Feature

Developments at Georgian Railway

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History of Georgian Railway

Georgian Railway (GRW) Ltd. is located in the South Caucasus at a key point on the ancient Silk Road between Europe and Asia (Fig. 1). The Silk Road was more than a trade route—it was a conduit for exchange of knowledge and culture that contributed to the development of all countries in the region. Today's GRW network has a similar function to the Silk Road by serving as a transport artery linking the Black and Caspian seas. It is the backbone of the Georgian economy, but, most importantly, it is the shortest rail route between Europe and Central Asia and a main part of the Eurasian Trade Corridor or so-called New Silk Route.

The idea of building a railway connecting the Black and Caspian seas was first proposed in the 1830s when it was realized that a railway from Poti on the Black Sea to Tbilisi (the capital of Georgia) could carry a great deal of the trade between northern Iran and Europe, especially since it would be only half as long as a railway through Turkey.

Construction of the first Trans-Caucasus line started in 1865 and the first passenger train from Poti arrived at Tbilisi on 10 October 1872, marking the birth of GRW. The first trains covered the 310-km journey in 15 hours. The next 20 years saw construction of the main line through west Georgia and the difficult mountain double-track Tsipa Tunnel linking east and west Georgia was completed in 1890.

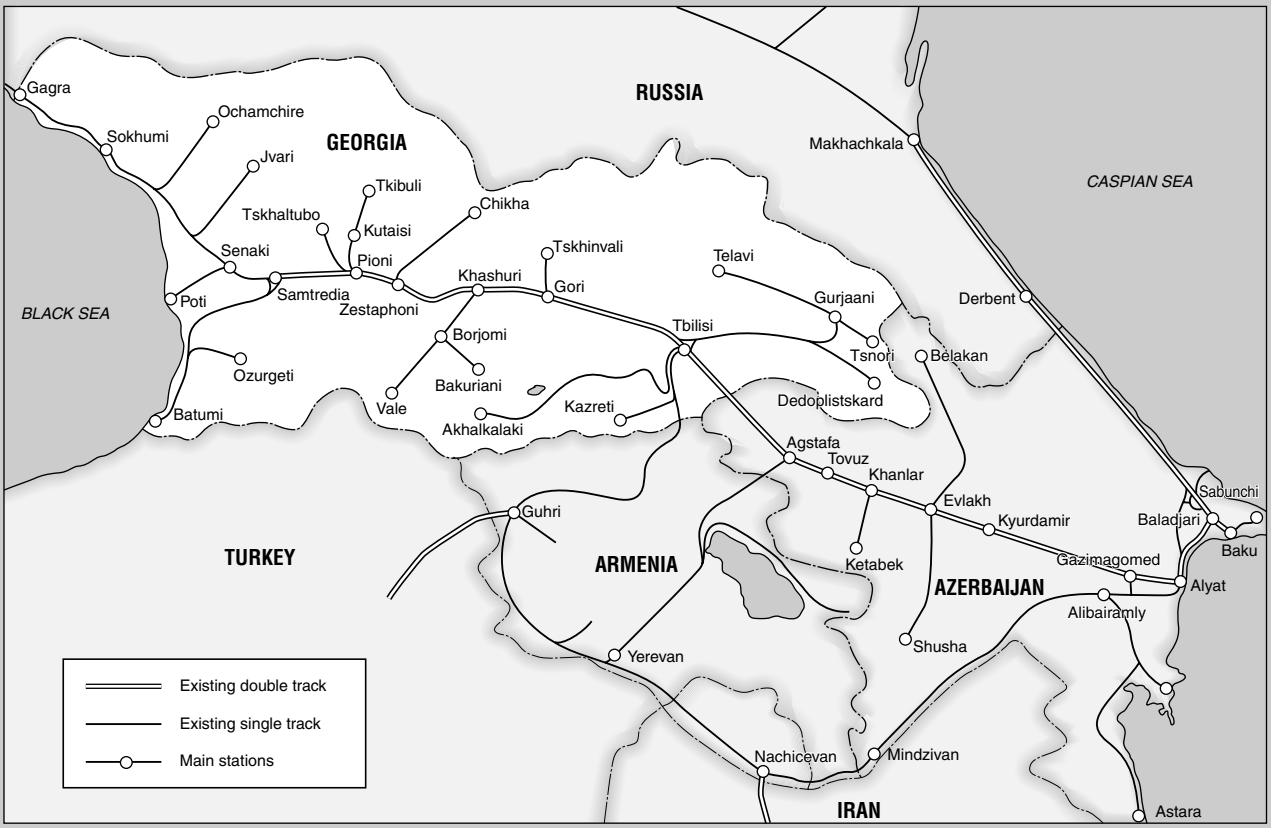
In 1883, the line was opened between Tbilisi and Baku (the capital of Azerbaijan) to carry oil from the Caspian oilfields to the Georgian port of Batumi from where it was shipped to world markets. The last major line between Georgia and Armenia was opened in 1899.

Rapid development of Georgian industry and agriculture between 1924 and 1940 was followed by construction of new branch lines throughout the Georgian regions. A connection with the Russian railway network was begun during WWII and opened in 1946 despite the war.

Completion of the network between Baku, Tbilisi, and Batumi had a positive effect on the economies of Georgia and the South Caucasus. In the 1870s, Batumi was a major exporter of wool, cotton, lumber, silk cocoons, and manganese, vividly showing the importance of the GRW to the Georgian Treasury. In addition to trade and freight, a tourist line was built in 1894 to the Borjomi Gorge, a beauty spot famed for its forests, resorts

Figure 1 Geography of Caucasus Region

Figure 2 Georgian Railway Network



(Georgian Railway)

and mineral water. The narrow-gauge line was extended in 1901 from Borjomi to Bakuriani, a winter sports resort. Another line was completed in 1915 through the famous Georgian wine-producing heartland to Kakhety.

Characteristics of GRW

Generally, the topography of Georgia presents railway engineers with difficult challenges; the 1538 km of tracks run through 45 tunnels and across 1716 large and small bridges with a total length of 40.3 km. Some lines are subject to very severe climate conditions and the Marabda–Akhalkalaki section in south Georgia crosses a pass at over 2200 m above sea level. By contrast, Poti Station is the lowest place in the network at 6 m above sea level. This complex topography requires about 5000 major engineering structures such as breakwaters, flood banks, embankment protection, snow fences, etc.

The first FERLI class steam locomotives were replaced by E and SU class steam locomotives in 1923. General Electric S-10 class electric locomotives entered service on 16 August 1932 when some lines were electrified. All GRW lines, including the Borjomi–Bakuriani narrow-gauge line, were finally electrified in November 1967.

Modern VL-10 and VL-11 class locomotives built by Tbilisi Electric Locomotive Works began operations in 1974. Negotiations are presently in progress with ADtranz of Germany to build modern high-speed locomotives for GRW.

Introduction of modern communications and signalling started in 1946 when automatic blocks, centralized signalling, and train radio came into use. Modern transport demands have seen the upgrading of communications and signalling infrastructure to international standards. For example, copper cables have already been replaced by fiber optics on some lines in west Georgia and the computer network is being expanded under the guidance of the Information-Computing Centre of the Georgian Railway. This will greatly improve the quality of railway management.

At present, GRW consists of three management departments that handle all business operations, 115 freight stations, eight locomotive depots, four wagon repair depots, 11 track branch depots, seven power substation depots, five communications centres, locomotive and carriage works, railway police offices, etc. The rolling stock includes 250 electric

Borjomi–Bakuriani narrow-gauge line (1902) (Georgian Railway)

Tsipa Tunnel (4 km, 777 m above sea level) (Georgian Railway)

locomotives, about 200 diesel locomotives, over 16,000 wagons (3478 covered, 5207 open, 1433 tankers, 769 refrigerated wagons, etc.).

The existing GWR track and rolling stock capacities can handle 60 trains each day, corresponding to 40 million tonnes of freight each year. Notwithstanding the civil unrest since Georgia's independence from the USSR in 1991 and despite economic difficulties in the transition from a socialist planned economy to a market economy, GRW has still managed to provide Georgia with nationally important freight transport services (Table 1) in stark contrast to the days of the former Soviet Union when the GRW was described as the 'Deadlock Way'.

New GRW Role

Lately, the political and economic maps of Europe and Asia have seen huge changes and one important result is the European Union (EU) programme on the New Silk Route, or TRACECA (Transport Corridor Europe–Caucasus–Asia).

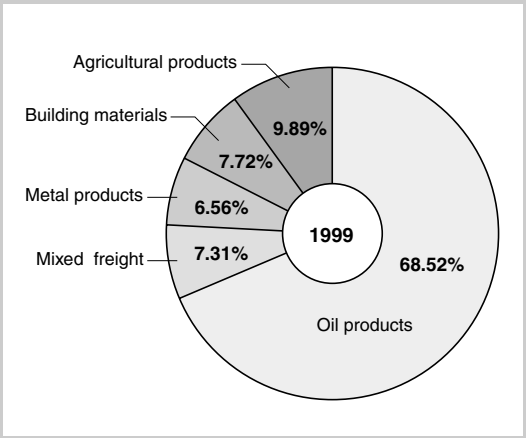
Support from the EU within the framework of the Technical Assistance for the Commonwealth of Independent States (TACIS) programme, as well as agreements between countries in central Asia and the Trans-Caucasus region, have resulted in revival of the Eurasian Transport Corridor (EATC). EATC is the shortest, safest and potentially cheapest route between Europe and Asia and is already seeing good results with continuous growth in freight traffic, especially container transport. For example, Mitsubishi Corporation is building a modern container berth at Poti to handle up to 300,000 containers each year. The political stability of Georgia and the

Table 1 Georgian Railway Statistics

Year	1985	1990	1993	1995	1996	1997	1998	1999
Route-km	1,465	1,583	1,583	1,575	1,575	1,575	1,575	1,575
Electrified route-km	1,465	1,583	1,583	1,575	1,575	1,575	1,575	1,575
Freight tonnage (thousand tonne)	63,881	53,861	7,966	4,656	4,784	7,231	8,494	9,492
Passenger-km (million)	4,214	2,497	1,003	371	380	294	397	355
No. of electric locomotives	317	338	297	237	227	225	224	218
No. of diesel locomotives	209	233	219	202	185	182	182	175
Total No. of employees	34,753	32,919	25,077	18,420	18,407	17,773	16,495	15,814
Employees in railway operations	22,995	21,354	18,872	13,752	13,505	13,438	12,790	12,404

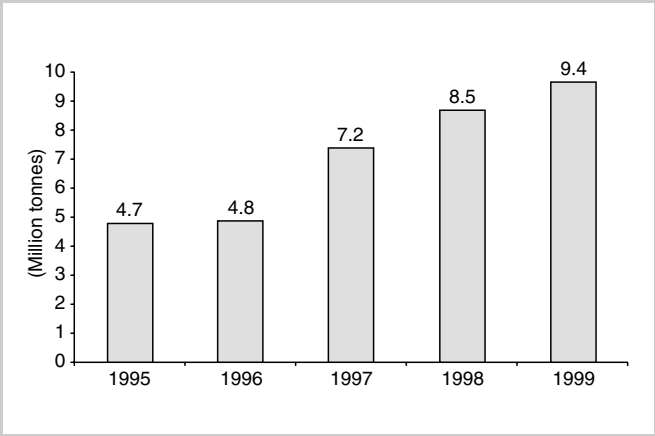
(Georgian Railway)

Figure 3 Freight Cargo in 1999



(Georgian Railway)

Figure 4 Freight Cargo Trend



(Georgian Railway)

assistance of various European programmes have resulted in the EATC drawing traffic from other transport corridors.

The conversion of GRW in 1998 to a limited company handling through freight between Asia and Europe only became possible after the breakup of the USSR, and the TRACECA project is a good example of this change. Another example is the containerized *Logistic Express*, which started operations in 1996 between Georgia and Azerbaijan and fully meets the needs of modern trans-shipment.

The most effective way of shipping freight between Poti (in Georgia) and Tashkent (in Uzbekistan) would be to run regular container services on the Tashkent–Chardzhou–Ashkhabad–Turkmenbashi (Krasnovodsk)–Baku–Tbilisi–Poti route through Uzbekistan, Turkmenistan, Azerbaijan to Georgia. On 25 June 1997, the 3rd Pan-European Transport Conference in Helsinki recognized the corridor across Georgia as an official part of the Pan-European Transport Corridors and this recognition will help attract freight to TRACECA.

It is also most important for the GRW network to have tight links with ferries across the Black Sea. A joint Georgian-Ukraine company called Eurasian Transport Co., Ltd. has already been established for this purpose and regular railway ferries between Poti and Ilichevsk (Ukraine), and Batumi and Ilichevsk are helping open the two countries to the rest of the world.

Some practical achievements of TRACECA are the Poti–Varna (Bulgaria), Poti–Burgas (Bulgaria)–Novorossiysk (Russian Federation), Poti–Odessa (Ukraine), Batumi–Varna (Bulgaria) and Poti–Sochi (Russian Federation) ferry services. Container services are also running between Piraeus (Greece) and Poti, Gioia Tauro (Italy) and Poti, Istanbul and Poti, and Antwerp (Belgium) and Poti.

Crude oil tankers en route through Georgia (Georgian Railway)

Work is underway to establish railway ferry services between Poti, Ilichevsk and Varna, and Batumi, Ilichevsk and Varna (1520 km), and Poti and Constanta (Romania 1435 km)—a railway ferry terminal has been constructed at Poti for these services.

In the very near future, construction of a new international line is planned between Tbilisi and Kars (Turkey) and this will help revive the economy of southern Georgia. Proper transport flows require development of multidirectional corridors and the governments of Turkey and Georgia consider this project to be one of the most important for the long-term interests of the entire region near the Black Sea, Caucasus and Central Asia. Geopolitical conditions are a very important part of railway passage and the great traditions and unique cultural-social conditions of Georgia can play a role in this process of reviving a New Silk Road. Establishment of effective transport links between Europe and Asia requires extensive research into forecasting regional transport demand; establishing multimodal transport systems; optimizing infrastructure in Georgia and other TRACECA members; arranging efficient, fast and transparent customs procedures; establishing uniform legislation, etc.

Some of these requirements have already been completed, such as the *Logistic Express* container train that started operations in November 1996 between Poti and Baku.

Integration into Eurasian Rail Network

A main task of GRW is to integrate the Eurasian transport networks. Georgia already has good relations with the EU and Central Asia and there is great interest in linking TRACECA with European Transport Corridors I, VII, VIII, and IX. Both political and practical steps are being taken towards this end. For example, Uzbekistan, Turkmenistan, Azerbaijan and Georgia have signed agreements on freight transport, and Ukraine, Georgia and Azerbaijan have reached an agreement on transit passage.

GRW is also developing infrastructure for containerized and bulk freight in accordance with international requirements. Terminals at Batumi, Poti and Tbilisi have been modernized for 20- and 40-foot containers and the yards can handle up to 10,000 units per month.

In general, the system specifications match the European requirements for intermodal transportation thanks to the EU assistance with the TRACECA programme. The eight initial participants of Kazakhstan, Uzbekistan, Turkmenistan, Kirghizia, Tadjikistan, Georgia, Azerbaijan, and Armenia have recently been joined by Ukraine, Mongolia and Moldova.

The main purposes of the TRACECA programme are as follows:

- Support political and economic independence throughout the region and accelerate integration into the European and world markets using railways as an alternative to road transport
- Strengthen regional cooperation
- Use the TACIS programme of the EU as a catalyst to attract support from international financial institutions and private investors

Strategic freight including oil from the Caspian and Turkmenistan oilfields, cotton from Uzbekistan, grain, etc., is already being carried, and 1.5-million-tonne grain silos are being constructed at Poti, along with a terminal for 200,000 containers and large warehouses.

April 1999 marked the opening of the Poti/Batumi–Ilichevsk–Varna railway ferry,

Tbilisi passenger station (Georgian Railway)

Tbilisi passenger station concourse (Georgian Railway)

giving added urgency to the need for better infrastructure as part of the direct link between Trans European Network corridor IX and Georgia. Furthermore, this ferry service is an extension of corridors IV, VII and VIII to Poti, establishing a link with the industrialized centres of Western and Central Europe. As a result, there is a serious and urgent need to bring the GWR management and marketing infrastructure into line with the European system. The urgency is also greater because Georgia has become a member of the European Council.

As part of this integration, the European Bank for Reconstruction and Development (EBRD) has provided a US$6 million grant to rehabilitate the GRW signalling and communications systems with optical fiber technology.

Now that the Tbilisi–Kars line connecting Georgia with Turkey has been built, China will be able to connect directly with the TRACECA route when construction of a line to the Kirghizia border is completed, cutting the journey distance from Asia to Europe by 50%.

GRW Investment

To improve GWR freight services, studies on marketing strategy are required, especially benchmarking, analysis of economics, new services, organizational model, budget, target market, inventory management, etc.

After the state-owned GRW became a limited company in 1998, it entered a phase of serious restructuring as outlined in the 1999 Georgia Development Plan. This restructuring offers the new company a chance to become more efficient in a market-driven economy by creating a market-oriented freight management and marketing infrastructure.

New organizational structures are being created and new railway legislation will soon be presented to the Georgian parliament based on research by the UK consulting engineers GIBB of the LAWGIBB Group and financed by the TACIS programme and World Bank.

The final research report noted that GWR still requires massive investment in infrastructure as well as modernization of its management structure.

The report particularly noted the need for reorganization of passenger operations so that international trains stop only at major stations, thereby reducing journey times. As part of the renewal, long-distance passenger transport will be restructured, carriages and rolling stock will be updated, telephone services will be added to passenger trains, and stations will be renovated. The consulting engineers also recommended rationalizing local services and closing some stations, but such closures will likely be minimized in view of government policy.

Although GWR freight traffic has already achieved a degree of success, some modernization of cargo handling systems is required and necessary equipment will be added to serve both mixed and bulk freight trains. The container yards at Poti and Tbilisi are being expanded and rebuilt due to the growth in container traffic. All these works will be financed from GWR's operating revenues. Rehabilitation of signalling systems will be financed using credits worth US$20 million from the EBRD, grants of US$5 million from the EU, and local funds. These advanced signalling systems will help increase train speed and service reliability.

The EU is also providing US$1.2 million towards infrastructure for the Georgian–Azerbaijan railway.

A joint venture on TALGO automatic gauge-changing axles is planned in the near future at the Tbilisi Electric Locomotive Works with the Spanish company Patentes Talgo SA. The EU has also allocated US$0.7 million to support rehabilitation of rolling stock and US$ 1.5 million for establishing international timetables and tariffs.

In the last year or two, the Georgian Ministry of Transport has organized a series of international conferences and working meetings to promote integration of Georgia into the international transport network, and in particular to strengthen railway cooperation. ■

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