distribution business steadily improved performance over the past five years in terms of network reliability indicators and network efficiency indicators (water and power losses).

OPERATIONAL REVIEW

TRANSMISSION & DISTRIBUTION (continued)

Energy Services business

Abu Dhabi Energy Services Company (ADES) reinforced TAQA's alignment with the Department of Energy to spearhead the delivery of its building retrofit program, engaging with tenders and entering into framework agreements with building owners with a CAPEX commitment of AED 60 million.

Framework agreements in 2021:

- **Emirates Schools Establishment (ESE)**
- **Abu Dhabi Health Services Company (SEHA)**
- **Department of Culture and Tourism - Abu Dhabi (DCT)**
- **United Arab Emirates University (UAEU)**

ADES initiated discussions to develop building retrofit projects in 2021 with several government and private entities in the UAE. Most recently, ADES announced a MoU with FAB Properties in January 2022.

ADES has identified several opportunities for energy efficiency improvements and is currently establishing the technical and commercial feasibility for related projects.

2022 Outlook

In 2022, the Transmission & Distribution business's key focus will be to continue to enhance customer experience across existing and new value-added services.

On the transmission side of the business, we will seek to ensure continued and effective integration with our existing network infrastructure, with an increasing focus on efficiency, operational excellence and capability building.

TAQA will also initiate several major construction projects, strategic partnership programs and initiatives to position us as a leader in the supply of low carbon, sustainable power and water, including:

- Completion of new power and water plants (e.g. Fujairah F3 and Al Dhafra Solar PV)
- Activation of the fourth 500 MVA transformer (Mahawi Area)
- Delivering a transformer shift to manage network loads
- Further integration of a diversified energy mix (nuclear and solar power)
- Implementation of a new procurement strategy and organization
- Expansion of the availability of harmonized customer payment solutions

In 2022, the Transmission & Distribution business's key focus will be to continue to enhance our customer experience and new value-added services.