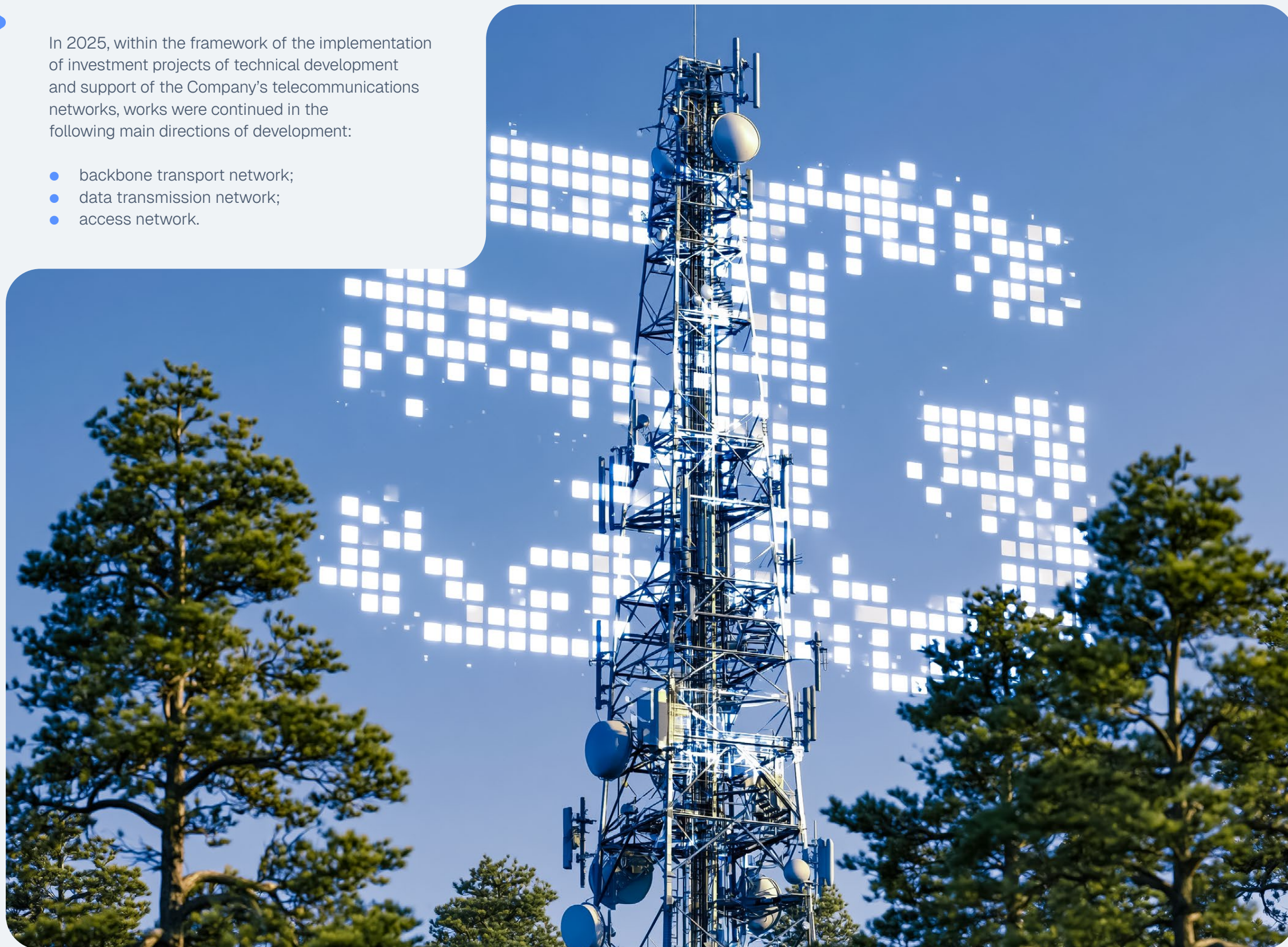


3.7. Development of the network and infrastructure

In 2025, within the framework of the implementation of investment projects of technical development and support of the Company's telecommunications networks, works were continued in the following main directions of development:

- backbone transport network;
- data transmission network;
- access network.



3.7.1. Backbone transport network

In 2025, the following results were achieved:

Under the “Reconnection of subscribers under the FOCL PPP 1.0 project” project, the transfer of services by the in-house method in 135 rural population centres was performed.

In the direction of construction of FOCL, the survey of routes at 2,632 facilities was carried out. Technological supervision over the construction of FOCL in 31 villages and at 15 customs posts is also being conducted.

In Karaganda Region, technological supervision was performed in the construction of FOCL on the Uspenka — Agadyr section with a total length of 53 km.

In East Kazakhstan Region, by the in-house method, the laying of FOCL on the Mitrofanovka — Privolnoye section with a total length of 36 km was performed.

In Kostanay Region, the laying of FOCL to the village of Shegen with a total length of 5 km was performed.

For the reservation of the existing transport network of Kazakhtelecom JSC, the survey of routes on the Zhezkazgan — Kyzylorda section with a length of 406 km and the Shalkar — Aktau section with a length of 1,147 km was carried out.

3.7.2. Data transmission network

On the data transmission network, the following measures were performed:

34 OSA5422 synchronisation devices and an MNC management system for the frequency and time synchronisation of the 5G MBN network in 17 cities of Kazakhstan were installed and tested.	The installation of equipment at the stations of Zharkent, Dostyk, Almaty, Astana and Uralsk was performed.	12×100 Gbit/s transit channels China — Russia were organized.
A 6×100 Gbit/s channel was organized on the border junction with China Telecom in the city of Zharkent on the current DWDM OSN6800 system.	The Dostyk — Alashankou border junction with China Mobile was organized, a 1×100G channel was connected.	17 routers were installed and configured in Akmola Region and 9 routers in Kostanay Region.
The technical possibilities were considered and connection points to the Company’s network were provided for 216 state institutions in Zhambyl, Almaty, Akmola, Pavlodar Regions, and also in Abai Region and EKR.	A 100 Gbit/s channel was organized on the DWDM network Shymkent — Turkestan.	Works on testing of ZTE DWDM equipment on the Almaty — Shyganak section with the organization of 100G, 200G, 400G and 800G channels on the Almaty — Akshi section were performed.
The connection of 19 BSs to RPC was performed and works on the organization of control channels through HUB SkyEdge-2 for the connection of 12 BSs of Auyl Telecom LLP.	The connections of BSs of Auyl Telecom LLP in RPC — Gorkunovo (EKR), Sagyndyk (EKR), Sulutal (Abai), village of Tyuemoinak (Ulytau) were performed.	The expansion of the backbone DWDM network between Astana-Karaganda-Almaty (Karaganda-Astana 2*100GE, Karaganda–Almaty 2*100GE), ATS Karaganda — DC Karaganda (8*100G), Almaty OPTS6 — DC PIT Alatau 8x100G was performed.

In 2025, the DT network was strengthened, ensuring the growth of throughput capacity and reliability of services:

Works within the framework of the project “Development of the infrastructure for cache servers” on the installation of cache servers Baishan 200G in the city of Pavlodar; Rutube 40G in the city of Almaty; Valve 200G in the city of Almaty and 200G in the city of Astana; Yandex 200G in the city of Almaty; EDGE_CENTER 200G in the city of Almaty; Yandex 200G in the city of Pavlodar; META (fala6-1) 300G in the city of Almaty; GGC 100G in the city of Almaty and 100G in the city of Aktobe were performed.	151 5G BSs were connected for the operators Kcell JSC and MTS.	Works on changing the scheme of connection to the CSCM system in the cities of Aktau, Kokshetau were performed, works on the migration of internet services to INET-PE equipment were performed.
Works on the installation of aggregation equipment for the RPC network NetEngine8000 in 12 RCs (24 pcs in 12 RCs) were performed. Configuration works on the configuration of protocols on NetEngine 8000 devices in the cities of Kyzylorda, Kostanay, Atyrau, Pavlodar were performed.	Works on the installation of Juniper ACX7100, Juniper ACX7024 and EX4400 equipment for the transition to the SDN network of the city of Astana were performed.	Equipment was accepted into trial operation under the project “Modernization of DT metro networks of the cities of Karaganda, Petropavlovsk, Taraz”.
4*100G channels on MX-PE equipment in the city of Almaty and with GPU clusters were organized; an Option B junction between ODS and ITD equipment was organized. The organization of a 1×40 Gbit/s channel between ODS equipment and Kaspi Bank JSC (PIT Alatau) was performed, a 1×40 Gbit/s channel between ODS equipment and Kaspi Bank JSC (Yrysty Street). The organization of IP L3VPN and L2 for Kaspi Bank JSC, L2VPN for Kcell JSC, L2VPN for NC KazMunayGas JSC was performed.	The organization of the IP Transit (Burst) service for Starlink 100 Gbit/s on alma-mx-6 equipment, the city of Almaty was performed. A scheme for the provision of the service of unfiltered IPT (Internet) for Starlink was elaborated.	A communication organization scheme was developed, specifications of equipment were prepared and actual costs were determined for the organization of channels for the use of LEO infrastructure of Amazon Kuiper for the connection of points in rural population centres within the framework of the investment agreement (IA).

