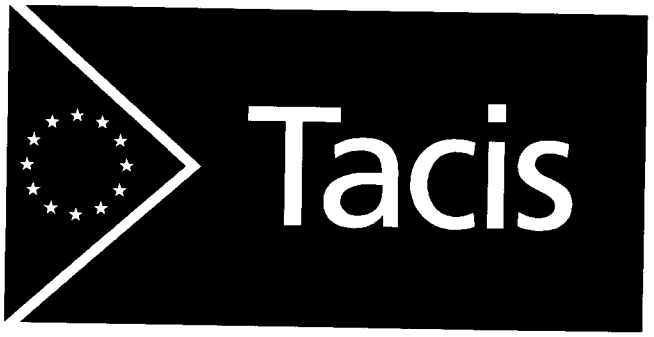


Feasibility Study of New Terminal Facilities in the Georgian Ports

Phase 2 Report

Vol. II - Traffic Forecast

February 1998

Volume II

Traffic Forecast

Table of Contents

1 Analysis of historical data

Traffic forecasts in i.e. European countries start with an analysis of historical data. In general, economic development and the resulting freight volume could be assumed to change in the future with structural continuity. For the Ports of Poti and Batumi historical data indicate a serious structural change with respect to volume and structure of cargo.

Like many ports in the former Soviet Union the cargo throughput of the port of Poti declined seriously. In the year 1989 the volume was 4.5 million tons. In 1992 the throughput was only 1.1 million tons. The increase in the years following 1993 up to 1.6 million tons in the year 1995 was mainly due to imports by the World Food Programme.

The container traffic in the port of Poti is characterised by remarkable growth rates. The throughput of cargo rose from 23,000 tons in 1992 to 90,000 tons in 1995.

The structure of goods handled through the port of Poti consisted in the year 1995 of 47% of bulk cargo, 35% of oil products and 12% of general cargo. The share of container throughput was about 5%.

The total throughput of the Port of Batumi declined from 3 million tons of cargo in the year 1990 to 1.4 million tons in 1995. Containers are handled only sporadically in Batumi. The structure of goods handled through the port of Batumi consisted in the year 1995 of 40% of bulk cargo, 46% of oil products and 14% of general cargo.

In detail the following cargoes with respect to the kind of commodity are handled through the ports of Poti and Batumi in the year 1995 (Source: Tacis "Forwarding - Multimodal Transports Systems" Draft Final Report February 1997). To verify these data the port management of Poti and Batumi was contacted. The data received by the project team differs in some points from the tables below:

1995 Port of Poti

commodity	inbound cargo tons	outbound cargo tons	total tons	total %
bulk	**697,000**	**145,000**	**842,000**	47%
coal	4,000		4,000	
grain	641,000		641,000	
ore, metal raw material	52,000	89,000	141,000	
ferrous metals		36,000	36,000	
others		20,000	20,000	
oil products	**476,000**	**146,000**	**622,000**	35%
general cargo	**138,000**	**81,000**	**219,000**	12%
foodstuff	120,000		120,000	
fertilizers/chemicals		23,000	23,000	
build. mat./equipment	9,000	5,000	14,000	
ferrous metals		48,000	48,000	
others	9,000	5,000	14,000	
containers	**78,000**	**17,000**	**95,000**	5%
total	1,389,000	389,000	1,778,000	100%

1995 Port of Batumi

commodity	inbound cargo tons	outbound cargo tons	total tons	total %
bulk	**533,000**	**18,000**	**551,000**	40%
coal	4,000		4,000	
grain	529,000		529,000	
ore, metal raw material		18,000	18,000	
ferrous metals				
other				
oil products	**238,000**	**404,000**	**642,000**	46%
general cargo	**122,000**	**68,000**	**190,000**	14%
foodstuff	115,000	20,000	135,000	
fertilizers/chemicals				
build. mat./equipment	1,000		1,000	
ferrous metals		46,000	46,000	
others	6,000	2,000	8,000	
containers				
total	893,000	490,000	1,383,000	100%

For the port of Batumi the import of 39 containers (in TEU) and 1 TEU in export was recorded. In an interview at the port of Varna it was mentioned that a Ro/Ro-ship since April 1997 and a second ship at end of the year 1997 is and respectively will go to Batumi. The transport of containers is possible. For the future, the container transport to and from Batumi has to be taken into account.

Other differences in data for the ports are due to the missing systematic collection of data and the establishment of a standardised data base. For every request of information separate calculations have to be executed in the ports. Therefore differences may occur.

In summary, the historical development of the ports of Poti and Batumi shows a sharp decline in turnover but also signs of recovery. It is an achievement of the port managements who kept the port running even in the days of low throughput and an unknown future. With the development of the economies of the TRACECA-countries the ports will regain their former importance. However, the structure of handled cargo will differ significantly in comparison to FSU times.

2 Economic evaluation of Georgia

2.1 General overview

From a world wide view Georgia, lying at the eastern end of the Black Sea just to the south of the great barrier formed by the Caucasus Mountains, belongs to the low income economies. The population totals about 5,4 million, the area covers nearly 70.000 square kilometres. In 1995 the population density reached 78 inhabitants per square kilometre, the lowest density of the Caucasian republics.

In 1995 the GNP per capita was estimated to reach 440 US-$; the purchasing power parity for the same year totalled about 550 US-$. Thus the standard of living in Georgia is comparable to Angola, Pakistan or Zambia.

Civil conflicts and political turmoil followed Georgia's declaration of independence from the Soviet Union in April 1991. The ensuing breakdown in law and order undermined the governments authority and coupled with accommodative domestic financial policies, and severe economic shocks stemming from the break-up of the Soviet Union led to one of the worst cases of hyperinflation on record.

Georgia was afflicted by a permanent energy crisis, owing to the fact that the country depended heavily on neighbouring countries for most of its energy needs. Supplies of natural gas were suspended in 1994 owing to the armed conflicts in the secessionist regions of the country and to lack of funds. There was a widespread rationing of power and water supplies. In February 1996 much of Georgia, including Tbilisi, was without electricity, owing to a 50% decrease in output from the capital's thermal power station.

By early 1994, Georgia was at the brink of collapse. Output had dropped precipitously; hyperinflation had eroded public finances and incomes. Faced with serious shortages of food and supplies, the country had to rely on foreign grants and loans to meet its most basic needs. In mid 1994, the authorities took steps to address these problems and put Georgia back on a sustainable growth path. Their bold reform efforts centred around a stabilisation program predicated on the pursuit of tight financial policies and the liberalisation of prices, trade, and the exchange system. In addition, the early implementation of structural reforms was expected to facilitate the development of a vigorous private sector. During 1995, Georgia began to repeat the benefits of the reform program launched in 1994.

Following four years of output collapse, real GDP increased again in 1996, led by agriculture, trade transport and construction. The exchange rate stabilised and inflation declined. The introduction of the new currency in September resulted in a reversal of the rampant currency substitution that had characterised the earlier coupon era. This, together with continued financial support from the international community, allowed the central bank to boost its international reserves considerably. Substantial progress was made in normalising relations with external creditors, through the conclusion or active negotiations of bilateral debt rescheduling agreements with several states of the former Soviet Union.

Georgia has made substantial progress on the structural front, but needs to accelerate reforms in several areas to avoid compromising growth and stabilisation prospects. The trade and payments system is essentially free of restriction; privatisation has proceeded rapidly; and considerable progress has been achieved in establishing a market oriented legal framework.

Relatively slow progress in restructuring enterprises and the energy sector and in creating an efficient land market - which allows land to be sold and pledged as collateral however - has created bottlenecks for further growth.

With improved political stability and the restoration of law and order, low wages, and liberal foreign investment law, Georgia has begun to create a favourable climate for investment. Notwithstanding the initial success of its reform program, however, Georgia's economy will require further progress in stabilisation and the continued steadfast implementation of structural reforms to consolidate its hard-won gains since 1994 and pave the way for sustained growth. External assistance will continue to be essential to ensure the sustainability of reforms over the next few years.

2.2 The structure of the economy

Before the breakdown Georgia used to have a well developed industry alongside a diversified agriculture. It had stood as a region of waterpower, mineral extraction, and developing machine production. A hundred or more different products were exported all over the world.

In the Soviet period Georgian enjoyed a relatively high standard by living. The benefits of state-sponsored industrialisation were helped by a flourishing second economy. In the late 1980's, however, it became an axiom among Georgian nationalists that Georgia was being economically exploited by the Soviet authorities. While it was true that the imposition of a centrally planned economy had served to make Georgia extremely dependent on Moscow, and had led to the siting of a series of large, heavy industrial enterprises in the country, with little regard for economic rationality, however, Georgia had benefited considerably from the supply of cheap energy and other raw materials.

2.2.1 Resources

The interior of Georgia has coal deposits notably at Tkvarcheli and Tkibuli, and a variety of other resources ranging from peat to marble. The manganese deposits of Chiatura rival those of India, Brazil and Ghana in quantity and quality.

The waterpower resources are considerable. The deepest and most powerful rivers are the Rioni and its tributaries, The Inguri, Kodori and Bzyb. Such western rivers account for three-quarters of total potential, with eastern Kura, Aragvi; Alazani and Khrami accounting for the rest.

Georgia produced a wide range of minerals in the Soviet period, but not in particularly large quantities, and output steadily decline in the post-war period Chiatura was a major source of manganese, but reserves were nearing exhaustion in the mid 1990. Production in the Tkvarcheli coal mines in Abkhavia were affected by the civil war in the region. Elsewhere, construction materials, such as marble, were produced to be exported all over the former USSR. Georgia also produced small amounts of petroleum and natural gas in the country. In 1994 - 1996 prospecting by foreign companies, especially in the west of the country, suggested that there were significant unexploded reserves, some offshore.

2.2.2 Industry

The former fuel power foundation developed in Georgia had served as the base for industrialisation. Dozens of hydroelectric stations, including the V.I. Lenin Zemo-Avchala, Rioni and Sukhumi plants, as well as many stations powered by coal and natural gas, were constructed in the sixtieth and seventieth of this century.

The coal industry was one of the oldest mineral extraction, centred on the Tkibuli mines. Deposits in Tkvarcheli and Akhaltsikhe are of importance.

Manganese and non-metallic minerals, ranging from talc to marble, used to supply various industries throughout the former Soviet Union.

The Rustavi metallurgical plant, located near the capital, produced its first steel in 1956. Its laminated sheet iron and seamless pipe products were used throughout the former Soviet Union, and during the 1970's Georgia used to produce cast and sheet iron. Zestafoni was the second major metallurgical centre.

The Georgian machine-building industry had been able to turn out a diverse range of products, from electric railway locomotives, heavy vehicles, and earth-moving equipment to lathes and precision instruments. Specialised products included tea gathering machines and anti-hail devices for the plantation. The machine industry was centred in the major cities.

The chemical industry of Georgia produced mineral fertilisers, synthetic materials and fibres and pharmaceutical products. The building industry, using local raw materials, used to supply the economy with cement, slate, and many prefabricated reinforced-concrete structures and parts.

Commonly used manufactured goods in former times were imported. In the seventieth a ramified system of light industries had been set up in major consumption area, which produced cotton, wool, and silk fabrics, as well as items of clothing.

Products of the food industries included tea, wine, and tobacco, as well as canned foods. Georgia lead the former Soviet Union in labelled table and dessert wines. Cognac and Champagne was also well developed. Other food industry activities included dairy products.

Despite the relative importance of agriculture in the Georgian economy, in 1985 industrial production account for 43% of Georgian NMP. The food processing industry and light industry accounted for 50-60% of industrial output, but heavy industry was important, too. The steel pipes from the giant Rustavi Metallurgical Factor and Kamaz lorries from the Kutaisi Automobile Factors were often presented as the main achievements of Soviet industrialisation in Georgia. There was also a significant defence sector, such as the Tbilisi Sukhoi plant. Industry was concentrated in three main areas: Tbilisi-Rustavi (ferrous metallurgy, engineering, constructing materials, light industry and food processing), Zestafoni-Chiatura (non-ferrous metallurgy, electrical engineering); and Kutaisi-Tkibuli (engineering, vehicle production and light industry).In late 1995 the Georgian government estimated that one third of the country's enterprises had been idle since the beginning of the year and that production in the others was running at a very low level. However, in 1995 growth in output was reportedly recorded in the engineering, metallurgical, light and chemical industries.

2.2.3 Agriculture

A distinctive feature of the Georgian economy was and still is that agriculture land is both in short supply and difficult to work. The relative proportion of arable is less than that in the other TRACECA-states. The importance of production of labour intensive crops, such as tea and citrus fruits, was a compensatory factor, however. A considerable portion of Georgia's agriculture output came from private garden plots. Mineral fertilisers and herbicides, used in agricultural production, came from Georgia, too.

Tea plantations covered about 65.000 hectares. Citrus trees occupied about 10.000 hectares. The production of wine used to be one of the oldest and most important branches of Georgian agriculture. Orchards once occupied more than 300.000 acres throughout the country. Sugar beets and tobacco were significant among other commercial crops. Essential oils supplied the perfume industry. Grains were important but quantities are insufficient for the country's needs and have still to be imported. Growing of vegetables and melons developed in the suburbs. Livestock, sheep and goats, cattle and pigs are raised. Poultry, bees, and silk worms are also significant.

In 1985 agriculture and livestock accounted for 31% of NMP. The dissolution of the USSR destroyed the markets for Georgian tea, fruit and wine. Subsequently, the shortage of credits for fertiliser, the high price of fuel and political upheaval led to decrease in production. By 1992 about 55% of cultivated land had been transferred to private ownership. Few Georgian agricultural products could be regarded as competitive, compared with those which flooded the Russian and other former Soviet markets.

2.2.4 Transportation

Georgia has a dense transportation system.

Once more than 60 mil tons of freight used to be carried annually by rail, but in the mountainous regions road transport remained the principal means of moving freight. The road network is about 21.000 kilometres, three-quartets of which is hard surfaced. The principal road in Georgia, the "Magisterial" runs from the Azeri border through Tbilisi to the Black Sea (Sukhumi); there is a trifurcating system at Samtredia, close to the Black Sea, where two roads provide access to Poti and Batumi. The roads run along the Valley between the two ranges of the Caucasus. The pavement is acceptable. The secondary roads, especially the road to Batumi, are in poor conditions.

The railway comprises 1.500 km. The line connecting the Azeri network to the Georgian ports is of major interest for freight movements between Central Asia and Europe. The lines goes from Gardabani (border to Azerbaijan) to Samtredia through Tbilisi. At Samtredia, two branches connect respectively Batumi and Poti. The distances are 401 km between Gardabani and Batumi and 363 km between Gardabani and Poti. Both links are double track from Gardabani to Samtredia (295) and from there single track to Batumi (106 km) and to Poti (68 km). The entire link is electrified. The condition is partly poor. In October 1995 the international consortium of petroleum companies (grouped in the Azerbaijani international operating company - AIOC) that was to develop Azerbaijan's petroleum reserves announced that early petroleum production, would be exported through Georgia, as well as Russia, to a new terminal an the Black Sea. In 1996 Georgia was granted a US $ 60 mil loan from the World Bank to upgrade its section of the pipeline. Tenders for this work were issued in mid 1996.

2.2.5 Future Development of the Economy and Foreign Trade

The previous Chapter shows that Georgia once had a good economic growth potential. Its sources of strength were high proportion of a well-educated labour force, a long tradition of entrepreneurship and substantial private sector activities in agriculture, a diversified industry, natural resources and relatively dense transportation system.

Economic shocks since Georgia's independence in 1991 had caused economic activity to decline to less than third of its level in 1990.

In 1994, when political stability improved substantial economic progress began, as the Government focused its attention on rebuilding Georgia's economy. The stabilisation programme followed the principles of IMF. As a consequence, a strong rebound in economic activity is expected in the next years. Restoration of economic growth will depend on recovery of agriculture; stronger private activity, foreign investment in agriculture, energy, and transportation, improved availability of basic inputs, especially natural gas and petroleum products. Agricultural output has already started to recover in response to price liberalisation, elimination of the state order system, and liberalisation of trade and exchange system. Industrial output is expected to benefit from the improved availability of inputs including energy, but an enduring recovery will require extensive restructuring. Investment is projected to recover from less than 3 percent of GDP in 1995 to about 11% in 1998. Government investment will focus mainly on the maintenance and development of infrastructure, especially in the areas of energy, agriculture, and transportation. The program envisages an expansion of non-government investment in the agriculture, service, and export sectors. Average annual growth rate till 2012 is expected to reach 2-3%.

Foreign trade is expected to become a key factor in the recovery of the Georgian economy. Due to the removal of trade restrictions a recovery of exports is to be anticipated. Imports will be fostered by the country's needs of raw materials, equipment and capital goods that have been lacking in recent years.

3 The hinterland of the Georgian ports

The hinterland of ports usually is defined by regions, where the cargo, which is handled in the ports comes from or where it goes to.

Port statistics concerning cargo turnover in Poti and Batumi indicate, that the hinterland of these ports mainly consists of Georgia, Armenia, Azerbaijan. But there are also port related traffic flows from/to the Central Asian States Turkmenistan, Uzbekistan, Tajikistan Kirghizstan, and Kazakhstan. That is why the hinterland of Poti and Batumi can be defined by these states; nevertheless, the Caucasian States are the most dominating states in the hinterland of Poti and Batumi.

3.1 Armenia

3.1.1 General overview

Armenia belongs to the group of low income economies in the world. In 1995 GNP per capita totalled 730 US-$; purchasing power parity was estimated in the same year to reach 840 US-$. The surface area is about 30.000 square kilometres which is populated by 3,8 million inhabitants. Occupying a landlocked area just south of the great mountain range of the Caucasus, and fronting the north-western extremity of Asia, Armenia was the smallest of the former republics of the Soviet Union. To the north and east, Armenia is bounded by Georgia and Azerbaijan, while its neighbours to the west and south-east are, respectively Turkey and Iran.

Armenia is a mountaineers country. Its average altitude is 1.800 meters above sea level. There are no lowlands: half the territory lies at altitudes of 1.100 - 2.000.

Although market-oriented reforms were initiated in the beginning of 1992, further progress was delayed due to the conflict in Nagorno-Karabakh and the effective trade blockade imposed on the country. The country's reform efforts regained momentum in 1994 with the support of the IMF. Substantial progress has been made since then both in the area of structural reforms and in macroeconomics stabilisation. In 1996 the private share in GDP was estimated 50 percent on account of sharp contraction in the state sector and rapid privatisation in trade, services and agriculture. New private enterprises have emerged rapidly, although their development has been hampered by an incomplete legal framework, shortages of energy and other inputs and trade barriers imposed by Armenia's neighbours. Almost all prices have been liberalised; some prices e.g. for bread, urban transport, electricity, telephone etc. remain administered. Armenia has progressively removed most of the regulatory obstacles to external trade. Import and export licences are required only for health, security and environmental reasons. There are no export taxes for enterprises. All bilateral clearing arrangements that exist between Armenia and other FSU countries have been eliminated. Armenia is committed to early WTO accession. Laws, regulating domestic and foreign investment, are existing.

3.1.2 The structure of economy

Before the breakdown Armenia was an industrial country with an important agricultural element. Formerly a supplier of copper, certain farm products, and cognac, Armenia became in the seventies and eighties a major supplier of chemicals, non-ferrous metals, machines, equipment, precision instruments, textiles and clothing, wines, cognacs, and canned goods.

3.1.2.1 Resources

Armenia has not the extensive energy resources of neighbouring Azerbaijan, but it possesses estimated reserves of 100 mil metric tons of coal, and a possible 6.000 mil barrels of petroleum and about 170.000 mil cu m of natural gas, although it is not yet clear, weather any of these are commercially viable for extraction. In addition, there are reserves of tuff (a building stone) molybdenum, lead, zinc, gold and silver, some of which are extracted on small scale. There are large deposits of mineral salt, calcium oxide and carbon.

At its initial stage of industrialisation, the creation of a power base utilisation the hydraulic potential of mountain streams was of decisive importance: production of electricity was combined with the building of irrigation works and water supply systems for industries and cities.

3.1.2.2 Industry

Mechanical engineering, machine tools and electrical power machinery, electronics, and the chemical and mining industries held a prominent place in the country's heavy industry, but light and food industries were also well advanced. Yerevan, Leninakan, and Kirovakan were machine-building cities. The centres of the chemical industries were Yerevan, Kirovakan, and Alaverdi.

Non-ferrous metallurgy - in Gugark and Zangezur - included the mining and dressing of copper, molybdenum, and other ores, the smelting of copper; and the extraction of rare metals.

The food industry processed various farm products. The most advanced branches were involved in the primary processing of grapes and production of high-quality cognacs, wines, canned fruits, and vegetables for export. Light industry was specialised in the production of woollen, silk, and cotton fabrics, knitted goods and clothes, carpets and footwear. Yerevan was the foremost industrial centre. Other important centres were developed in the north, where Leninakan and Kirovakan were major industrial centres.

The collapse of the interdependent Soviet economy adversely effected Armenia's industrial and construction sectors. However, it was the energy blockade that was the prime cause of the decline in industrial output in the early 1990's. The sector's contribution to the Net Material Product decreased by almost 50% in 1992 alone, with many of Armenia's 450 factories inoperative, owing to lack of power. In 1993 the sector made up about 30% of Armenia's NMP, compared with 46% in the previous year. In 1994 industrial production rose approximately at the same rate as GDP. Apart from the recovery of inputs and the restoration of old markets and discovery of new ones. Armenia's industry had to overcome other obstacles before it could function effectively in competitive world markets. Privatisation proceeded slower than anticipated, with about one half of the enterprises forseen for privatisation in 1995 still unsold and added to the target for 1996. In March 1996 the government approved a two year privatisation programme, intended to increase economic activity. The average annual percentage change of GDP till 2012 is estimated to reach 1,5%.

3.1.2.3 Agriculture

Agriculture in Armenia has to contend with many difficulties, because arable land is scarce. The extensive irrigated lands yield high-quality grapes and fruits. Tobacco and potatoes are raised in the lower parts of the mountain belt.

The leading branch of agriculture is viticulture. Among the many orchard crops, peaches and apricots are commonest. Apples and cherries, mazzards and pears are cultivated. Walnuts, hazelnuts, almonds, pomegranates, and figs are also produced. Vegetables are grown, quality tobacco is widely cultivated. Animal husbandry, whose main brands are the raising of beef, cattle and sheep, plays a major role.

In contrast to the industrial sector, the privatisation of agricultural land proceeded rapidly from 1991; by late 1992 about 90% of arable land was in private ownership. There was an immediate impact on production levels, which rose by a total of 15% in 1991. Grain, vegetable, fruit and fodder production all registered significant increases. Nevertheless, there were still significant obstacles on the path to agricultural development. Many farmers, though they owned their land, did not have adequate access to credit, equipment, fuel, water, fertilisers or pesticides. Nor were they able to find a market for their products.

3.1.2.4 Transportation

Mountains are a serious impediment to the construction of land transport routes of any kind, although distances between towns and regions are not great. A railway line, leading to Tbilisi in the north and Baku in the east, runs through the northern, western and southern region of Armenia. Yerevan is linked with the Sevan basin by a line running along the Razdan River. Clustered along the rail routes are major industrial industries.

The railways of Armenia consist of around 800 route-kilometres. The connection with Tbilisi is single track. A small section between Giury and Akhurian is diesel operated. From/to Bagrtashen (157 km) the line is single track and electrified. Due to political disagreement with neighbouring countries (Turkey and Azerbaijan), this is the only railway in operation to the port of Poti and Batumi (Yerevan-Giumri-Airun-Bagratashen-Georgia). From Poti and Batumi to Armenia, shipments are forwarded both by road and rail.

The blockade imposed by Azerbaijan and Turkey had a powerful negative impact on trade. In 1994 petroleum, gas and foods accounted for more than 80% of imports. Gas imports from Turkmenistan explain that country's position as the main destination of exports.

In the face of the blockades and the continuing instability affecting routes through Georgia and the North Caucasus, Iran became an increasingly important trading partner in the 1990s. The construction of a permanent road bridge linking Armenia and Iran would facilitate the further development of trade between these countries.

3.2 Azerbaijan

3.2.1 General overview

In 1995 Azerbaijan belonged to the group of the low income countries in the world. With a surface area of 1.026 thousands square kilometres and a population of 7.1 million the GNP per capita was estimated to reach 480 USD in 1995; this figure lay between that of Mauritania (460 USD) and Zimbabwe (540 USD) in the same year.

Since 1990 Azerbaijan's GDP has declined continuously. Total output, as measured by GDP - index fell from 100 in 1990 to 39 in 1995, with strong reductions in transport and communication, in construction as well as in industry and agriculture. The decline in output has mainly been due to continuing disruption of trade links among FSU Republics, reduced oil production resulting from depletion of existing fields, and the dislocation resulting from Nagorni Karabakh conflict. Real GDP started to grow again in 1996. Economic activities appeared to be increasing especially in the informal sector and the emerging private sector. The average annual percentage change of GDP till 2012 is estimated to reach 3,5%.

3.2.2 The structure of the economy

3.2.2.1 Resources

At the turn of the 20th century Azerbaijan was the world's leading petroleum producer and it was also the birthplace of the oil-refining industry.

In the mid 1990 three major Caspian oil-fields were believed to contain 4.000 mil barrels of recoverable reserves. Between 1990 and 1994 annual crude petroleum production declined from 12,5 mil metric tons to 9,6 mil tons. However, recent discoveries in the Caspian Sea made the Azeri petroleum sector of great potential importance not only to the national economy, but also to the world market. In mid 1996 Azerbaijan's need to receive petro-dollars in order to rebuild its crumbling economy was urgent. If exploration was successful, it was estimated that Azerbaijan would manage to export up to 30 mil metric tons of crude petroleum per year from 2000.

Azerbaijan also has other natural resources, including gas, iodo-bromide waters, lead, zinc, iron, and copper ores, nepheline syenites utilised in the production of aluminium, common salt, and a great variety of building materials, including marl, limestone, and marble.

3.2.2.2 Industry

Azerbaijan once had a diversified industrial base, with heavy industry and its leading branches -power, manufacturing, and chemicals - predominating. Branches of the processing industry, producing mineral fertilisers, gasoline, and kerosene, herbicides, industrial oils, synthetic rubber, plastics, etc. were well developed. Sumgait had emerged as the major centre of this industry, as well as of ferrous metallurgy, Azerbaijan manufactured equipment for the oil and gas industry, electrical equipment of all kinds, and many appliances and instruments. Some of these goods were exported to other countries. This type of industry was located mostly in Baku, Kirovabad and Mingechaur.

Light industrial manufactures included cotton and woollen textiles, knitwear, household items, footwear and other consumer goods. The cities of Sheki, Stepanakert, Kirovabad, Mingechaur, and Baku are the main centres of this industry.

3.2.2.3 Agriculture

Arable land in Azerbaijan constitutes only 7 percent of the total. Raw cotton is the leading agricultural product. Other important products are grapes, winter wheat, rice, barley, tea, citrus fruits and silk. In 1996 much of the arable land was either under Armenian control or dangerously close to the disputed zone. Like industry, agricultural production decreased in line with overall economic decline. The 1995 grain harvest, principally wheat, was projected at 950.000 metric tons, representing the latest in series of gradual annual declines since 1990, when production had been over 1,4 mil tons. The lack of, and therefore increase in price s for, fertilisers and equipment, most of which came from Russia and Uzbekistan, was a contributory factor in the declining agricultural output. Agricultural reforms generally focused on leasing land to farms than outright sales.

3.2.2.4 Transport

Most of the rivers of Azerbaijan are not navigable, and most freight - including that sent out of the country - is carried by rail. Considerable portions of the rail network are electrified, and total track mileage is about 1.700 km. The major railway lines go through the Kura Valley and connect Baku with Tbilisi and Batumi and Poti in Georgia. The link between Baku and Tbilisi is double track and electrified.

Motor transport is used extensively for both freight and passengers within the republic. The total length of highways has reached 13.400 miles. Highways connect various parts of the republic and are often the only means of land communication between some of the remote mountain districts and the administrative enters and large cities. A ferry link connects Baku with Turkmenbashi in Turkmenistan. Baku is also linked with pipelines through Russia and Georgia to the Black Sea. The strategic question was weather the thousands of millions of barrels of petroleum that lay beneath the Caspian Sea would be pumped north, through Russia, or through Georgia, Armenia and Turkey. A northern pipeline would maintain the link between the new nations bordering the Caspian Sea, and their vast petroleum reserves, and the Russian Federation. A southern pipeline would link the Caspian region with Turkey, allowing the petroleum wealth of the former USSR to be exported, through a country belonging to the NATO, to a Mediterranean port.

Following the outbreak of Conflict in Chechnya, Grozny was considered too unstable a location for a pipeline. Consequently, it was thought that it might be better to pump the petroleum south and west. The early petroleum would go through Georgia to the Black Sea in an existing pipeline, later shipments would go through a new pipeline via Georgia and Turkey to the Mediterranean port of Ceyhan. In October 1995 the AIOC reached a compromise agreement to pipe early Azeri petroleum through two routes, a northern one through Russia to the Black Sea, and another one through Georgia and Turkey. It was hoped that this agreement would ease tensions with Russia. The deal would also satisfy Western Petroleum interests fearful of complete dependence on Russia.

In 1996 Azerbaijan and Georgia signed an agreement with AIOC to pipe Caspian Sea petroleum to the Georgian Black Sea port of Supsa. In the same year the AIOC signed a transport-agreement with Transneft, the Russian oil pipeline monopoly, to ship 5 mil metric tons of Azeri petroleum per year through the Russian pipeline system to Novorossiisk.

3.2.2.5 Foreign trade

The main sources of Azerbaijan's imports in 1995 were Turkey, the Russian Federation, Iran, The United Arab Emirates, Turkmenistan, Germany, Ukraine, Georgia, Kazakhstan and the USA. Major imports included electric power, margarine, butter, soybean oil, sugar, poultry, natural gas, pharmaceuticals and wheat.

In 1995 total exports of Azerbaijan stood at 547 mil $, 40% of which where destined for countries of the former USSR. Iran was Azerbaijan's largest export partner, accounting for almost 55% of extra-republican exports in 1993. Major exports included diesel fuel, cotton fibre, electricity, lubricants, and kerosene.

Volume and structure of Azerbaijan's imported and exported goods will not change dramatically within a short term. Exports are mainly determined by natural resources and by the structure of the economy and especially the structure of the capital stock. Imports are influenced by the availability of hard currency, the industrial structure, the needs of the population and, very important, by the development of income.

The capital stock in Azerbaijan is in a hopelessly poor condition which will not allow high capacity utilisation in the near future. Agricultural production will not reach for self sufficiency. That is why Azerbaijan has to import food, consumer goods and project cargo for industrial investment. Hard currency is expected to be available as a consequence for rising oil exports. Petroleum production from the new fields was expected to begin in early 1997. Initial output from the Caspian offshore production area, which encompassed the Azeri, Chirag and deep-water Guneshli fields, was predicted to be around 70.000 barrels per day.

In 1996 an agreement was signed concerning the development of the Shakh-Deniz offshore oil-field, which held estimated recoverable reserves of 400.000 mil cu m of natural gas, 200 mil metric tons of gas condense and 100 mil tons crude petroleum.

The Karabakh oil-field in the Azerbaijani Caspian Sea is another important source of petroleum reserves. Recoverable crude petroleum reserves are estimated at 85 mil metric tons. With increasing petroleum production the availability of hard currency will grow, which will stimulate important development as well as the availability of petroleum resources, which can be exported in form of crude oil as well as processed products.

3.3 The Central Asian States (Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, Kirghizstan)

3.3.1 General overview

From a general view Tajikistan and Kirghizstan belong to the group of low income economies in the world, whereas Turkmenistan, Uzbekistan and Kazakhstan are counted to the lower middle income economies. In 1995 GNP per capita GDP ranged from 370 US-$ (Tajikistan) to 1.330 US-$ (Kazakhstan; see Table 4)

In these five republics live about 55 million people on around 4 million square kilometres, which means nearly 14 inhabitants per square kilometre. The total population of the Central Asian economies equals that of Italy or France; the population density, however, is much lower in Central Asia. The ratio of the population living in urban areas ranges from 57.6% in Kazakhstan to 30,9% in Tajikistan. Agricultural production as part of total production is in all economies relatively high. Industrial production as part of the total production with exception of Kirghizstan is low. The level of industrial production in Kirghizstan, however, reaches the Georgian and Armenian level.

Average annual percentage changes of GDP in 1992 were negative for all five economies; negative growth rates reached from -3,6% in Kazakhstan to -30% in Tajikistan. With the failure of the Soviet economic system and the advent of full political independence, the Central Asian economies began reform programmes but had significant problems to overcome in the early 1990s. With exception of Tajikistan, however, all countries could reach a growth path in the year 1996.

The Republics till now have made least progress in moving to a market-based economy. The disruption to traditional trading partnerships have resulted in a number of years of recession. Performance, however, differs widely, with output continuing to fall in Tajikistan, but increasing elsewhere, particularly in Kirghizstan. This republic appears to have made most progress in moving to a market economy. The private sector is growing in importance areas such as small-scale industrial activities and agriculture. Foreign investment is particularly important in economic modernisation, but totals, with the exception of Kazakhstan, remain low. As part of the move to economic independence and the wish to conduct independent monetary policies, new currencies have been introduced, but Tajikistan is the only Central Asian Republic to remain within the rouble zone. Economic prospects for Central Asia are likely to depend on the exploitation of natural resources and the promotion of agriculture. During the fragmentation of the former Soviet Union, however, the petroleum and natural gas producing countries of Kazakhstan and Turkmenistan, and the agricultural republics of Kirghizstan and Uzbekistan, lost important markets and are seeking new trading partners. Progress of increasing exports has been disappointing, though due to unfavourable geographic locations, poor infrastructure and inadequate transport facilities, including poor roads, railway networks and pipeline systems. Realignment of external trade to the south-east of the region and towards China and the Far East, in particular, is severely hampered by shortcomings in infrastructure which will require enormous investment.

3.3.2 The structure of economies

3.3.2.1 Resources

Kazakhstan possesses large deposits of coal, petroleum and natural gas, and minerals such as chrome, lead, copper, zinc, wolfram and gold. Most of the industrial base of the country is connected with the extraction and processing of its resources.

Turkmenistan is rich in natural resources, with primary production, notably gas and oil extraction, and cotton and its processing, dominating economic activity. The gas reserves are counted amongst the ten largest in the world. Reserves of oil and gas in the Caspian Sea have been estimated at three billion tonnes and 4,5 trillion cubic metres respectively. Cotton is the major crop, and the country is among the top ten producers in the world. Chemical resources are also extensive, especially those of mirabilite and other similar salts in the Kara-Bogaz-Gol area of the Caspian. Deposits of sulphur, potassium, and sodium chloride and oil fuel waters containing iodine and bromine are also considerable. Dolomites, limestone, and marl are found in the mountains and foothills, and the Kara Kum supplies sands used in making glass and bricks.

Uzbekistan has extensive natural reserves and the development of mining and the processing of minerals and metals is identified as a major priority by the government. The country has 30 gold deposits and once ranked eighth in the world in terms of gold processing. Close to 70 metric tons of gold were extracted annually in the mid-1990s. There were also significant deposits of other important non ferrous metals, including copper, lead, zinc, tungsten and lithium. Uzbekistan also has important reserves of hydrocarbons. The extraction of petroleum rose in Uzbekistan from the early 1980s. The two main oil-fields in the country produced about 5,5 metric tons in 1994 and there is the potential nearly to double this amount. The mountain streams offer potential hydroelectric development.

Tajikistan has considerable mineral deposits, including gold, iron, lead, tin, mercury and coal, but extracting many of these is problematic given the mountainous terrain of much of the country. The mountains. however, prove advantageous in providing a river hydroelectric system. Tajikistan is dependent on others for other energy sources. Non-metal resources include common salt, carbonates, fluorite, arsenic, quartz sand, asbestos, and precious and semiprecious stones. The major mineral fuel is coal. Tajikistans natural wealth also includes medicinal mineral springs.

Unlike its neighbours in former Soviet Central Asia, Kirghizstanr's principal natural resources are not petroleum and natural gas. Instead, the country has significant deposits of gold and rare metals such as antimony, mercury, molybdenum and uranium, making mining Kirghizstan*s most important sector for foreign investment. Gold id the countries most valuable mineral commodity; production of gold in 1995 was 1,2 metric tons, and it is hoped to increase annual average output to 25 tons through the development of five major deposits. The production of gold and mercury was already increasing in 1996. Output of mercury at the Khaidarakan Mercury Plant, the largest producer of mercury and its components in the former USSR, was expected to increase from 380 metric tons in 1995 to 660 tons in 1996. The plant exports 90% of its production.

3.3.2.2 Agriculture

Kazakhstan is an important producer and exporter of agricultural products. It was estimated that in 1993 this sector of the economy accounted for about 20% of the country's net material product. Animal husbandry was mainly orientated towards meat production. There is also, however, significant output of milk and dairy products, including dried milk, butter and cheese.

Wool (including the valuable astrakhan), camel hair and hides are also produced in large quantities.

Grain production is of crucial importance to the economy. Approximately one half of the land under cultivation is devoted to wheat. Other important cereals are barely, millet and rice. Cotton, sugar, beef and tobacco acquired a new significance. Foreign investors showed a particular interest in the tobacco industry.

Turkmenistan's agricultural sector employed in 1993 about 40% of the working population. Cotton is the single most important crop, itself contributing an estimated 18% to GDP in 1995. Turkmenistan was among the 10 highest cotton-producing countries in the world, but was only slowly shifting from being an exporter of fibre to an exporter of fabrics.

Agriculture is fundamental to Uzbekistan's economy, too. Although over 60% of the country is arid or semiarid steppe, there are also a number of highly fertile regions. The single most important crop in Uzbekistan is cotton, the country being the fourth largest producer of seed cotton and the second largest exporter in the world. It was also the largest producer of silk and karakul pelts in the former USSR. Other important products include wheat, rice, jute (kanaf), tobacco, fruits and vegetables.

In an attempt to decrease environmental pollution compounded by the salinity, pesticides and fertilisers and ameliorate the problems around the Aral Sea, a shifting production to grain was introduced. After 1990 the area sown for grain increased from 1,01 mil ha to 1,53 mil ha. The Government targeted 1,7 mil ha for grain production in 1996. Cotton production continued to be of crucial importance to Uzbekistan. The area, devoted to cotton production was to remain constant at 1,5 mil ha. Cotton production in 1994 reached about 4 mil tons compared to peak production of 5,4 mil tons in 1988.

Agriculture was traditionally the primary sector of the Tajikistani economy, providing 45% of employment. The major crop was cotton. In 1995 cotton production was reported at 510.000 tons. Other agricultural products included grains, fruit, vegetables and livestock. The other major growth area was the illegal drugs trade, with the more remote parts of the country producing their own opium crops and trafficking becoming a major business.

The agricultural sector, which in 1995 accounted for almost one third of GDP and more than 40% of those in employment, was one of Kirghizstan's strongest economic sectors. Output increased again in 1995, after the decline in previous years. Although some of Kirghizstan's most important products - wool, meat and leather - came from livestock, herds were being reduced to adjust to the loss of export markets, especially in Russia. Production of vegetables, potatoes, and cotton increased substantially. Output of grain and cereals was expected to reach 1,15 mil tons in 1996.

3.3.2.3 Industry

In 1993 Kazakhstan's industry accounted for an estimated 20% of total employment. The basic infrastructure of industry is good, although equipment is generally old, inefficient and, environmentally, extremely harmful. There is a high degree of wastage. Karaganga is the main centre of the Kazakhstan coal industry, although Ekibystuz, further north, is also well developed, as is Turgai and Maikuben. Once the country produced far more coal than was needed for domestic consumption and had long been an exporter. Total coal production declined from a peak of 143 mil metric tons in 1988 to 117 mil tons in 1993. This decrease in output was mainly the result of reduced demand and excess stocks.

As with coal, production of crude petroleum and, more significantly, natural gas declined after 1992. Extensive foreign investment in the energy sector, however, resulted in a degree of stabilisation in 1995. Construc-

tion of a planned pipeline from massive Tengez field to Novorosiisk, on the Russian Black Sea coast, would enable Kazakh petroleum to be exported to the European market.

Ferrous and non-ferrous metallurgy are high developed. Important copper, zinc and lead works are located in the north east of the country, while the mining and processing of iron is based in the Aktyube region in the north west. There are also copper deposits in the centre of the country and lead and zinc in the south. Also in the north-east of the country is one of the world's largest gold deposits, at the extremely low-cost mines near Auezov. In 1993, following Australian and US involvement, in the venture, the company operating the mines was even quoted on the London Stock Exchange. A number of foreign mining groups showed interest in Kazakhstan's gold reserve in the mid 1990s, although progress towards developing their exploitation was slow. Total gold production in Kazakhstan, in 1993, was estimated at 13 metric tons. A Metal Exchange was established in Kazakhstan in 1992.

Apart from the petrochemical sector and the processing of agricultural products, industry is dominated by heavy engineering works, which produce a broad range of machinery and machine tools, and a light industry, the production of textiles. These industries all suffered from the problems experience throughout the economy of Kazakhstan, such as the increase in fuel prices and the disruption to the traditional trading partnerships. There were also problems in the supply of raw materials and with the decay of capital equipment and basic infrastructure. By 1995, however, the situation had stabilised, although the sectoral composition of industrial activity had begun to alter. The metals and energy sectors were becoming increasingly dominant, accounting for over two thirds of industrial production, while machine - building, constructing materials and light industry were contracting.

Summing up, it can be recognised, that agriculture, construction and transport and communications, which had been vital contributors to GDP prior to Kazakhstan's independence, all suffered from the political and economic disruption as the country struggled to make the transition to a market economy. In other areas, however, the signs were more promising. Extensive interest by foreign investors in the petroleum and natural gas sector, as well as an increase in exports of ferrous and non ferrous metals, caused output in these commodities to increase. Furthermore, after limited success in 1994, the government's stabilisation programme had helped to control inflation and make significant progress in enterprise restructuring.

As the main focus of foreign investment interest indicates, Turkmenistan is rich in natural gas resources. In 1991 about one third of total industrial production was accounted for by 61 textile enterprises, and a further one third was contributed by 38 large enterprises in the chemicals, gas, petroleum and electricity - generating industries. Russia controls the export routes, which traverse Ukraine, a country that was apt to utilise these supplies when necessary. Russia blocked Turkmenistan exports on several occasions, sitting disputes over transit fees. Major Russian petroleum and gas companies, such as LUK-oil, were able to demand and receive equity shares in international exploration and production deals, like the Tengiz project, the Caspian Shell offshore project and the Caspian Pipeline Commission project involving Kazakhstan and several Western firms.

Turkmen gas exports in 1994 and 1995 were far below previous figures. On account of unpaid bills and arrears, Turkmenistan terminated supplies to Ukraine in 1994, so that annual deliveries were only 11.500 mil cu m, instead of the contracted 24.000 mil cu m. Ukraine's US-$ 1.127.000 debt in 1994 purchases and arrears from earlier years was rescheduled with IMF encouragement. Despite significant barter component, even then the dollar obligations were large and Ukraine's payments were late on several occasions.

Turkmen crude petroleum production declined sharply from its peak of 16 mil metric tons per year in the mid 1970's to 4,4 mil tons in 1993 and 4,1 mil tons in 1994. The country had three petroleum refineries in Turk-

menbashy, Cheleken and Charjou. The Turkmenbashy refinery required priority upgrading for it increase capacity to 9 mil tons per year - a project worth up to 1.000 mil USD.

Unlike Kazakhstan, Uzbekistan did not plan to become a major exporter of petroleum, but rather to achieve self sufficiency. Foreign investment was to finance the development of the Mingbulak and Kokdumalak fields as a way to raise total output. It was planned that by 2000 - 10 annual production would reach 9 mil tons.

Industry in Uzbekistan was largely confined to light industry. Despite the importance of cotton and silk growing only small percentage was processed domestically. Uzbekistan relied heavily on textile imports. The development of an indigenous textile industry was given high priority in the 1990. The importance of the agricultural sector was reflected in the fact that a significant part of industrial activity was concerned with agro industrial production (machinery and fertiliser). An important new departure for the domestic economy was the production of small trucks, cars and diesel-engine buses. A number of foreign firms established production facilities in Uzbekistan and the country was set to become a regional centre for the automotive sector. In 1995 Daimler Benz expanded vehicle production in Uzbekistan and in 1996 Daewoo opened a plant in Tashkent which will eventually produce 30.000 cars and vans annually.

Infrastructural limitations constrained the development of tourism, which had considerable potential in the country because of its unique historical sites. The lack of an adequate infrastructure of transport, hotels and recreation facilities, however, meant that the sector's potential was yet to be fulfilled. Like almost all sectors of the Uzbek economy, its success was dependent on foreign capital and on initial increase in the other economic activities required to support it.

The economy as a whole remained fragile and heavily dependent on agricultural production, particularly cotton. Although management of the economy improved and fiscal discipline became stricter, the state continued to intervene, particularly in areas such as the lucrative foreign trade sector and the management of enterprises. despite the slow pace of economic change, the country's large natural resource base, together with the gradual conversion of the political leadership to economic reform, suggested that the economy would gradually improve in the second half of the 1990's.

Tajikistan's industrial sector is relatively small, employing about 14% of the countries labour force in 1990. In 1994 industry provided about 11% of employment and contributed 35% of GDP. A handful of large enterprises dominates the economy, with the only heavy industry provided by the hydroelectric sector end a massive aluminium plant at Tursan-Zade, to the west of Dushanbe. Producing some 450.000 metric tons in 1991, production fell steadily after independence to stabilise at 237.000 tons in 1994 and 1995, when the plant was estimated to be producing at about 40% of capacity. Aluminium provided about 60% of export earnings in the latter year. However, the industry was not integrated into the national economy, being very dependent on input imports and with little value added to the production locally. Like the cotton sector, this was a feature of its development as part of the Soviet economic system, these two industries being based in Tajikistan to take advantage of its extensive water resources.

Other industries included engineering, mostly geared to the production of agricultural machinery, textiles, and food processing, which was concentrated largely on fruit, natural oils and tobacco. Much of the latter was traded with Pakistan and the People Republic of China, rather then exported to the former USSR as before 1991. Industrial production declined at an amount average rate of some 17% in 1992 - 1994, but it was largely unchanged in 1995 as compared with the previous year. The decline, and the collapse of the transport and construction sectors, provided the main cause for total GDP being only 46% of its 1991 level, in real terms by 1995.

Industrial production outside the Khojand region was badly affected by the civil war, with the destruction of factories, the blockage of transport networks and the diversion of many workers from production. Nevertheless, in 1995 the government published a plan to crate a market based economy by the end of the century, on the basis of massive privatisation in the agricultural and industrial sector, and the gradual freeing of all prices. By mid 1996 the prospects for the economy of Tajikistan remained bleak. The benefits of the relative stability of the previous year were soon lost in the resurgent conflict in 1996. the situation was especially acute in the southern regions of the country, where violence continued to upset everyday life, as opposed to the traditionally rich northern province around Khojand, which experienced less disruption or destruction of economy assets. Nevertheless, the rebuilding of the economy appeared to depend upon a number of factors, including the reconstruction and modernisation of existing plants, and the restoration of reliable and safe communications networks. Above, peace remained the essential precondition for both domestic reconstruction and the attraction of foreign aid and investment.

The industrial sector of Kirghizstan's economy accounted for almost one third of GDP and about one quarter of employment in 1995. Much of the manufacturing base involved the processing of agricultural materials, including wool, leather and food products. Other light manufacturing included the production of textiles, clothing and shoes. Light industry accounted 37% of industrial production in 1994, up from 28% in 1989. However, output in light industry fell by 49% during the same period, mainly because of the shortage of inputs, which was an obstacle to production in all types of industry.

Heavy industry, especially machine-building for agriculture and metallurgy, accounted for 44% of industrial production in 1994, virtually the same as in 1989. In mid 1996 the government was working to diversify production away from heavy industry and towards high technology products and consumer goods.

Foreign investment in Kirghizstan was dominated by the mining industry. Canada was the largest foreign investor, with 45% of all foreign investment in the country at the end of 1994, primarily owing to the Cameco mining company's investment in the Kumtor gold mines. The USA and Turkey came next in significance, followed by the People's Republic of China. There were almost 400 joint ventures in Kirghizstan, although by mid 1996 most were not yet operational, and over 70 foreign companies were registered to do business. Foreign countries active in Kirghizstan included Pepsi Co., Coca Cola and Proctor & Gamble of the USA, LG.-Electronics of the Republic of Korea, Mercedes Benz of Germany and Andre % Cie, a Swiss mineral-water bottler. Many other companies had representative offices, including Toyota, Sumitomo and Mitsui of Japan. The Tash-Kumyr district in the south was to become a centre of high technology industry, with developing projects scheduled for 1997.

The Kyrgyz Republic is the furthest advanced among the Central Asian economies in its process of reform. However, while the som had remained stable, by mid 1996, the economy had not yet regained pre-independence levels, with per head income falling to about two thirds of its 1990 level. However, the mass privatisation programme, which began in 1994, had affected 855 companies by the end of 1995. Membership of the WTO, together with the customs union, will help to attain an economic growth rate as high as 7% a year.

3.3.2.4 Transportation

Turkmenistan

The basic means of transport is the railways. The main trunk line is between Turkmenbashy and Tashkent with branch lines from Mary to Kushka and from Nebit Dag to Vyska. Chardizhan and areas as far north-west along the Amu Darya as Kungrad are linked to the central regions.

The railways of Turkmenistan comprise around 2.200 km. It's entirely operated with diesel traction and except of 40 km of double track around Ashgabat, the network is single track. The main line connects Ashgabat with Tashkent and with the port of Turkmenbashy.

Motortransport is developing more rapidly than rail, and trucks handle most freight traffic within the country. The main highways pass near railway lines and supplement them, especially in short distances deliveries, but roads were also constructed in more remote regions. River transport, in seasonal operation on the Amu Darya and the Karakunsky Kanal is of local importance.

As for the road network of Turkmenistan, it comprises around 13.600 km of public roads, divided in state roads, republic roads and local roads. The road from Turkmenbashi to Chardjiev is in good condition.

A network of pipelines connects the oil-fields and gas deposits with transportation and consumption points. Natural gas is taken to central regions of Russia.

Kazakhstan

The great distances, scattered industrial centres, and developing extractive industries means that transportation plays a critical role. The railways take the biggest share of the total freight turnover, and the track length is about 12.600 km with the densest network in the north. Kazakhstan is crossed by long section of the Trans-Siberian, South-Siberian, and Turkistan-Siberian trunk lines, among others, while the Orenburg-Tashkent line serves the west and south.

Kazakhstan's railway system is operated by three regional networks: the Almaty network serving around 4.000 km, the Tselinaya north-eastern network serving about 4.900 km and the country and the western and north-western network serving around 3.700 km. From Almaty rail lanes go in three main directions: to Russian Federation borders in the north, to Uzbekistan border and to the shores of the Caspian sea. For the TRACECA states two are of special importance:

- Almaty - Aktau; this line is about 3.300 km long. The route is single track over the 311 km from Almaty to Shu, double track over the 1.880 km from Shu to Kandagacal and from there single track again over the 1.100 km to Aktau. The line is electrified from Almaty to Shu and from Arys to Aktau (2.430 km)
- Almaty - Tdengedy; this line links Almaty and Telengeldy at the border with Uzbekistan. The line goes through Uzbekistan and Turkmenistan and can serve cargo from Kazakhstan to Turkmenbashy on the Caspian Sea. This route in 930 km long and entirely electrified.

Kirghizstan

Kirghizstan occupies the Tien Shan mountain range which stretches for hundreds of kilometres across the north-eastern part of Central Asia. Over 94% of the country has altitudes of more than 1.000 m above sea level, and about 40% is more than 3.000 metres. The country commands a well developed network, adjusted to geographical characteristics. Roads constitute the basis of the network. Over 50% of the 20.000 km of the road are paved and in sufficiently good condition. By one of the main roads connecting Bishkek to Osh, the two major industrial centres, is degenerating. Automotive transport, with about 72% of the freight traffic, is by far the most important transport mode of the country.

As for rail network, it consist of a small line, which goes through the Chu Valley (the most developed industrial region) in the north and links up with the Kazakhstan railway network. The line is one of the country's possibilities to integrate a multi-modal TRACECA corridor. A small line in the south connects the country with Uzbekistan. It travels from Kok-langak to Andjan (Uzbekistan) and Bekabad (Tajikistan). From there, railway shipment to Tashkent in the north or Samarkand in the south rail links exist.

Uzbekistan

Uzbekistan's infrastructure is well developed in the south and south-eastern parts of the country and much less in the central and western part.

The rail network comprises around 4.400 km. There are three main links:

- Tashkent - Tchengeldy (Kazakhstan)
- Tashkent - Khodchadavlet (at the border of Turkmenistan)
- Tashkent - Karakalpaida (at the border of Kazakhstan)

The first link is double track and entirely electrified and about 79 km long. This link comprises 685 km and partly double track and entirely diesel operated.

The third link is 1.850 km long and straddles the border between Uzbekistan and Turkmenistan. Both countries are experiencing some difficulties in defining inter-operability regulations, which caused Uzbekistan to plan a new line, which is single track and non-electrified and which would by-pass Turkmenistan.

The road network of Uzbekistan comprises about 43.250 km. There are two main links which connect Tashkent to Karakul in Turkmenistan and south-north-west link between Termez and Nukuss via Bukhara. These links are partly in fair conditions. Truck transportation accounts for the minor part of total freight carried. The pipeline network is well developed.

Tajikistan

Tajikistan is the most land-locked country of central Asia. The north of the country is almost separated from the rest of the territory by the Alai mountains. The existing rail lines in the north travels between western and eastern Tajikistan from Karnibadarn, Sovetaball and Bekabad. From there, two existing branches connect the system with Samarkand and Tashkent. In parallel to the rail line, there is a road connection between west and east which is in poor condition. The south-western part of Tajikistan is depending on the rail corridor from Termez in Uzbekistan. About half of the total freight turnover is handled by rail, the rest by motor transport. Half of the highways are surfaced. A small amount of freight is carried by water, mainly between the river port of Termez (Uzbekistan) and Fizal-Kala (160 miles up the Amu Darya).

4 Additional facts, main findings and conclusions for the Traffic Forecast

The three Caucasian and the five Central Asian States are members of the Commonwealth of Independent Sates (CIS), an organisation set up at the end of 1991 after the break up of the Soviet Union. The CIS provides a framework for multilateral co-operation between the 12 members with the aim of creating a community of integrated states.

All states have made least progress in moving to a market based economy. Disruption of traditional trading partnership has resulted in a number of years of recession. Table 1 shows the average annual percentage change of GDP from 1992 - 1997.

Table 1:

Average annual percentage change of GDP in TRACECA states 1992-1998

Country	1992	1993	1994	1995	1996	1997*
Georgia	-44,8	-25,4	-11,4	-5,0	8,0	10,0
Armenia	-41,8	-8,6	5,5	6,9	6,4	7,0
Azerbaijan	-2,2	-23,1	-19,7	-19,0	1,2	5,1
Kazakhstan	-3,6	-9,6	-18,0	-4,4	1,1	5,0
Turkmenistan	-5,3	8,5	-17,5	n.a.	n.a.	n.a.
Uzbekistan	-11,1	-2,4	4,2	-1,3	1,6	1,0
Tajikistan	-30,0	-20,0	-17,0	-12,4	-19,0	n.a.
Kirghizstan	-15,8	-16,3	-20,1	-6,3	2,0	3,0

Source: Republic of Georgia: Policy Framework Paper 1996 - 1998, February 1996
The World Bank; Statistical Handbook 1996
EBRD,EIU,IMF, Dresdner Bank, BfAI, Buisiness Central Europe, London
OECD, UNCTAD
* estimated

Economic performance differs widely, with output continuing to fall in Tajikistan but increasing elsewhere, particularly in Kazakhstan. This country appears to have made most progress in moving to a market economy.

All countries are members of the key multilateral financial agencies, the International Monetary Fund (IMF) and the World Bank. As part of the move to economic independence and the wish to conduct independent monetary policies, new currencies have been introduced, but Tajikistan is the only Central Asian Republic to remain within the rouble zone.

Available data for some countries show, that the serve recession in the TRACECA states captured all sectors of the economies. The figures, concerning the average annual growth of GDP, agriculture, industry and services as well as Gross Domestic Investment for the period between 1990 and 1995 are shown in Table 2.

Table 2:

Average annaual growth rate (%) in TRACECA states 1990-1995

Country	GDP	Agriculture	Industry	Services	Gross domestic investment
Georgia	-26,9	-31,4	-34,1	-22,3	-21,2
Armenia	-21,2	-0,6	-28,7	-19,7	-17,7
Azerbaijan	-20,2	n.a.	n.a.	n.a.	n.a.
Kazakhstan	-11,9	-18,0	19,2	6,1	-16,7
Turkmenistan	n.a.	n.a.	n.a.	n.a.	n.a.
Uzbekistan	-4,4	-0,9	-6,7	-6,6	-9,2
Tajikistan	n.a.	n.a.	n.a.	n.a.	n.a.
Kirghizstan	-14,7	-7,6	n.a.	n.a.	n.a.

Source: EBRD/World Bank: World Development Report 1997;
Table 1 Basic indicators

The World Development Report, published by EBRD and the World Bank in 1997, does not deliver figures for all countries concerned; nevertheless, available figures show, that it was the industry, which suffered mostly from recession in the TRACECA-states. That is mainly a consequence of the disruption of traditional trade connections between the members of the former Soviet Union.

Main findings of the research work concerning development of economic activity in the hinterland of Georgian ports are listed in the following tables.

Table 3 contains figures about population and area of TRACECA-States in the year 1995. Kazakhstan and Uzbekistan are by far the most important countries concerning total population.

Table 3:

Population and area of TRACECA-States 1995

Country	Population (Mio)	Area (1.000 km²)	Inhabitants/km²
Georgia	5.4	69.7	77.5
Armenia	3.8	29.8	127.5
Azerbaijan	7.5	86.6	86.6
Kazakhstan	16.6	2717.3	6.1
Turkmenistan	4.6	488.1	9.4
Uzbekistan	22.8	447.4	51.0
Tajikistan	5.8	143.1	40.5
Kirghizstan	4.5	198.5	22.7
Source:	Stat. Bundesamt, Germany		

Table 4 shows GDP and per capita GDP in 1993 and 1995 for each country. These data show Kazakhstan, Turkmenistan, and Uzbekistan being economically the strongest among this group of low income resp. lower middle income countries.

Table 4:

	1993	1995	1993	1995
Georgia	500	440	2,8	2,38
Armenia	700	730	2,5	2,56
Azerbaijan	600	480	4,4	3,60
Kazakhstan	1500	1330	24,9	22,08
Turkmenistan	1400	920	5,3	4,23
Uzbekistan	900	970	17,8	22,12
Tajikistan	400	370	2,3	2,15
Kirghizstan	700	700	3,1	3,15

Source: Prognos; EBRD/World Bank: World Development Report 1997

Distribution of GNP at current prices (%)

It is presumptuous to try and make **a** long-term forecast of economic developments in the TRACECA-countries. The uncertainties regarding political stability are too great; slumps and radical changes in the production, employment and liquidity too dramatic. The transition has not yet progressed far enough and the danger of war and latent problems with minorities is very critical.

On the other hand, there have often been such dramatic changeover situations in the past for groups of countries, for instance west European reconstruction after Word War II. There are many other countries; which have been devastated by wars, revolutions or government overthrows in the past. There are many examples for successful economic recovery of these countries.

One of the few certainties in quantitative empirical research on long term economic growth is that political instability has a negative effect on growth and investment. But that is the limit to certain knowledge.

For the purposes of the forecasts in this study the thesis is, that the economic future of TRACECA States is already indicated to a large extent by how far they have today progressed in the process of transition, i.e. the creation of General conditions that allow for private-sector activities[1]. The following criteria to measure a country's position in the process of transition

- privatisation of companies
- restructuring of major companies
- price liberalisation, freedom of trade
- protection of competition
- liberalisation of foreign trade and currency
- system reform of banking system
- existing EU trade restrictions
- foreign direct investment received

were used by Prognos in order to make a ranking list of the states.

In categorising the countries the base of work to a large extent were studies carried out by EBRD[2]. It assessed the countries according to the above criteria on a scale of 1 = very poor to 4 = very good. Better knowledge about single countries was used to correct the EBRD estimates. The results are shown in

[1] See PROGNOS: Economic and demographic development in Europe; Basel 1995

[2] EBRD: Transition Report 1996

Table 6:

Assessment of the position in the transition process

and estimated average change of GDP in % p.a. 1995 - 2012

Country	average position	estimated growth rates (% p.a.)
Armenia	1,6	1,0
Azerbaijan	2,5	3,5
Georgia	1,3	0,5
Kazakhstan	1,5	1,0
Kirghizstan	2,5	4,0
Tajikistan	1,5	1,0
Turkmenistan	2,5	3,5
Uzbekistan	1,8	2,5

Source: Forecast as well as own estimations

The good position of Azerbaijan and Turkmenistan in this ranking list is a result of the good prospects for the oil and gas industry in this countries. Different international consortia partly even with Russian membership made contracts with the authorities, which guarantee heavy investment in the exploration of new oil fields of the countries.

In order to work out a detailed traffic-forecast for the Georgian ports it is necessary to analyse the development of foreign trade of the TRACECA states in the Caucasian and Central Asian area.

Until 1989 the TRACECA states were satellites in the COMECON-System. Their trade was mainly oriented on this system. Trade with hard currency countries hardly took place. Even in 1995, six years after disruption, the extra CIS-trade of TRACECA-States is relatively unimportant, as the figures of Table 7 show.

Table 7:

Extra CIS trade of TRACECA states in 1993/94/95 (million US-$)

Country	Exports			Imports		
	1993	1994	1995	1993	1994	1995
Georgia	52	39	58	73	59	225
Armenia	30	57	104	86	188	340
Azerbaijan	351	362	330	241	292	439
Kazakhstan	n.a.	1.356	2.343	n.a.	1.384	1.172
Turkmenistan	n.a.	1.651	929	n.a.	686	745
Uzbekistan	n.a.	1.030	1.827	n.a.	1.208	1.634
Tajikistan	n.a.	382	497	n.a.	374	321
Kirghizstan	n.a.	7	140	n.a.	18	169
Source:	World Bank: Statistical Handbook 1996 States of the former USSR					

Only Kazakhstan and Uzbekistan exported in 1995 reasonable values of goods to economies outside the CIS-States. Never the less, it can be expected that as a consequence of the integration of these states into international trade the volumes of traded goods with partners outside CIS will grow considerably. That is why the traffic flows from West to East. (Imports from Western Europe and from America to TRACECA-States) and from East to West (exports) will increase. Traffic flows between TRACECA-States and South East Asia are expected to grow as well.

The changes, however, for the integration process are quite different for the single countries. They depend mainly from:

- the existing trade and exchange rates regimes,
- the availability of natural resources,
- the quality and competitiveness of industrial goods,
- the infra- and supra structure, which is necessary to handle international trade, and
- existing trade relations.

As a consequence of development help especially from IMF and the World Bank, existing trade and exchange rate regimes already have been changed considerably, as described above. This liberalisation process, which did not come to an end till now, is expected to continue and will facilitate the development of international trade relations especially with Western Europe, North America and South East Asia.

The TRACECA-States partly possess rich natural resources, which can enable them to earn considerable amounts of hard currency in the future, a prerequisite for growing imports of goods which have to be imported for the reformating and restructuring process in the various sectors of the economies. The most important sectors in the states concerned are energy, mining and agriculture. In the energy sector, oil, gas and partly salts are major commodities, too. In agriculture, cotton, grain, fruits, tobacco and vegetables are the dominant product groups.
Table 8 gives an overview of the main national resources of the Trans-Caucasian and Central Asian States.

Table 8:

National Resources of TRACECA states

Georgia	Armenia	Azerbaijan	Kazakhstan	Turkmenistan	Uzbekistan	Tajikistan
manganese	agricultural	agricultural	chrome, lead	natural gas,	natural gas,	cotton,
coal, timber	metal ores	land	wolfram,	oil, potassium	oil, coal,	coal, gold, iron
minerals	coal, tuff	oil, gas	copper,	oidinebromine,	gold, silver	lead
marble	molybdenum salt	iron ore	zinc, gold,	sodium, sulphur	copper, zinc	mercury
	calcium oxide		iron ore,	sulphate salts	lead, lithium	salt, carbonates
	carbon		coal, oil	mirabilite	wolframite,	fluorite, asbestos
					hydrocarbon	mineral springs
			natural gas	minerals	tungsten	

Source: World Bank: Statistical Handbook States of the former USSR
Eastern Europe and the Commomwealth of Independent States; London 1997

Concerning the agricultural sector Table 9 shows the major agricultural products in the TRACECA-States.

Table 9:

Major agricultural products of TRACECA states

Georgia	Armenia	Azerbaijan	Kazakhstan	Turkmenistan	Uzbekistan	Tajikistan	Kirghizstan
tea, citrus,	grain,	grapes,	grain, wood,	cotton,	cotton,	cotton,	livestock
citrus products	potatoes,	cotton,	meat	grain,	grain,	wheat	cotton, wool
fruits	vegetables,	tobacco,	potatoes,	vegetables,	vegetables,	fruit, vegetables	silk, hemp,
grapes	grapes,	fruits,	vegetables,	livestock	silk, fruits	grapes	fodder,
tobacco	fruits	vegetables	cotton, wool	grapes	cocoon	tobacco	vegetables,
grain	tobacco		sugar, tobacco		grapes		potatoes, fruit
	nuts		natural gas		tobacco		grain, tobacco

Source: World Bank: Statistical Handbook States of the former USSR
Eastern Europe and the Commomwealth of Independent States; London 1997

Until 1989 the TRACECA-States were integrated in the COMECON-system of labour division. For Soviet economic planing purposes the former Soviet Union was divided in twenty planning regions - Georgia, Armenia and Azerbaijan belonging to the TRANS-CAUCASUS - which were elected for special purposes within the whole complex. As a consequence special industrial structures were developed in the planning regions. The main industrial activities of TRACECA-States are figured in Table 10.

Table 10.

Main industrial activities of TRACECA states

Georgia	Armenia	Azerbaijan	Kazakhstan	Turkmenistan	Uzbekistan	Tajikistan	Kirghizstan
light industry,	light industry,	oil production	metallurgy,	textiles,	cotton	agroprocessing	metallurgy,
iron, steel,	metallurgy,	heavy machinery	heavy machinery	oil and gas	harvesters,	labour intensive	agricultural
teak,	machine	machine tools	machine tools	products,	textile-	industries,	machinery,
tobacco	building	petrochemicals	petrochemicals	chemicals,	machinery,	machine	food processing,
hydroelectricity	food processing	food processing	food processing	electricity-	chemicals	building	tobacco processing
machine buildin	chemicals	textiles	textiles	generating	metallurgy,	aluminium	textile,
chemicals	electronics				aircraft, cars	processing	sugar refeneries
engineering					trucks, busses	food processing	
food processing						textiles	leather
Source:	World Bank: Statistical Handbook States of the former USSR						
	Eastern Europe and the Commomwealth of Independent States; London 1997						

However, many of the industrial plants in the TRACECA-States, are in bad shape, because of the shortage of reinvestment, obsolete equipment and lack of maintenance. Low productivity is typical for the whole stock of capital in these countries, and the goods produced in these plants often fail in international competitiveness.

Economies with rich natural resources being on a stage of low development need exports to earn hard currency, which is a prerequisite to import goods the economy cannot produce or other economies can produce better because of comparative cost advantages.

Table 11 shows main commodities, which were traded by TRACECA-States in the period from 1993 till 1995.

Table 11:

Main Commodities traded by TRACECA states in 1993, 1994 and 1995

Georgia	
Exports	Imports
food industry	oil products, power
ores	food
metals	machinery
	chemicals
	industrial products

Armenia	
Exports	Imports
machines	oil and gas
food	iron and steel
products of the light industry	products of the light industry
metals	wood products
other industrial products	machines
	chemicals
	food

Azerbaijan	
Exports	Imports
chemicals	chemicals
mineral products	food
non ferrous and ferrous metal	vegetable oil
	oil and gas
agricutlural products	mineral products fertilizer
machines	beverages
textiles	meat, sugar
oil and gas	wood products
wood products	construction materials
cotton fibres	agricutlural products products of light
buses	industry, cars

Kazakhstan	
Exports	Imports
fuel and oil product	fuel and oil products
ferrous metals	machines, buses
copper and copper products, zinc	electrical equipment cars, trucks
chemicals	vehicles
grain, cotton	ferrous metal
tractors	products
salt	sugar, grain
ores, coal	chemicals

Turkmenistan	
Exports	Imports
natural gas	grain
cotton	textiles
oil products	clothing
ores	pipes
fertilizer	food, potatoes

Kirghizstan	
Exports	Imports
antimony	oil, oil products
tobacco	natural das
non ferrous ores	timber
wood	matal products
cotton	chemicals
leather	non ferrous metals
machinery	grain
electrical goods	food
clothing	sugar
sugar, fertilizer	

Uzbekistan	
Exports	Imports
cotton	grain, potatoes
tractors	rice
non ferrous metals	sugar, cotton fabric
fertilizer	tea, food
petroleum, gas	cars, trucks

Tajikistan	
Exports	Imports
cotton	food
aluminium	clothing
agricultural products	sugar
cars	oil, oil products
gold	grain
mineral ores	

Source: TACIS Inception Report; bfai: country reports; The World Bank
Eastern Europe and the Commonwealth of Independent States; London 1997

All Trans-Caucasian and Central Asian States are in a process of rapid integration into international labour division. This is a consequence of interrupted trade relation with former COMECON-partners as well as the heavy interest shown by foreign investors mainly coming from Western Europe and North America. Rich natural resources of the TRACECA-States, being important for the Western Community as well as for the rest of the world, have roused strong interest of many companies all over the world to built up trade relations with the countries in the hinterland of the Georgian ports.

Table 12 shows main export- and import partners of the TRACECA-States in the year 1995.

Table 12

Main Export- and Import- Partner of TRACECA States in 1995

Georgia		Armenia		Azerbaijan		Kazakhstan		Turkmenistan		Uzbekistan		Tajikistan		Kirghizstan	
Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Armenia	Armenia							Armenia	Armenia						
Azerbaijan	Azerbaijan					Azerbaijan	Azerbaijan	Azerbaijan	Azerbaijan						Azerbaijan
				Belarus	Belarus	Belarus	Belarus	Belarus		Belarus	Belarus			Belarus	Belarus
		Georgia	Georgia	Georgia	Georgia			Georgia	Georgia						
				Kazahkstan	Kazahkstan			Kazahkstan	Kazahkstan	Kazahkstan	Kazahkstan	Kazahkstan	Kazahkstan	Kazahkstan	Kazahkstan
								Kyrgyz		Kyrgyz					
					Kyrgyz Republic	Kyrgyz Republic	Kyrgyz Republic	Republic		Republic	Kyrgyz Republic				
				Moldavia	Moldavia		Moldavia								
Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia
				Tajikistan		Tajikistan	Tajikistan	Tajikistan		Tajikistan	Tajikistan			Tajikistan	Tajikistan
Turkmenistan	Turkmenistan	Turkmenistan		Turkmenistan	Turkmenistan	Turkmenistan	Turkmenistan			Turkmenistan	Turkmenistan		Turkmenistan		Turkmenistan
Ukraine	Ukraine			Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine		Ukraine	Ukraine
				Usbekistan	Usbekistan	Usbekistan	Usbekistan	Usbekistan	Usbekistan			Usbekistan	Usbekistan	Usbekistan	Usbekistan
	Austria		Austria	Austria	Austria	Austria	Austria	Austria	Austria	Austria	Austria	Austria			
			Belgium		Belgium	Belgium	Belgium					Belgium	Belgium		Belgium
Bulgaria	Bulgaria		Bulgaria		Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgaria			Bulgaria	Bulgaria
			Czech Republic		Czech Republic	Czech Republic	Czech Republic				Czech Republic				
			Denmark								Denmark				
					Estonia	Estonia	Estonia			Estonia			Estonia		
				Finland	Finland	Finland	Finland					Finland			
			France		France		France		France		France			France	
	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany		Germany
					Hungary	Hungary	Hungary				Hungary	Hungary			
			Ireland			Ireland	Ireland	Ireland	Ireland						
			Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy			Italy	
					Latvia	Latvia	Latvia			Latvia		Latvia	Latvia		
			Lithuania	Lithuania	Lithuania	Lithuania	Lithuania	Lithuania		Lithuania	Lithuania	Lithuania			
	Netherlands	Netherlands	Netherlands		Netherlands	Netherlands	Netherlands		Netherlands	Netherlands	Netherlands	Netherlands			
			Norway		Norway		Norway					Norway	Norway		
					Poland	Poland	Poland			Poland			Poland		
	Romania		Romania								Romania				
										Slovak			Slovak		
						Slovak Republic	Slovak Republic			Republic			Republic		
	Spain					Spain		Spain					Spain		
						Sweden		Sweden					Sweden		
Switzerland		Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland		
	United	United						United	United	United		United	United	United	
	Kingdom	Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	Kingdom	Kingdom	Kingdom	United Kingdom	Kingdom	Kingdom	Kingdom	
	other Europe	other Europe	other Europe			other Europe	other Europe	other Europe	other Europe	other Europe	other Europe		other Europe		
								Afghanistan	Afghanistan	Afghanistan				Afghanistan	Afghanistan
				China	China	China	China	China	China	China	China	China		China	China
						India	India			India	India				
							Iraq								
					Japan		Japan	Japan	Japan		Japan				
						Dem. People´s		Dem. People´s							
						Rep. Korea		Rep. Korea							
					Rep. of Korea		Rep. of Korea			Rep. of Korea	Rep. of Korea	Rep. of Korea			
							Mongolia				Syrian Arab				
											Republic				
Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey	Turkey		Turkey	Turkey
	other Asia	other Asia	other Asia			other Asia	other Asia	other Asia	other Asia	other Asia	other Asia		other Asia	other Asia	other Asia
							Canada						Canada		Canada
															Cuba
	United States		United States	United States	United States	United States	United States	United States	United States	United States	United States	United States	United States	United States	United States
						other Amerika	other Amerika	other Amerika							
		other Africa	other Africa			other Africa		other Africa					other Africa		

Source: TACIS Inception Report; World Bank; Eastern Europe and teh Commonwealth of Independent States, London 1997

The data show the wide range of trade connections which have been partly built up since the dissolution of the network of the former Soviet Union.

Volume and structure of a country's imported and exported goods will not change dramatically within a short term. Exports are mainly determined by natural resources and by the structure of the of the economy and especially the structure of the capital stock. Imports are basically influenced by the availability of hard currency, the industrial structure, the needs of the population and, very important, by the development of income.

As figures stated above all TRACECA-States are on a low development standard. The capital stocks in these countries are mostly in a poor condition which will not allow high capacity utilisation like in like in former times. Agricultural production - with exception of Kazakhstan - does not reach for self sufficiency. That is why these countries mainly have to import food, at least in the next years, until agricultural production will reach former quantities, consumer goods and project cargo for industrial investment, and if they have no own energy resources, oil gas and products thereof.

Exports, however, are mainly determined by the availability of natural resources, the structure of industrial production and the degree of agricultural production.

When the economies will recover in the medium term, the trade flows to and from the hinterland of the Georgian ports will change step by step.

A prerequisite for the successful recovery is the exploitation of natural resources, which are located generously in the hinterland. The enterprises engaged in the exploitation process first of all need project cargo and construction material such as steel, timber, building material, and equipment, such as machines, tools, tractors, bulldozer, and other building material. Trade flows of these materials will primarily be affected by the level of fixed capital investment in the exploitation industry. When the returns of investment activity begins to flow hard currency streams will swell which primarily will be used to import such goods, the industry in the hinterland cannot produce competitively. Such goods are in the first phase consumer goods. In the next phase, when the economy begins with the rehabilitation of infra- and suprastructure, large quantities of building material including cement, bricks and stone, sand and gravel are needed, which partly will be imported. For the recovery of the agricultural sector, vehicles, trucks, tractors, and other hardware as well as fertilisers are needed. When production in the rural areas begins to grow, agricultural trade will increase: grain, cotton, fruits, vegetables, wine and groats will be important.

The rehabilitation of the industrial sector will be accompanied by the dismantling of huge industrial complexes. That is why we expect scrap to be handled across borders in reasonable quantities. Petrochemical industry in the hinterland is very important; after recovery this part of industry should be able to export petrochemical products as well as it will need inputs from other industries abroad. Petrochemicals thus are expected to play a dominant role in the Georgian ports.

The exploitation of ferrous and non-ferrous ores is expected to grow in the future, too. Partly they will be refined and processed in the hinterland and traded as metal, partly they will be traded as pallets or they will be exported without processing. That is why the Georgian ports should be able to handle metals, pallets, ores, ferrous as well as non ferrous.

The turnover of cotton fibre is expected to grow considerably, when the availability of fertilisers and water for irrigation will be improved.

When the income per capita starts to grow, the imports of new and used cars will swell considerably. As a consequence, automotive parts are needed, which have to be imported, too.

When income grows further people want to rebuild and restructure their homes or houses. That is why building material, such as roofing material, tiles, stones, carpets, sanitary equipment, tapestry, paint etc. is needed and partly has to be important.

Equipment for the construction of communication networks will be important, too.

The range of potential import commodities is very wide, wider than the range of export commodities. The structure of export production within the next decade will be dominated by raw materials and semi finished commodities, such as metals or pallets, as well as agricultural production like cotton and fibres. Oil products as well as petrochemicals will be important, too.

To sum up, the following commodities are mainly expected to be important for the Georgian ports:

Unloaded commodities	Loaded commodities
project cargo	grain
construction material	cotton
steel	fruits, spices, tea
timbers	scrap
building material	petrochemicals
food, sugar, rice, meat	ores
beverages	metals
consumer goods	pallets
vehicles, trucks, tractors	salt
automotive parts	petroleum products
fertilisers	fertiliser
grain	textiles
petrochemicals	tobacco
machines	leather
industrial products	
electric and electronic goods	

5 Containerisation and Unitisation Potentials

5.1 Ferry Facilities in other ports

Almost all major ports of the Black Sea are connected by ferry lines (trucks and rail wagons). The following list contains all ferry lines between TEN and TRACECA.

Relation	No of vessels operating
Burgas (BG) - Poti (GEO) -Novorossisk (RUS)	1
Burgas (BG) - Novorossisk (RUS) - Poti (GEO)	1
Varna (BG) - Batumi (GEO)	1
Illiychevsk (UKR) - Poti (GEO)	1

Status: 31.12.97

Between Bulgaria and Georgia two RO/RO-lines serving three relations have started operation in 1996 and 1997. In Constanta, Romania, a new ferry terminal for trucks and wagons is under construction, the line to Batumi is planned to start in 1998. From Illiychevsk (Ukraine) two rail ferry lines are operating: One to Varna (Bulgaria), where the change of bogies is handled, and since 1996 to Poti (Georgia).

The traffic potential for the rail ferry service between Poti and Illyichevsk has been investigated thoroughly in a study by the HPTI-Dornier-RMG Consortium which can be found in Annex 1 of this volume. According to the forecasts, as result can be stated that the cargo potential justifies the investment in the building of an adequate rail ramp in Poti which is being financed within the Tacis-Traceca programme by EU grant. This improvement of handling operations for rail wagons is an important aspect for achieving a significant share out of the cargo potential.

In short can be stated that the ferry facilities for RO/RO and rail are in poor and not optimised but principally working conditions. In all ports the problems are well known and master plans for renewal and extension have been made. In the ports of Constanta and Bourgas the construction of new facilities have already begun.

In the following, the ferry facilities of TEN ports at the Black Sea are described. For further information see the description of the ports in Phase 1 Report.

Illyichevsk, Ukraine
Three dedicated RO/RO-facilities two with adjustable ramps and one with a fixed ramp are installed in the port. Maximum depth at the quay is 9.6 m. The rail gauge is the Russian size (1.520 m), the change of bogies is not possible. The conception for the future includes expansion of the ferry terminal.

Constanta, Romania
Due to the strategic geographical position at the river Danube the Port of Constanta has developed to the largest of the Black Sea. In the old part at berths no. 1 to 4 are RO/RO- and passenger ferry facilities situated. With the construction of the Danube - Black Sea Canal the building of the so called South Port at its mouth begun. Up to now a large free zone with warehouses, throughput and stocking facilities for general cargoes (actually mainly steel products and timber) as well as the extension of the intermodal throughput by a RO/RO-terminal and a railway ferry berth are being installed. Possible drafts reach up to 14.5 m.

Varna, Bulgaria

The RO/RO-terminal is situated in the port Varna-East right at the Black Sea. From here a line to Novorossisk and to Batumi is under operation. Maximum depth is up to 12 m. By access via a 20 km long lake and canal system with a maximum draft of 10 m is the port Varna-East situated. The Bulgarian Railway company operates here the rail ferry facility with the only bogie change possibility between European and Russian gauge at the Black Sea. Since the line between Illychevsk and Varna has experienced a decline of demand, dispatching capacities for other relations are available.

Bourgas, Bulgaria

In the port of Bourgas a RO/RO-ferry line is on operation to the eastern side of the Black Sea to Novorossisk and Poti since 1996. The existing facilities are lacking parking and manoeuvring spaces for the trucks. But one project of the port master plan concerns the RO/RO-facilities. Constructions have already begun, therefore improvement will be achieved soon. The harbour draught will be up to 10.5 m.

5.2 Traffic Patterns for Feeder and Liner Services

Georgian ports are connected with the world market via feeder concerning container and with Europe additionally via RO/RO-lines from the Bulgarian ports Varna and Bourgas and Illyichevsk in Ukraine. Due to seasonal deviations and the fast development of cargo volume the frequencies of the lines as well as the employment of vessels may be adjusted. The following list contains the actual operating lines serving Georgia.

Vessels	Capacity of vessels	Frequency departures/month	Lines	Agents	Relations
STK-1011	80 TEU	3	Bultrans	Barwil	Istanbul - Poti
MSC-Vencer	160 TEU	2	MSC	Barwil	Istanbul - Poti
MSC-Larisa	160 TEU	2	MSC	Barwil	Istanbul - Poti
Paainer	240 TEU	2	SCS	Cavtrex-Poti	Gio Taura - Piraeus - Poti - Novorossisk
Patainer	240 TEU	2	SCS	Sarlis	Gio Taura -Piraeus - Poti - Novorossisk
Palinger	350 TEU	1	SCS	Sarlis	Gio Taura -Piraeus - Poti - Novorossisk
Gevo Victory	100 TEU	2	ESC	ESC	Piraeus - Varna - Novorossisk - Poti
Simin	120 TEU	2	Argoshipping	Argoshipping	Damieda - Poti (Trabzon) - Trabzon (Poti)
Aksoy Gelybolu	230 TEU	2	CMN	Vneshtrans	Piraeus - Illyichevsk - Poti
Borgfeld	160 TEU	2	CMN	Vneshtrans	Piraeus - Gio Taura - Odessa - Poti
Mind Ice	220 TEU	2	Istkbal	Murphy	Antwerp - Poti
Mind Action	220 TEU	2	Istkbal	Murphy	Antwerp - Poti
Geroy Plevny	108 wagons/ 250 trucks/ 900 cars	3	Ukrferry	Instra	Illyichevsk - Poti
Sredets	60 trucks	4	Somat	EXIM-TK	Burgas - Novorossisk - Poti
Preslav	45 trucks	4	Somat	EXIM-TK	Burgas - Poti - Novorossisk
Serdica	60 trucks	1 (occasionally)	Bulunion		Varna - Batumi

Status: 31.12.1997

The quoted capacities of the ferry vessels cannot be seen as a fixed number. It is custom, that RO/RO-vessels transport also containers on specific rolling flats as well as rail ferry vessels are loaded with trucks and containers. Therefore, the transported types and volumes may change slightly.

Some more lines are preparing already the establishment of new links. In near future this will be the Georgian Line with the vessel Valery Gegidze on the route Istanbul - Poti - Novorossisk and from Constanta will operate Romline to connect Romania and Georgia.

A respectively high number of container and RO/RO-lines have established in the last few years. The operators are medium sized shipping companies as well as world-wide operating container lines. This fact can be taken as a prove that the cargo volume and the link via the Black Sea between TEN and TRACECA experiences fast growing demand.

Taking into account the general concepts of major container operators it becomes clear that Poti and Batumi as well as other ports of the Black Sea will be connected by feeder vessels. The main ports which are connected directly by large container vessels are e.g. Antwerp/Rotterdam from the ARA-Range, Gio Taura (Italy) and Piraeus (Greek). There the containers are handled and bundled to all destination ports in Europe with feeder ships. Therefore, the container ships in Georgian ports will stay at a size already used today.

5.3 Availability of Shipping

Taking into account the variety of lines already operating and the short time it took to establish them, it is clear that the transport sector reacts fast and flexiblly to changing transport demand. Shipping lines need not only to buy a vessel but may also take a ship under charter when expanding their service. So the bottleneck for further shipping space is not the number of vessels and of lines but the port capacities for loading and discharging-. As soon as faster dispatch, efficient port operation and customs procedures can be achieved in Poti and Batumi it is possible for the lines to accelerate the circulation and therefore to increase the capacity at a considerable degree on the existing lines. These objects can be achieved in short time. Besides, the realisation of extensions will ease the capacity limitation in medium and long term.

5.4 Container and Unitisation Potential of Cargo

The evaluation of the Caucasian and Central Asian economies is performed above. Derived from that, the commodities expected to be important for the Georgian ports are described.

At the present the level of containerisation of the Caucasian and Central Asian foreign trade is limited, and most of the containers currently handled are carrying imports of Europe, the Far East and North America transited via Dubai and Bandar Abbas, Iran or a Turkish port and then carried by truck to their destination. The containerisation potential of the expected commodity mix in the Georgian ports is considerable. The world level of cargo transported in containers in comparison to general cargo is up to now approximately 80 %. This share has to be regarded as containerisation potential for the next decade.

Whether cargo is transported in container or not depends on several determinants, the most important are:

- load quantity,
- value/weight relation of cargo,
- availability of handling facilities,

- customs regulations,
- balance of cargo flows,
- tariffs offered on relation,
- availability of empty containers.

Within the coming years up to the year 2000 the level of the containerisation of the Caucasian and Central Asian general cargo trades can be expected to increase considerably. In the following years, it is highly probable that the share of containers will reach the world level. The driving forces of this increase will be

- the structure of cargo volume traded,
- the world wide extension of trade,
- the development of the TRACECA route for container transportation,
- the implementation of logistic services and information exchange in a way modern container operators do e.g. P&O containers, Sea-Land Service Inc., Maersk, Hapag Lloyd or Evergreen,
- using cotton or other cargo as return cargo to make containerised cargo flows more balanced.

The driving force for the containerisation of the trades will initially be the import trades to the Caucasian and Central Asian region. The commodities of higher value e.g. consumer goods as canned food, beverages, electronic instruments or spare parts for the oil drilling on this relation are usually containerised. Once the import containers are discharged at their destination, the container operators will seek cargoes suitable for containerisation among the export cargoes. Because before returning the containers empty, it makes sense to find payloads to deduct at least the costs. Cotton, metals, chemical and petrochemical products as well as significant quantities of industrial goods, produced in the countries are therefore commodities with potential to be containerised.

6 Interviews with international main operators, shippers, forwarders

6.1 Interviews

The interviews have been carried out with a selection of the following European and Trans-Caucasian transport specialists:

- Shippers
- Forwarders
- Shipping lines
- Ports and
- Railways

The commercial exchanges between the Republics of Uzbekistan, Kazakhstan, Azerbaijan, Georgia and the rest of the world have significantly changed since 1990. In the past international exchanges were on low level, national exchanges had a high importance. The Operations were done by big trading companies whose management was in Moscow. During these last years each Republic of the CIS has started to develop their own organisation(s) in the logistic area.

The interviews were performed in the period from October 1997 to January 1998. The following companies, in alphabetical order, were involved:

- Alfred Ernst + CoKG
- BASF
- Delacher & Co.
- F&O
- Ferro Transport
- Ferrostaal
- Franz Welz
- Intransco
- Klöckner
- Kraft
- Kuehne & Nagel
- Meyers Sohn GmbH
- Militzer & Münch
- Paul Günther Logistik + Leasing GmbH
- Procter and Gamble
- Samsung
- Sealand
- Shell
- Sostmeier Spedition & Logistik
- Sped. Heilmann
- Texaco
- Transalpina
- Transasia
- Transcargo

- Unitrans
- Wesotra Spedition+Transport
- Willy Betz

6.2 Common interest with Georgian Ports

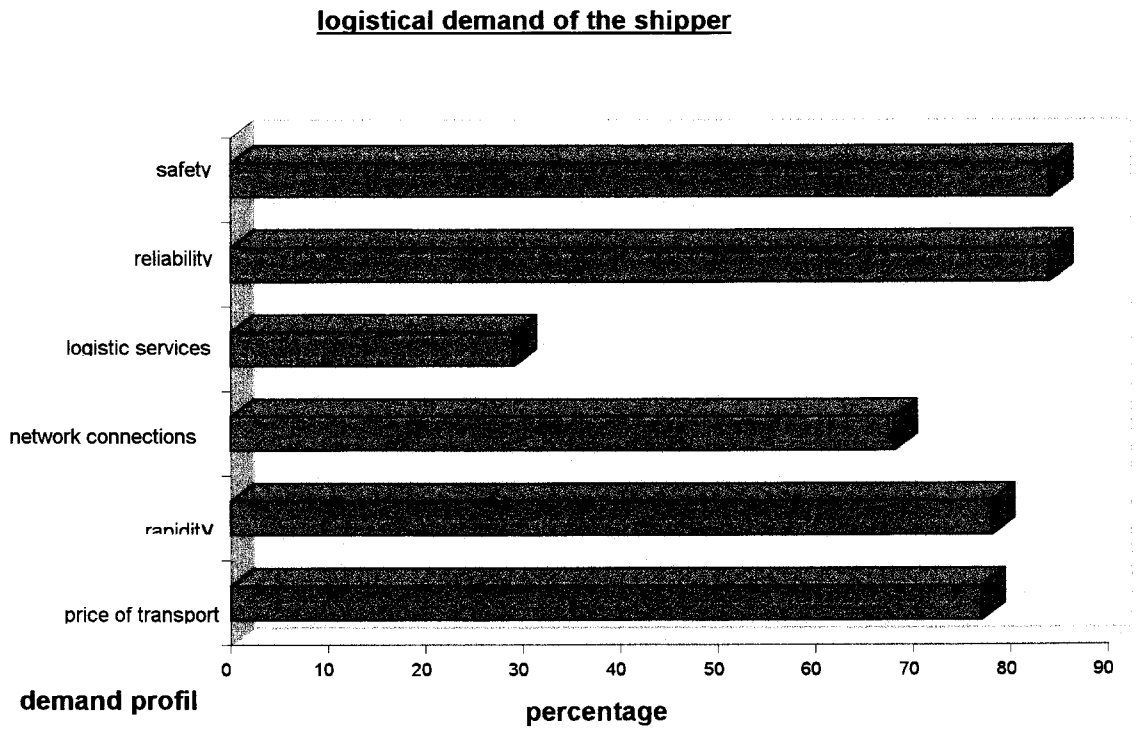
In most cases the complete transport operation is taken in charge by a professional, i.e. an international forwarder, who discusses directly with the ports authorities. The operators are mainly working in the following fields:

- Consumer products
- Oil and oil by-products
- Chemical Products
- Fertiliser
- Industrial machinery
- Metal and
- Foodstuff

The companies are generally satisfied with the present situation concerning their transport operations. Nevertheless the main critics are :

- Rapidity of transport
- Safety of transport
- Reliability of transport
- Flexibility of transport
- Logistical services for transport
- Transport delivery prices
- Connections and traffic infrastructures

Generally speaking, these interviews enable us to point out themain criteria concerning the importance of the transport operation problems. The figure below shows the importance of the different problems:



6.3 Volumes of Cargo handled

It is difficult to get reliable freight information about the volume. Freight of forwarders requires substantial flows of international traffic to establish a forwarding network. The changes in the former Soviet Union to a market economy have resulted in a strong reduction of transportation movements, including those involved in international trade.

However, the backbone for the economy is the transportation network. With a good transportation network and a developing economy the freight transport volume will strongly increase. This trend has resulted from several interviews with different companies. Examples for the increasing of freight volume are very different from one company to another.

6.4 Main transport Corridors/Routes

Truck

No common routes exist. The truck routes are mainly routes using the shipping lines through the Black Sea:

- The trucks travelling to Baku pass the ports of Poti or Batumi. They use the shipping link through the Black Sea from and to Odessa or Varna/Bourgas.
- Trucks travelling to Turkey mostly use land routes.
- Destinations with origin and destination (Kazakhstan, Tashkent) and North Europe are using the northern link to Moscow and via Brest/St. Petersburg/Kaliningrad. However, this link is mainly a railway link.

The main corridor for the Trucks are the corridors through the Black Sea to the ports of Odessa or Varna/Bourgas.

Railway

- The largest part of the railway transport uses the link via Moscow and Brest in Belarus or the link via the Ukraine to Poland. The transhipment, related to the track gauge difference with the Russian system is a bottleneck in this transport system.

Multimodal

- Two major routes exist. The first one runs through St. Petersburg and the second one through the ports of the Black Sea (Poti and Batumi).

There is a strong competition between the classical north routes (via St. Petersburg) and the south TRACECA routes (via Poti or Batumi).

6.5 Expectations

The TRACECA route is a reliable and important route. The companies expect to improve the following:

- rapidity of transport
- safety of transport
- reliability of transport
- flexibility of transport
- logistical services of transport
- price of transport
- network and infrastructure

The extensive written interviews of companies in Germany show that the safety of transport seems to be the criteria which is the most important to them, followed by reliability and logistical services. These criteria are followed by the price and the rapidity of transport as well as transport networks.

Rapidity of transport

- transport time from dispatch to receipt point (e.g. house to house traffics)
- to reduce the time of still standing along the way of transport (e.g. time of customer clearance)

Transport safety

- safety for means of transport and containers as well as safety of goods to avoid theft
- protection of specific kinds of goods (e.g. hazardous goods or cooled goods)
- Safety and security (damage, theft, etc.) of the transport mode

Realibility of transport

- schedules for transport (e.g. defined times of departure or arrival, transport times, arrival times)
- practicability of transport (e.g. to meet the deadline, transportation guarantee)

Flexibility of transport

- diversity of facilities (e.g. container, bulk, storage, repair shop etc.)
- availability of different transport facilities
- diversity of offer and possibilities to make arrangements (schedules, liner transport)

Logistical services for transport

- Possibility of checking the freight location's at any time (e.g. status - messages about the location of cargo / container / truck / wagon)
- Possibility of sending information in advance between dispatcher and recipient (exploitation of data networks, automatical data exchange)
- online communication possibility between loader / shipper / common carrier and recipient

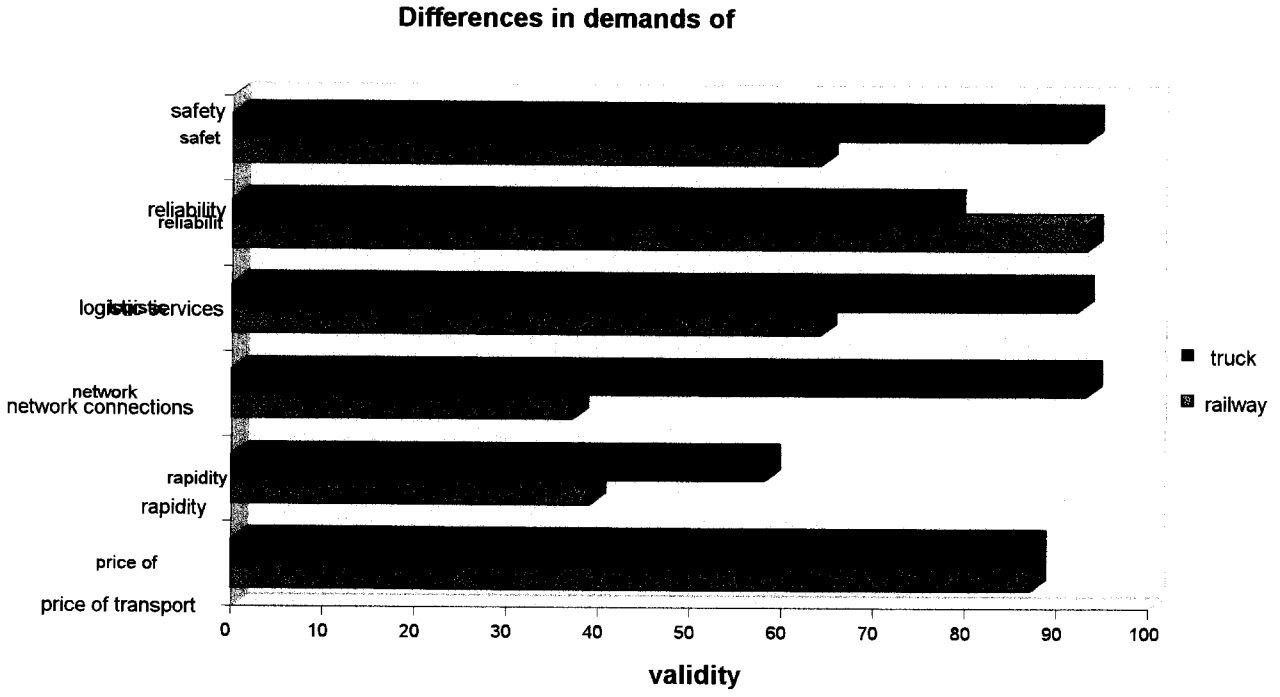
Price for transportation

- fast elaboration of transport offers for the customers
- distinction of transport price to different performance features
- testing the price performance proportions

Network and infrastructure

- density of network, availability and quality of traffic ways
- exploitation of free capacity
- Changes in goods structure to ensue on changes in traffic infrastructure
- estimation about the infrastructure changes in future (rapidity of changes)
- expected traffic restrictions (statutory requirement, restriction, prohibitions)

The expectations are different concerning the transport mode. The following figure shows this different expectations expressed by the operators:



7 Update of existing traffic forecast

The basis of the traffic forecast for the ports of Poti and Batumi should have been, in accordance with the working plan for the project, the Traceca project "Regional Traffic Database and Forecasting Model". Unfortunately, the available reports show that the model for the traffic forecast is acceptable, but the used database referring to the year 1995 does not correspond with data in other reliable sources. Therefore, it is not possible to use the data of the mentioned project to execute and respectively update a traffic forecast for Poti and Batumi.

Within the feasibility study for the Georgian ports it was planned to make an up-date of existing traffic forecast. Therefore, other existing traffic forecasts for the region had to be examined with respect to the usefulness for the estimate of future ports traffic. The following studies with traffic forecasts are of major importance:

- Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997
- Tacis/TRACECA "Trans Caucasian Railway, Railways Pre-Investment study and Pilot train Baku - Tiblisi - Batumi/Poti" , Draft Final Report May 1997
- HPC Hamburg Port Consulting GmbH "Optimising and Reorganisation of the Georgian Ports Poti and Batumi" (GTZ financed) April 1996
- Tacis "Forwarding - Multimodal Transports Systems" Draft Final Report February 1997
- Tacis "Development of the Port of Baku, Port Master Plan, Traffic Forecast and Economic Assessment" Phase III Report March 1997
- Tacis "Port Network Plan and Improvement Programme" Phase 3, Economic and Financial Evaluation Report - Baku April 1997

The first three of the mentioned studies (esp. the HPC study) perform a sound traffic forecast based on the future development of the GDP, the development of the main branches of the national economies and foreign trade of Armenia, Azerbaijan and Georgia. The main target of the Tacis/TRACECA studies is the forecast of railway traffic, though. Therefore, additional effort is necessary to integrate the road freight traffic and to estimate the throughput of the ports.

The studies concerning forwarding - multimodal transport systems and the port of Baku give additional information and data with respect to the relevant transport corridors. The data will be used to prove plausibility and supplement the data set.

Considering of the available reports and data the approach for the elaboration of the traffic forecast for the ports of Poti and Batumi is as follows:

- Analysis of the mentioned studies with respect to the underlying assumptions and scenarios
- Evaluation of the data concerning the ports of Poti and Batumi, compilation of data for the traffic forecast
- Setting the assumptions for the road haulage sector and definition of scenarios for road transport from and to the Georgian ports
- Execution of traffic forecast for the years 2002, 2007 and 2012
- Evaluation of the results with respect to plausibility
- Discussion of the sensitivity of the results with respect to political aspects and competitive transport routes

8 Preparation of Traffic Forecast

The political and economical development of the Caucasus region and the Central Asian states in the future depends on many governing factors leading to different consequences for the traffic of the ports of Poti and Batumi. In addition, the development of the competitive transport corridors influence the turnover of the ports. Therefore, it is helpful to base the traffic forecast on different paths of the possible development of the region. The traffic forecast is calculated on three scenarios.

Scenario I is based on assumptions characterising a positive development for the Caucasus region and a strong competitive position with respect to alternative transport corridors. Scenario I may be described in short as the "best case" development.

On the other hand, scenario II is based on a retarded development of the region. The rehabilitation of the national economies and the transport sector is slowed down by several set-backs and the competition of other transport corridors is strong. The political situation will be in this scenario far from normalisation in the interstate relations of the region. Scenario II may be stated as the "worst case" of the development.

Between these two extreme scenarios a third scenario (scenario III) describes an economic and political development, that is characterised as the "probable case". A moderate growth of the economies and a political development led by the common understanding that agreements to the benefit of all countries of the region will be the best way to proceed, are the main assumptions of scenario III.

In general, the scenarios are based on the railway traffic forecast of the study Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997. However, several assumptions of the scenarios of this study are varied, especially concerning the modal split and the economic development of the region in the pessimistic scenario. The scenarios refer to the countries of Georgia, Azerbaijan and Armenia.

In detail the scenarios are based on the following assumptions:

8.1 Scenario I

Transport sector

- Steady growth in transport volume due to the progress in economic development of the countries (rehabilitation of industries, exploitation of natural resources)
- Modernisation of railway infrastructure and rolling stock, organisation of railway traffic according to modern standards
- Development of forwarding companies and offer of efficient truck services
- Changes in modal split: transport of bulk mainly by the railways, significant share of road transport in general cargo

Transport of exports

- Growth of freight traffic in accordance with the entire freight volume, higher growth rate for Armenia due to the normalisation of the political situation, high growth rates for the export of oil products for Azerbaijan (volume produced above national consumption will be exported: about 5 to 7 million t per year)
- Transport of bulk and oil products in main by railway

Transport of imports

- Decrease in imports of cereals (reduction of food aid), increase of imports of general cargo with similar growth rates to exports
- Increase in the import of equipment for oil production and several development projects for Azerbaijan
- Increase in the import of foodstuff and other goods of higher value (general cargo)

Transport of transit cargo

- Transit traffic via Yalta to Russia and via Dshulfa to Iran will be possible by the year 2000
- Cotton and oil products from Central Asia, investment goods and foodstuff to Central Asia will increase

Commodities

Bulk

Imports of grain via the ports of Poti and Batumi for the destination in Armenia, Georgia and Azerbaijan are organised by the World Food Programme (WFP). It is assumed that imports due to this program will decline with the rising degree of self-sustainability of the countries. Nevertheless, it has to bee taken into account that the use of arable land for grain production is limited and that cereals are a basic foodstuff for meals and to feed livestock. The expectation of rising demand for grain will also in the future result in an import demand. Import countries for grain via the Georgian ports are mainly Georgia, Azerbaijan, Armenia and Turkmenistan.

Before the dissolution of the SU the Georgian ports handled bauxite and aluminium oxide for an aluminium plant in Azerbaijan. The product (aluminium oxide) was despatched to Magnetogorsk in Russia. Because the processing plants in Magnetogorsk could be served cheaper by Russian ports, the transport connection via the Georgian ports is not of interest for the future. The Caucasian countries will have a future demand for aluminium that could be delivered by the plant in Azerbaijan. Therefore, imports of bauxite or aluminium oxide via the Georgian ports are assumed with a rising volume according to the expansion of capacity of the plant in Azerbaijan until 2002.

The deposits of manganese ore in Georgia will lead to exports via the Georgian ports, when the mining industry is recovered and modernised. It is assumed that this process is completed until 2002. In addition, copper concentrate and chrome will be exported in future.

Ferrous metal and scrap iron are assumed to have an important share in outbound cargo of the Georgian ports. Scrap exports are a consequence of the restructuring of the Caucasian region. Obsolete industrial equipment, outdated rolling stock of railway and unnecessary military material will be the sources of scrap exports. It is assumed that the process of restructuring will last over the year 2012.

The development of Caucasian countries will lead to import demand of building materials. A limited inbound cargo volume esp. for cement is assumed for the Georgian ports.

Oil products

The throughput of oil products in the Georgian ports is one of the items with a high degree of uncertainty with respect to the traffic forecast. The governing factors influencing the turnover of oil products in Poti and Batumi are:

- The exploitation of the oil fields in the Caspian Sea and respectively the major transport routes of oil products depend on the answer to the question if the Caspian Sea is a sea or a lake. The classification as a sea makes it possible to apply international legal rules (Law of the Sea Convention). The surface area is then divided according to this convention into national zones belonging to the property of the five countries. If the Caspian Sea has the status of a lake no international treaty is applicable and it is the joint property of the five countries. Depending on the result of the status of the Caspian Sea the transport routes for oil products underlay the political influence of the involved countries. Russia is interested in transport through its territory. Alternative routes through e.g. Georgia guarantee economic and political independence.
- Georgia has limited oil reserves at the Black Sea and east of Tiblisi. The exploitation of a remarkable amount within the time span of the traffic forecast is uncertain. The refinery in Batumi doesn't fit modern standards and needs complete reconstruction. According to patterns in international oil trade crude oil is transported as close as possible to the regions of consumption. Therefore, it has to be questioned which capacity in the Batumi refinery is needed to fulfil market demands.
- Azerbaijan has proven oil deposits and refinery capacity. Crude oil will be transported in pipelines. Oil products will be consumed in the region. The surplus could be exported to a large extend via the Georgian ports.

With respect to the last mentioned point figures for the turnover of oil products in the Georgian ports in the future differ in the existing traffic forecasts very much. The study of GTZ "Reorganisation of the Georgian Ports Poti and Batumi" expects that about 1.5 million tons of oil products p.a. up to the year 2010 are handled in the Georgian ports (maximum variant). The study Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997, seems to indicate a volume of about 5 to 7 million tons of westbound traffic of petrochemical products to the Georgian ports up to the year 2015 (optimistic scenario). The GTZ estimate seems to be rather conservative whereas the Tacis/TRACECA estimate is very optimistic. Therefore a sound estimate for the turnover of oil products in the Georgian ports is in the range of about 2.3 to 3.4 million tons throughput in scenario I and about 2 million tons in scenario II.

General Cargo

The import of general cargo via the Georgian ports will increase with a growth rate higher than the GDP growth rate. The structure of the goods is determined by metal products, mineral building materials, equipment for the industries, foodstuff that is not produced within the countries and high-value consumer goods. With the recovery of the agricultural production and the industries exports of general cargo will increase.

Container

With respect to the container traffic in the Georgian ports it is assumed that in the future a growing share of the general cargo is transported in containers. Existing traffic forecasts show different results for the container traffic in the Georgian ports. The forecast made by Sea-Land Service Inc. "Georgian Intermodal Terminal Network - Feasibility Study and Business Plan" April 1997 estimates the container throughput for the port of Poti between 130,000 TEU (container + ro-ro-traffic, loaded containers, scenario I) and 62,000 TEU (scenario II) for the year 2001. The forecast in the study Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997 estimates a TEU throughput volume of about 20,000 TEU (pessimistic scenario) up to 44,000 TEU (optimistic scenario) for the year 2012. These extreme differences in existing studies indicate that a reliable estimate of future container traffic seems to be a problem.

An important volume in container traffic will in future result from the export of cotton from Uzbekistan and Turkmenistan (see Tacis "Port Network Plan and Improvement Programme" Phase 3, Economic and Financial Evaluation Report - Baku April 1997, p. 100). In 1995 about 300,000 tons of cotton was exported from

Turkmenistan. The governments of Uzbekistan, Turkmenistan, Azerbaijan and Georgia have reached an agreement for the transport of one million tons of cotton via the TRACECA route (and the ports of Poti and Batumi) to Europe. Experts have doubts about the realisation of the mentioned volume for economic reasons. In addition, the volume would cause capacity problems in transport. Nevertheless, a significant part of container transport in the east-west direction will result of cotton exports from Turkmenistan and Uzbekistan.

8.2 Scenario II

Transport sector

- Retarded growth in transport volume for the reason of delays in the rehabilitation of industries and the exploitation of natural resources
- Insufficient modernisation of railway infrastructure and rolling stock, sub-optimal organisation of railway traffic
- Development of forwarding companies with truck fleets
- Changes in modal split: in comparison to scenario I higher share of road transport for bulk and general cargo

Transport of exports

- Growth of freight traffic in accordance with the retarded growth in the entire freight volume, lower growth rates for Armenia for the reason of continuing political problems with neighbouring countries, lower production level for oil products of Azerbaijan and therefore reduced exports
- Transport of bulk and general cargo to a larger extend by road in comparison to scenario I

Transport of imports

- The assumed lower growth rates of the national economies of Georgia, Azerbaijan and Armenia lead to smaller traffic volumes in comparison to scenario I

Transport of transit cargo

- The transit traffic via Yalma to Russia is, compared to scenario I much smaller, transit traffic via Dshulfa to Iran is not possible

With respect to the commodities it is assumed, that structure of goods is not different to scenario I, however the volume is, due to the retarded development, much lower in comparison to scenario I.

8.3 Scenario III

Transport sector

- Growth in transport volume due to the progress in economic development (rehabilitation of industries, exploitation of natural resources), but due to a not humanised development of the different economic sectors (e.g. rehabilitation of industry neglecting the increasing demand for energy) lower growth rates in comparison to scenario I
- Modernisation of railway infrastructure and rolling stock, but organisation of railway traffic being one step behind modern standards
- Development of forwarding companies with truck fleets
- Changes in modal split: in comparison to scenario I better chances for road haulage sector to gain market shares of transport volume due to suboptimal organisation of railway service

Transport of exports

- Growth of freight traffic in accordance with the entire freight volume, relatively high growth rates for the export of oil products for Azerbaijan

Transport of imports

- Similar assumptions like scenario I, however lower growth rates in import volume

Transport of transit cargo

- Cotton and oil products from Central Asia, investment goods and foodstuff to Central Asia will increase, but with lower growth rate in comparison to scenario I

With respect to the commodities it is assumed, that the structure of goods is not different to scenario I, however, the volume is, due to the development, lower in comparison to scenario I.
The results of the traffic forecast for the ports of Poti and Batumi (main commodity groups) for scenario I, II, III are compiled in the following tables.

The figures in the following tables have been rounded for easy handling. Therefore, slight differences between the shown total sum and the calculated sum may appear.

Port of Poti 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	842,000	47%	697,000	50%	662,200	95%	34,900	5%	145,000	37%	117,500	81%	27,600	19%
oil products	622,000	35%	476,000	34%	466,500	98%	9,500	2%	146,000	38%	141,600	97%	4,400	3%
general cargo	219,000	12%	138,000	10%	117,300	85%	20,700	15%	81,000	21%	72,100	89%	8,900	11%
container	95,000	5%	78,000	6%	49,100	63%	28,900	37%	17,000	4%	6,000	35%	11,100	65%
total	1,778,000	100%	1,389,000	100%	1,295,100	93%	94,000	7%	389,000	100%	337,200	87%	52,000	13%

scenario I (best case) 2002

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,409,400	28%	729,000	31%	583,200	80%	145,800	20%	680,400	25%	544,300	80%	136,100	20%
oil products	1,057,100	21%	309,800	13%	303,600	98%	6,200	2%	747,300	27%	732,400	98%	14,900	2%
general cargo	1,166,400	23%	492,000	21%	344,400	70%	147,600	30%	674,400	25%	472,100	70%	202,300	30%
container	1,428,900	28%	811,600	35%	608,700	75%	202,900	25%	617,300	23%	463,000	75%	154,300	25%
total	5,061,800	100%	2,342,400	100%	1,839,900	79%	502,500	21%	2,719,400	100%	2,211,800	81%	507,600	19%

scenario I (best case) 2007

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	2,054,400	30%	940,700	29%	799,600	85%	141,100	15%	1,113,700	31%	946,700	85%	167,100	15%
oil products	1,300,000	19%	454,800	14%	445,700	98%	9,100	2%	845,200	23%	828,300	98%	16,900	2%
general cargo	1,155,600	17%	538,400	16%	403,800	75%	134,600	25%	617,200	17%	462,900	75%	154,300	25%
container	2,411,800	35%	1,362,500	41%	1,021,800	75%	340,600	25%	1,049,300	29%	787,000	75%	262,300	25%
total	6,921,800	100%	3,296,400	100%	2,670,900	81%	625,400	19%	3,625,400	100%	3,024,900	84%	600,600	17%

scenario I (best case) 2012

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	2,742,300	30%	1,183,000	27%	1,005,500	85%	177,400	15%	1,559,300	32%	1,325,400	85%	233,900	15%
oil products	1,558,100	17%	514,100	12%	503,800	98%	10,300	2%	1,044,000	21%	1,023,100	98%	20,900	2%
general cargo	1,163,400	13%	562,200	13%	421,600	75%	140,500	25%	601,200	12%	450,900	75%	150,300	25%
container	3,800,500	41%	2,143,100	49%	1,607,300	75%	535,800	25%	1,657,400	34%	1,243,000	75%	414,300	25%
total	9,264,300	100%	4,402,400	100%	3,538,200	81%	864,000	19%	4,861,900	100%	4,042,400	84%	819,400	17%

Port of Poti 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	842,000	47%	697,000	50%	662,200	95%	34,900	5%	145,000	37%	117,500	81%	27,600	19%
oil products	622,000	35%	476,000	34%	466,500	98%	9,500	2%	146,000	38%	141,600	97%	4,400	3%
general cargo	219,000	12%	138,000	10%	117,300	85%	20,700	15%	81,000	21%	72,100	89%	8,900	11%
container	95,000	5%	78,000	6%	49,100	63%	28,900	37%	17,000	4%	6,000	35%	11,100	65%
total	1,778,000	100%	1,389,000	100%	1,295,100	93%	94,000	7%	389,000	100%	337,200	87%	52,000	13%

scenario II (worst case) 2002

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	916,200	20%	473,900	31%	331,700	70%	142,200	30%	442,300	25%	309,600	70%	132,700	30%
oil products	687,000	15%	201,300	13%	197,300	98%	4,000	2%	485,700	27%	471,200	97%	14,600	3%
general cargo	758,200	17%	319,800	21%	191,900	60%	127,900	40%	438,400	25%	263,000	60%	175,300	40%
container	928,700	21%	527,500	35%	311,200	59%	216,300	41%	401,200	23%	236,700	59%	164,500	41%
total	3,290,100	73%	1,522,500	100%	1,032,100	68%	490,400	32%	1,767,600	100%	1,280,500	73%	487,100	27%

scenario II (worst case) 2007

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,335,300	30%	611,400	29%	428,000	70%	183,400	30%	723,900	31%	506,700	70%	217,200	30%
oil products	845,000	19%	295,600	14%	289,700	98%	5,900	2%	549,400	23%	538,400	98%	11,000	2%
general cargo	751,100	17%	349,900	16%	210,000	60%	140,000	40%	401,200	17%	240,700	60%	160,500	40%
container	1,567,700	35%	885,600	41%	522,500	59%	363,100	41%	682,100	29%	402,400	59%	279,600	41%
total	4,499,100	100%	2,142,500	100%	1,450,200	69%	692,400	31%	2,356,600	100%	1,688,200	72%	668,300	28%

scenario II (worst case) 2012

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,782,500	30%	768,900	27%	538,300	70%	230,700	30%	1,013,600	32%	709,500	70%	304,100	30%
oil products	1,012,800	17%	334,200	12%	327,500	98%	6,700	2%	678,600	21%	665,000	98%	13,600	2%
general cargo	756,200	13%	365,400	13%	219,300	60%	146,200	40%	390,800	12%	234,500	60%	156,300	40%
container	2,470,300	41%	1,393,000	49%	821,900	59%	571,100	41%	1,077,300	34%	635,600	59%	441,700	41%
total	6,021,800	100%	2,861,500	100%	1,907,000	67%	954,700	33%	3,160,300	100%	2,244,600	71%	915,700	29%

Port of Poti 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	842,000	47%	697,000	50%	662,200	95%	34,900	5%	145,000	37%	117,500	81%	27,600	19%
oil products	622,000	35%	476,000	34%	466,500	98%	9,500	2%	146,000	38%	141,600	97%	4,400	3%
general cargo	219,000	12%	138,000	10%	117,300	85%	20,700	15%	81,000	21%	72,100	89%	8,900	11%
container	95,000	5%	78,000	6%	49,100	63%	28,900	37%	17,000	4%	6,000	35%	11,100	65%
total	1,778,000	100%	1,389,000	100%	1,295,100	93%	94,000	7%	389,000	100%	337,200	87%	52,000	13%

scenario III (probable case) 2002

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,198,000	28%	619,700	31%	464,700	75%	154,900	25%	578,300	25%	433,700	75%	144,600	25%
oil products	898,500	21%	263,300	13%	258,000	98%	5,300	2%	635,200	27%	616,100	97%	19,100	3%
general cargo	991,400	23%	418,200	21%	271,800	65%	146,400	35%	573,200	25%	372,600	65%	200,600	35%
container	1,214,500	28%	689,800	35%	448,400	65%	241,400	35%	524,700	23%	341,100	65%	183,600	35%
total	4,302,400	100%	1,991,000	100%	1,442,900	72%	548,000	28%	2,311,400	100%	1,763,500	76%	547,900	24%

scenario III (probable case) 2007

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,746,300	30%	799,600	29%	639,700	80%	159,900	20%	946,700	31%	757,300	80%	189,300	20%
oil products	1,105,100	19%	386,600	14%	378,900	98%	7,700	2%	718,500	23%	704,100	98%	14,400	2%
general cargo	982,200	17%	457,600	16%	297,500	65%	160,200	35%	524,600	17%	341,000	65%	183,600	35%
container	2,050,000	35%	1,158,100	41%	810,700	70%	347,400	30%	891,900	29%	624,300	70%	267,600	30%
total	5,883,600	100%	2,801,900	100%	2,126,800	76%	675,200	24%	3,081,700	100%	2,426,700	79%	654,900	21%

scenario III (probable case) 2012

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	2,330,900	30%	1,005,500	27%	804,400	80%	201,100	20%	1,325,400	32%	1,060,300	80%	265,100	20%
oil products	1,324,400	17%	437,000	12%	428,300	98%	8,700	2%	887,400	21%	869,700	98%	17,700	2%
general cargo	988,900	13%	477,900	13%	334,500	70%	143,400	30%	511,000	12%	357,700	70%	153,300	30%
container	3,230,300	41%	1,821,600	49%	1,275,100	70%	546,500	30%	1,408,700	34%	986,100	70%	422,600	30%
total	7,874,500	100%	3,742,000	100%	2,842,300	76%	899,700	24%	4,132,500	100%	3,273,800	79%	858,700	21%

Port of Batumi 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	551,000	40%	533,000	60%	533,000	100%	0	0%	18,000	4%	18,000	100%	0	0%
oil products	642,000	46%	238,000	27%	226,100	95%	11,900	5%	404,000	82%	400,000	99%	4,000	1%
general cargo	190,000	14%	122,000	14%	113,500	93%	8,500	7%	68,000	14%	64,600	95%	3,400	5%
container	0	0%	0	0%	0	0%	0	100%	0	0%	0	100%	0	0%
total	1,383,000	100%	893,000	100%	872,600	98%	20,400	2%	490,000	100%	482,600	98%	7,400	2%

scenario I (best case) 2002

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	939,600	31%	618,100	72%	494,500	80%	123,600	20%	321,500	15%	257,200	80%	64,300	20%
oil products	1,291,900	43%	61,700	7%	60,500	98%	1,200	2%	1,230,200	57%	1,205,600	98%	24,600	2%
general cargo	777,600	26%	182,900	21%	128,000	70%	54,900	30%	594,700	27%	416,300	70%	178,400	30%
container	29,200	1%	1,500	0%	0	0%	1,500	100%	27,700	1%	0	0%	27,700	100%
total	3,038,300	100%	864,200	100%	683,000	79%	181,200	21%	2,174,100	100%	1,879,100	86%	295,000	14%

scenario I (best case) 2007

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,369,600	36%	819,000	79%	696,100	85%	122,800	15%	550,600	20%	468,000	85%	82,600	15%
oil products	1,589,000	42%	61,300	6%	60,000	98%	1,200	2%	1,527,700	56%	1,497,100	98%	30,600	2%
general cargo	770,400	20%	145,200	14%	108,900	75%	36,300	25%	625,200	23%	468,900	75%	156,300	25%
container	49,200	1%	4,900	0%	0	0%	4,900	100%	44,300	2%	0	0%	44,300	100%
total	3,778,200	100%	1,030,400	100%	865,000	91%	165,200	9%	2,747,800	100%	2,434,000	89%	313,800	11%

scenario I (best case) 2012

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,828,200	40%	1,334,900	86%	1,134,700	85%	200,200	15%	493,300	16%	419,300	85%	74,000	15%
oil products	1,904,300	42%	65,900	4%	64,600	98%	1,300	2%	1,838,400	61%	1,801,700	98%	36,800	2%
general cargo	775,600	17%	136,300	9%	102,200	75%	34,100	25%	639,300	21%	479,500	75%	159,800	25%
container	77,500	2%	11,600	1%	0	0%	11,600	100%	65,900	2%	0	0%	65,900	100%
total	4,585,600	100%	1,548,700	100%	1,301,500	84%	247,200	16%	3,036,900	100%	2,700,500	89%	336,500	11%

Port of Batumi 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	551,000	40%	533,000	60%	533,000	100%	0	0%	18,000	4%	18,000	100%	0	0%
oil products	642,000	46%	238,000	27%	226,100	95%	11,900	5%	404,000	82%	400,000	99%	4,000	1%
general cargo	190,000	14%	122,000	14%	113,500	93%	8,540	7%	68,000	14%	64,600	95%	3,400	5%
container	0	0%	0	0%	0	0%	0	100%	0	0%	0	100%	0	0%
total	1,383,000	100%	893,000	100%	872,600	98%	20,440	2%	490,000	100%	482,600	98%	7,400	2%

scenario II (worst case) 2002

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	610,800	31%	401,800	72%	281,300	70%	120,500	30%	209,000	15%	146,300	70%	62,700	30%
oil products	839,800	43%	40,100	7%	39,300	98%	800	2%	799,700	57%	775,700	97%	24,000	3%
general cargo	505,500	26%	118,900	21%	71,300	60%	47,500	40%	386,600	27%	232,000	60%	154,600	40%
container	18,900	1%	900	0%	0	0%	900	100%	18,000	1%	0	0%	18,000	100%
total	1,975,000	100%	561,700	100%	391,900	70%	169,700	30%	1,413,300	100%	1,154,000	82%	259,300	18%

scenario II (worst case) 2007

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	890,200	36%	532,300	79%	372,600	70%	159,700	30%	357,900	20%	250,500	70%	107,400	30%
oil products	1,032,800	42%	39,800	6%	39,000	98%	800	2%	993,000	56%	973,100	98%	19,900	2%
general cargo	500,800	20%	94,400	14%	56,600	60%	37,800	40%	406,400	23%	243,800	60%	162,500	40%
container	32,000	1%	3,200	0%	0	0%	3,200	100%	28,800	2%	0	0%	28,800	100%
total	2,455,800	100%	669,700	100%	468,200	70%	201,500	30%	1,786,100	100%	1,467,400	80%	318,600	20%

scenario II (worst case) 2012

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,188,300	40%	867,700	86%	607,400	70%	260,300	30%	320,600	16%	224,500	70%	96,200	30%
oil products	1,237,900	42%	42,900	4%	42,000	98%	900	2%	1,195,000	61%	1,171,100	98%	23,900	2%
general cargo	504,100	17%	88,600	9%	53,200	60%	35,400	40%	415,500	21%	249,300	60%	166,200	40%
container	50,500	2%	7,600	1%	0	0%	7,600	100%	42,900	2%	0	0%	42,900	100%
total	2,980,800	100%	1,006,800	100%	702,600	70%	304,200	30%	1,974,000	100%	1,644,900	83%	329,200	17%

Port of Batumi 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	551,000	40%	533,000	60%	533,000	100%	0	0%	18,000	4%	18,000	100%	0	0%
oil products	642,000	46%	238,000	27%	226,100	95%	11,900	5%	404,000	82%	400,000	99%	4,000	1%
general cargo	190,000	14%	122,000	14%	113,500	93%	8,500	7%	68,000	14%	64,600	95%	3,400	5%
container	0	0%	0	0%	0	0%	0	100%	0	0%	0	100%	0	0%
total	1,383,000	100%	893,000	100%	872,600	98%	20,400	2%	490,000	100%	482,600	98%	7,400	2%

scenario III (probable case) 2002

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	798,600	31%	525,400	72%	394,100	75%	131,400	25%	273,200	15%	204,900	75%	68,300	25%
oil products	1,098,200	43%	52,500	7%	51,400	98%	1,000	2%	1,045,700	57%	1,014,300	97%	31,400	3%
general cargo	660,900	26%	155,400	21%	101,000	65%	54,400	35%	505,500	27%	328,600	65%	176,900	35%
container	24,700	1%	1,200	0%	0	0%	1,200	100%	23,500	1%	0	0%	23,500	100%
total	2,582,400	100%	734,500	100%	546,500	74%	188,000	26%	1,847,900	100%	1,547,800	84%	300,100	16%

scenario III (probable case) 2007

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,164,100	36%	696,100	79%	556,900	80%	139,200	20%	468,000	20%	374,400	80%	93,600	20%
oil products	1,350,600	42%	52,100	6%	51,000	98%	1,000	2%	1,298,500	56%	1,272,600	98%	26,000	2%
general cargo	654,900	20%	123,500	14%	80,200	65%	43,200	35%	531,400	23%	345,400	65%	186,000	35%
container	41,900	1%	4,200	0%	0	0%	4,200	100%	37,700	2%	0	0%	37,700	100%
total	3,211,500	100%	875,900	100%	688,100	78%	187,600	22%	2,335,600	100%	1,992,400	85%	343,300	15%

scenario III (probable case) 2012

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,554,000	40%	1,134,700	86%	907,700	80%	226,900	20%	419,300	16%	335,400	80%	83,900	20%
oil products	1,618,800	42%	56,100	4%	54,900	98%	1,100	2%	1,562,700	61%	1,531,400	98%	31,300	2%
general cargo	659,300	17%	115,900	9%	81,100	70%	34,800	30%	543,400	21%	380,400	70%	163,000	30%
container	65,900	2%	9,900	1%	0	0%	9,900	100%	56,000	2%	0	0%	56,000	100%
total	3,898,000	100%	1,316,600	100%	1,043,700	79%	272,700	21%	2,581,400	100%	2,247,200	85%	334,200	15%

Poti/Batumi 1995			modal split	
Commodity	total in tons		rail	road
bulk	1,393,000	44%	96%	4%
oil products	1,264,000	40%	98%	2%
general cargo	409,000	13%	90%	10%
container	95,000	3%	58%	42%
total	3,161,000	100%	95%	5%

scenario I (best case) 2002

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	2,349,000	29%	80%	20%
oil products	2,349,000	29%	98%	2%
general cargo	1,944,000	24%	70%	30%
container	1,458,100	18%	73%	27%
total	8,100,100	100%	82%	18%

scenario II (worst case) 2002

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	1,527,000	29%	70%	30%
oil products	1,526,800	29%	97%	3%
general cargo	1,263,700	24%	60%	40%
container	947,600	18%	58%	42%
total	5,265,100	100%	73%	27%

scenario III (probable case) 2002

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	1,996,600	29%	75%	25%
oil products	1,996,700	29%	97%	3%
general cargo	1,652,300	24%	65%	35%
container	1,239,200	18%	64%	36%
total	6,884,800	100%	77%	23%

scenario I (best case) 2007

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	3,424,000	32%	85%	15%
oil products	2,889,000	27%	98%	2%
general cargo	1,926,000	18%	75%	25%
container	2,461,000	23%	73%	26%
total	10,700,000	100%	84%	16%

scenario II (worst case) 2007

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	2,225,500	32%	70%	30%
oil products	1,877,800	27%	98%	2%
general cargo	1,251,900	18%	60%	40%
container	1,599,700	23%	58%	42%
total	6,954,900	100%	73%	27%

scenario III (probable case) 2007

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	2,910,400	32%	80%	20%
oil products	2,455,700	27%	98%	2%
general cargo	1,637,100	18%	65%	35%
container	2,091,900	23%	69%	31%
total	9,095,100	100%	80%	20%

scenario I (best case) 2012

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	4,570,500	33%	85%	15%
oil products	3,462,400	25%	98%	2%
general cargo	1,939,000	14%	75%	25%
container	3,878,000	28%	73%	26%
total	13,849,900	100%	84%	16%

scenario II (worst case) 2012

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	2,970,800	33%	70%	30%
oil products	2,250,700	25%	98%	2%
general cargo	1,260,300	14%	60%	40%
container	2,520,800	28%	58%	42%
total	9,002,600	100%	72%	28%

scenario III (probable case) 2012

Poti/Batumi			modal split	
Commodity	total in tons		rail	road
bulk	3,884,900	33%	80%	20%
oil products	2,943,200	25%	98%	2%
general cargo	1,648,200	14%	70%	30%
container	3,296,200	28%	69%	31%
total	11,772,500	100%	80%	20%

Traffic forecast for the ports of Poti and Batumi (detailed commodity groups) scenario III

Port of Poti	1995				modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	842,000	47.4%	697,000	50.2%	662,200	95%	34,900	5%	145,000	37.3%	117,500	81%	27,600	19%
coal	*4,000*	*0.5%*	*4,000*	*0.6%*					*0*	*0.0%*				
ore	*141,000*	*16.7%*	*52,000*	*7.5%*					*89,000*	*61.4%*				
ferrous metal	*36,000*	*4.3%*	*0*	*0.0%*					*36,000*	*24.8%*				
cement	*20,000*	*2.4%*	*0*	*0.0%*					*20,000*	*13.8%*				
mineral fertilizer	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
grain	*641,000*	*76.1%*	*641,000*	*92.0%*					*0*	*0.0%*				
oil products	622,000	35.0%	476,000	34.3%	466,500	98%	9,500	2%	146,000	37.5%	141,600	97%	4,400	3%
general cargo	219,000	12.3%	138,000	9.9%	117,300	85%	20,700	15%	81,000	20.8%	72,100	89%	8,900	11%
metal products	*48,000*	*21.9%*	*0*	*0.0%*					*48,000*	*59.3%*				
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*14,000*	*6.4%*	*9,000*	*6.5%*					*5,000*	*6.2%*				
foodstuff, others	*157,000*	*71.7%*	*129,000*	*93.5%*					*28,000*	*34.6%*				
container	95,000	5.3%	78,000	5.6%	49,100	63%	28,900	37%	17,000	4.4%	6,000	35%	11,100	65%
total	1,778,000	100%	1,389,000	100%	1,295,100	93%	93,900	7%	389,000	100%	337,100	87%	51,900	13%

scenario III (probable case) 2002

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,198,000	27.8%	619,700	31.1%	464,700	75%	154,900	25%	578,300	25.0%	433,700	75%	144,600	25%
coal	*3,100*	*0.3%*	*3,100*	*0.5%*					*0*	*0.0%*				
ore	*497,700*	*41.5%*	*92,900*	*15.0%*					*404,800*	*70.0%*				
ferrous metal	*173,500*	*14.5%*	*0*	*0.0%*					*173,500*	*30.0%*				
cement	*15,500*	*1.3%*	*15,500*	*2.5%*					*0*	*0.0%*				
mineral fertilizer	*6,200*	*0.5%*	*6,200*	*1.0%*					*0*	*0.0%*				
grain	*501,900*	*41.9%*	*501,900*	*81.0%*					*0*	*0.0%*				
oil products	898,500	20.9%	263,300	13.2%	258,000	98%	5,300	2%	635,200	27.5%	616,100	97%	19,100	3%
general cargo	991,400	23.0%	418,200	21.0%	271,800	65%	146,400	35%	573,200	24.8%	372,600	65%	200,600	35%
metal products	*374,700*	*37.8%*	*2,100*	*0.5%*					*372,600*	*65.0%*				
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*54,800*	*5.5%*	*37,600*	*9.0%*					*17,200*	*3.0%*				
foodstuff, others	*561,900*	*56.7%*	*378,500*	*90.5%*					*183,400*	*32.0%*				
container	1,214,500	28.2%	689,800	34.6%	448,400	65%	241,400	35%	524,700	22.7%	341,100	65%	183,600	35%
total	4,302,500	100%	1,991,000	100%	1,443,000	72%	548,000	28%	2,311,500	100%	1,763,600	76%	547,900	24%

scenario III probable case) 2007

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,746,300	29.7%	799,600	28.5%	639,700	80%	159,900	20%	946,700	30.7%	757,300	80%	189,300	20%
coal	*4,000*	*0.2%*	*4,000*	*0.5%*					*0*	*0.0%*				
ore	*798,600*	*45.7%*	*135,900*	*17.0%*					*662,700*	*70.0%*				
ferrous metal	*284,000*	*16.3%*	*0*	*0.0%*					*284,000*	*30.0%*				
cement	*24,000*	*1.4%*	*24,000*	*3.0%*					*0*	*0.0%*				
mineral fertilizer	*12,000*	*0.7%*	*12,000*	*1.5%*					*0*	*0.0%*				
grain	*623,700*	*35.7%*	*623,700*	*78.0%*					*0*	*0.0%*				
oil products	1,105,100	18.8%	386,600	13.8%	378,900	98%	7,700	2%	718,500	23.3%	704,100	98%	14,400	2%
general cargo	982,200	16.7%	457,600	16.3%	297,500	65%	160,200	35%	524,600	17.0%	341,000	65%	183,600	35%
metal products	*342,400*	*34.9%*	*1,400*	*0.3%*					*341,000*	*65.0%*				
timber	*5,200*	*0.5%*	*0*	*0.0%*					*5,200*	*1.0%*				
min. build. materials	*57,300*	*5.8%*	*41,600*	*9.1%*					*15,700*	*3.0%*				
foodstuff, others	*577,200*	*58.8%*	*414,600*	*90.6%*					*162,600*	*31.0%*				
container	2,050,000	34.8%	1,158,100	41.3%	810,700	70%	347,400	30%	891,900	28.9%	624,300	70%	267,600	30%
total	5,883,600	100%	2,801,900	100%	2,126,600	76%	675,200	24%	3,081,700	100%	2,426,800	79%	654,900	21%

scenario III probable case) 2012

Port of Poti					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	2,330,900	29.6%	1,005,500	26.9%	804,400	80%	201,100	20%	1,325,400	32.1%	1,060,300	80%	265,100	20%
coal	*5,000*	*0.2%*	*5,000*	*0.5%*					*0*	*0.0%*				
ore	1,052,100	*45.1%*	*150,800*	*15.0%*					*901,300*	*68.0%*				
ferrous metal	*424,100*	*18.2%*	*0*	*0.0%*					*424,100*	*32.0%*				
cement	*40,200*	*1.7%*	*40,200*	*4.0%*					*0*	*0.0%*				
mineral fertilizer	*15,100*	*0.6%*	*15,100*	*1.5%*					*0*	*0.0%*				
grain	*794,400*	*34.1%*	*794,400*	*79.0%*					*0*	*0.0%*				
oil products	1,324,400	16.8%	437,000	11.7%	428,300	98%	8,700	2%	887,400	21.5%	869,700	98%	17,700	2%
general cargo	988,900	12.6%	477,900	12.8%	334,500	70%	143,400	30%	511,000	12.4%	357,700	70%	153,300	30%
metal products	*340,200*	*34.4%*	*2,900*	*0.6%*					*337,300*	*66.0%*				
timber	*5,100*	*0.5%*	*0*	*0.0%*					*5,100*	*1.0%*				
min. build. materials	*57,400*	*5.8%*	*42,100*	*8.8%*					*15,300*	*3.0%*				
foodstuff, others	*586,200*	*59.3%*	*432,900*	*90.6%*					*153,300*	*30.0%*				
container	3,230,300	41.0%	1,821,600	48.7%	1,275,100	70%	546,500	30%	1,408,700	34.1%	986,100	70%	422,600	30%
total	7,874,600	100%	3,742,000	100%	2,842,300	76%	899,700	24%	4,132,600	100%	3,273,900	79%	858,800	21%

Port of Batumi 1995					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	551,000	39.8%	533,000	59.7%	533,000	100%	0	0%	18,000	3.7%	18,000	100%	0	0%
coal	*4,000*	*0.7%*	*4,000*	*0.8%*					*0*	*0.0%*		*0%*		*0%*
ore	*18,000*	*3.3%*	*0*	*0.0%*					*18,000*	*100.0%*				
ferrous metal	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
cement	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
mineral fertilizer	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
grain	*528,700*	*96.0%*	*528,700*	*99.2%*					*0*	*0.0%*				
oil products	642,000	46.4%	238,000	26.7%	226,100	95%	11,900	5%	404,000	82.4%	400,000	99%	4,000	1%
general cargo	190,000	13.7%	122,000	13.7%	113,500	93%	8,500	7%	68,000	13.9%	64,600	95%	3,400	5%
metal products	*46,000*	*24.2%*	*0*	*0.0%*					*46,000*	*67.6%*		*0%*		*0%*
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*1,000*	*0.5%*	*1,000*	*0.8%*					*0*	*0.0%*				
foodstuff, others	*143,000*	*75.3%*	*121,000*	*99.2%*					*22,000*	*32.4%*				
container	0	0.0%	0	0.0%	0	0%	0	100%	0	0.0%	0	100%	0	0%
total	1,383,000	100%	893,000	100%	872,600	98%	20,400	2%	490,000	100%	482,600	98%	7,400	2%

scenario III (probable case) 2002

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	798,600	57.7%	525,400	71.5%	394,100	75%	131,400	25%	273,200	14.8%	204,900	75%	68,300	25%
coal	*10,500*	*1.3%*	*10,500*	*2.0%*					*0*	*0.0%*				
ore	*273,200*	*34.2%*	*0*	*0.0%*					*273,200*	*100%*				
ferrous metal	*15,800*	*2.0%*	*15,800*	*3.0%*					*0*	*0.0%*				
cement	*10,500*	*1.3%*	*10,500*	*2.0%*					*0*	*0.0%*				
mineral fertilizer	*5,300*	*0.7%*	*5,300*	*1.0%*					*0*	*0.0%*				
grain	*483,400*	*60.5%*	*483,400*	*92.0%*					*0*	*0.0%*				
oil products	1,098,200	79.4%	52,500	7.1%	51,400	98%	1,000	2%	1,045,700	56.6%	1,014,300	97%	31,400	3%
general cargo	660,900	47.8%	155,400	21.2%	101,000	65%	54,400	35%	505,500	27.4%	328,600	65%	176,900	35%
metal products	*365,600*	*55%*	*1,600*	*1.0%*					*364,000*	*72.0%*				
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*3,100*	*0.5%*	*3,100*	*2.0%*					*0*	*0.0%*				
foodstuff, others	*292,300*	*44.2%*	*150,800*	*97.0%*					*141,500*	*28.0%*				
container	24,700	1.8%	1,200	0.2%	0	0%	1,200	100%	23,500	1.3%	0	0%	23,500	100%
total	2,582,500	187%	734,500	100%	546,500	74%	188,000	26%	1,848,000	100%	1,547,900	83%	300,200	17%

scenario III (probable case) 2007

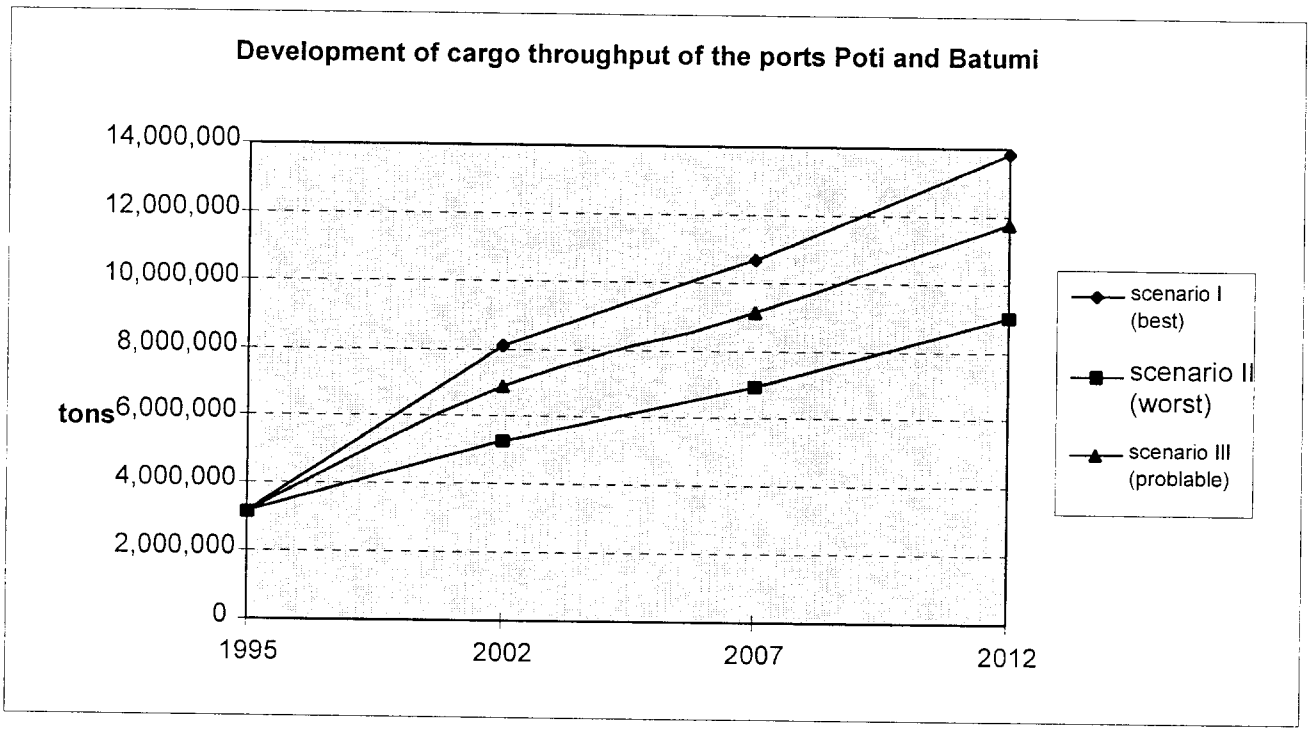
Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,164,100	36.2%	696,100	79.5%	556,900	80%	139,200	20%	468,000	20.0%	374,400	80%	93,600	20%
coal	*13,900*	*1.2%*	*13,900*	*2.0%*					*0*	*0.0%*				
ore	*468,000*	*40.2%*	*0*	*0.0%*					*468,000*	*100%*				
ferrous metal	*20,900*	*1.8%*	*20,900*	*3.0%*					*0*	*0.0%*				
cement	*20,900*	*1.8%*	*20,900*	*3.0%*					*0*	*0.0%*				
mineral fertilizer	*13,900*	*1.2%*	*13,900*	*2.0%*					*0*	*0.0%*				
grain	*626,500*	*53.8%*	*626,500*	*90.0%*					*0*	*0.0%*				
oil products	1,350,600	42.1%	52,100	5.9%	51,000	98%	1,000	2%	1,298,500	55.6%	1,272,600	98%	26,000	2%
general cargo	654,900	20.4%	123,500	14.1%	80,200	65%	43,200	35%	531,400	22.8%	345,400	65%	186,000	35%
metal products	*383,200*	*58.5%*	*600*	*0.5%*					*382,600*	*72.0%*				
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*2,500*	*0.4%*	*2,500*	*2.0%*					*0*	*0.0%*				
foodstuff, others	*269,192*	*41.1%*	*120,400*	*97.5%*					*148,792*	*28.0%*				
container	41,900	1.3%	4,200	0.5%	0	0%	4,200	100%	37,700	1.6%	0	0%	37,700	100%
total	3,211,400	100%	875,800	100%	688,200	78%	187,700	22%	2,335,600	100%	1,992,400	84%	343,200	16%

scenario III (probable case) 2012

Port of Batumi					modi						modi			
Commodity	tons in total		inbound		rail		road		outbound		rail		road	
bulk	1,554,000	39.9%	1,134,700	86.2%	907,700	80%	226,900	20%	419,300	16.2%	335,400	80%	83,900	20%
coal	*22,700*	*1.5%*	*22,700*	*2.0%*					*0*	*0.0%*				
ore	*419,300*	*27.0%*	*0*	*0.0%*					*419,300*	*100%*				
ferrous metal	*34,000*	*2.2%*	*34,000*	*3.0%*					*0*	*0.0%*				
cement	*45,400*	*2.9%*	*45,400*	*4.0%*					*0*	*0.0%*				
mineral fertilizer	*22,700*	*1.5%*	*22,700*	*2.0%*					*0*	*0.0%*				
grain	1,009,900	*65.0%*	1,009,900	*89.0%*					*0*	*0.0%*				
oil products	1,618,800	41.5%	56,100	4.3%	54,900	98%	1,100	2%	1,562,700	60.5%	1,531,400	98%	31,300	2%
general cargo	659,300	16.9%	115,900	8.8%	81,100	70%	34,800	30%	543,400	21.1%	380,400	70%	163,000	30%
metal products	*387,000*	*58.7%*	*1,200*	*1.0%*					*385,800*	*71.0%*				
timber	*0*	*0.0%*	*0*	*0.0%*					*0*	*0.0%*				
min. build. materials	*3,500*	*0.5%*	*3,500*	*3.0%*					*0*	*0.0%*				
foodstuff, others	*268,800*	*40.8%*	*111,200*	*96.0%*					*157,600*	*29.0%*				
container	65,900	1.7%	9,900	0.8%	0	0%	9,900	100%	56,000	2.2%	0	0%	56,000	100%
total	3,897,900	100%	1,316,500	100%	1,043,800	79%	272,700	21%	2,581,400	100%	2,247,200	85%	334,200	15%

Results of the traffic forecast

The results of the traffic forecast indicate a relatively high growth rate for the total cargo volume of the ports of Poti and Batumi in the period of the years 1995 until 2002. In scenario I ("best case") the total throughput increases by a rate of 14% per year. The "worst case scenario" (scenario II) indicates an annual growth rate of 7%. Scenario III ("probable case") results in an annual growth rate of 12%. In the following years of the forecast an annual growth rate of 6% for all scenarios is indicated. A comparison of the development of turn-over of the ports is shown in the following diagram.



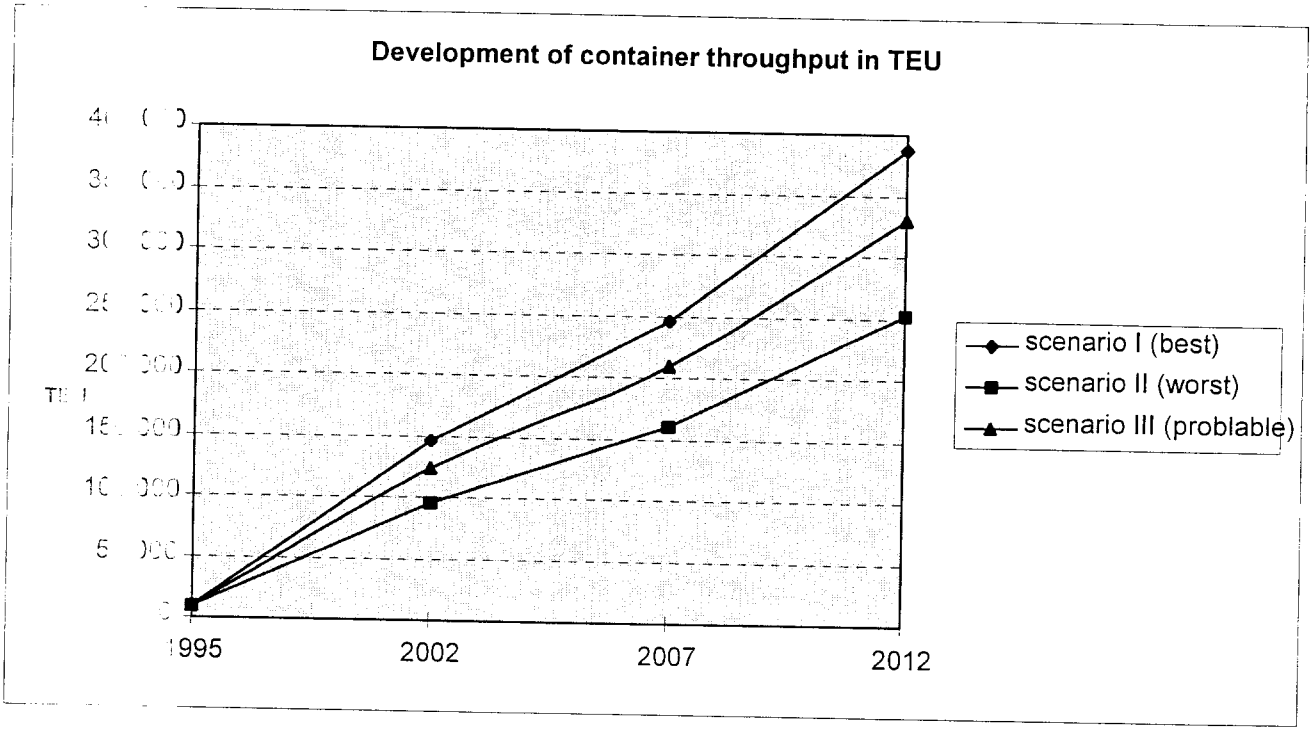
These results are due to the assumption, that in the first period of the forecast (year 1995 until 2002) the economic development of the regions is very dynamic and the rehabilitation of industries and the exploitation of the natural resources records remarkable progress. Additionally, the starting point of the development of throughput in the ports (actual use of capacity in comparison to FSU times) has to be taken into account. In the following periods a moderate growth of cargo volume according to economic development is assumed.

With respect to the commodities the traffic forecast results in different paths of development. For bulk a decline to 29% in the year 2005 is followed by a growth to about 33% (achieved in the year 2012). Oil products (exports of Azerbaijan and imports of Georgia and Armenia) have a diminishing importance for the ports in the forecast period considering the share of throughput. The capacity for the processing of crude oil in Azerbaijan will increase over the next years so that for regional demand imports are needed to a decreasing extend. General cargoes will stable at a level of 13% in the year 1995 and 14% in the year 2012. The reason is to bee seen in the enormous rising share of container throughput from about 3% of the total throughput in the year 1995 to 28% in the year 2012. These figures reflect the growing demand for investment goods (technical equipment, spare parts etc.) and consumer goods of higher value. According to the international trend these goods are transported in containers. It is assumed, that in the next years up to 2002 the container transport is characterised by a high degree of dynamic. In contrast to other forecasts for the container traffic of the ports (esp. Sea-Land Service Inc. "Georgian Intermodal Terminal Network - Feasibility Study and Business Plan" April 1997) the growth in container traffic is in the period 1995 until 2002 about 31% (scenario I) and 145% per year (scenario III). In the period 2003 until 2007 the growth rate is 10% per year.

r traffic that is concentrated in the Port of Poti, shows the following development in TEU with respect to the different scenarios:

Throughput of container in TEU

	1995	2002	2007	2012
scenario I (best)	9,500	0	145,810	387,800
scenario II (worst)	9,500	0	94,760	252,080
scenario III (problable)	9,500	123,920	123,920	329,620



The modal split for the ports hinterland traffic in the year 1995 was a share of 95% for rail transport and 5% for road transport. These data indicate prevailing structures of the FSU and the lack of a road haulage sector. To put the future in concrete forms two different paths of development are possible:

- rehabilitation and extension of road network with first priority, promotion of private trucking companies
- first priority for the rehabilitation and modernisation of the railroad network, rolling stock and organisation of railroad traffic

It is assumed, that the railway is also in the future considered to be the backbone of the transport system of the TRACECA countries. It may be the easier way to rely mainly on road transport, because the investment in trucks and throughput facilities is the task of private companies. But a well working railway system is an indispensable component of the economy of a country developing its industries and transport. First steps are the planning of a Trans-Caucasian-Logistic-Express and different studies for the improvement of the railways in the TRACECA region (i.e. Tacis/TRACECA "Trans Caucasian Railway, Railways Pre-Investment study and Pilot train Baku - Tiblisi - Batumi/Poti" , Draft Final Report May 1997, Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997).

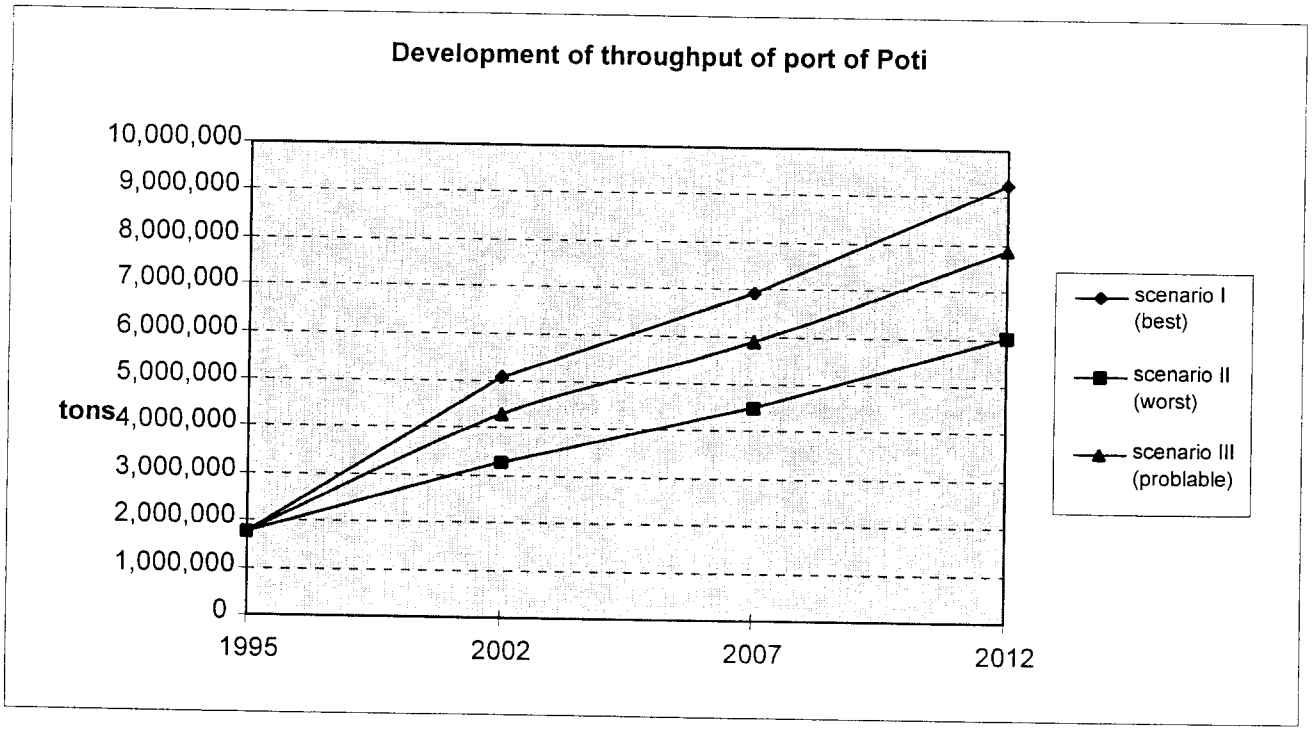
Therefore, a considerable share of the ports hinterland traffic is assumed to be carried out by rail. In scenario I about 82% of the transport volume (in- and outbound traffic of the ports) is transported by rail. In scenario II

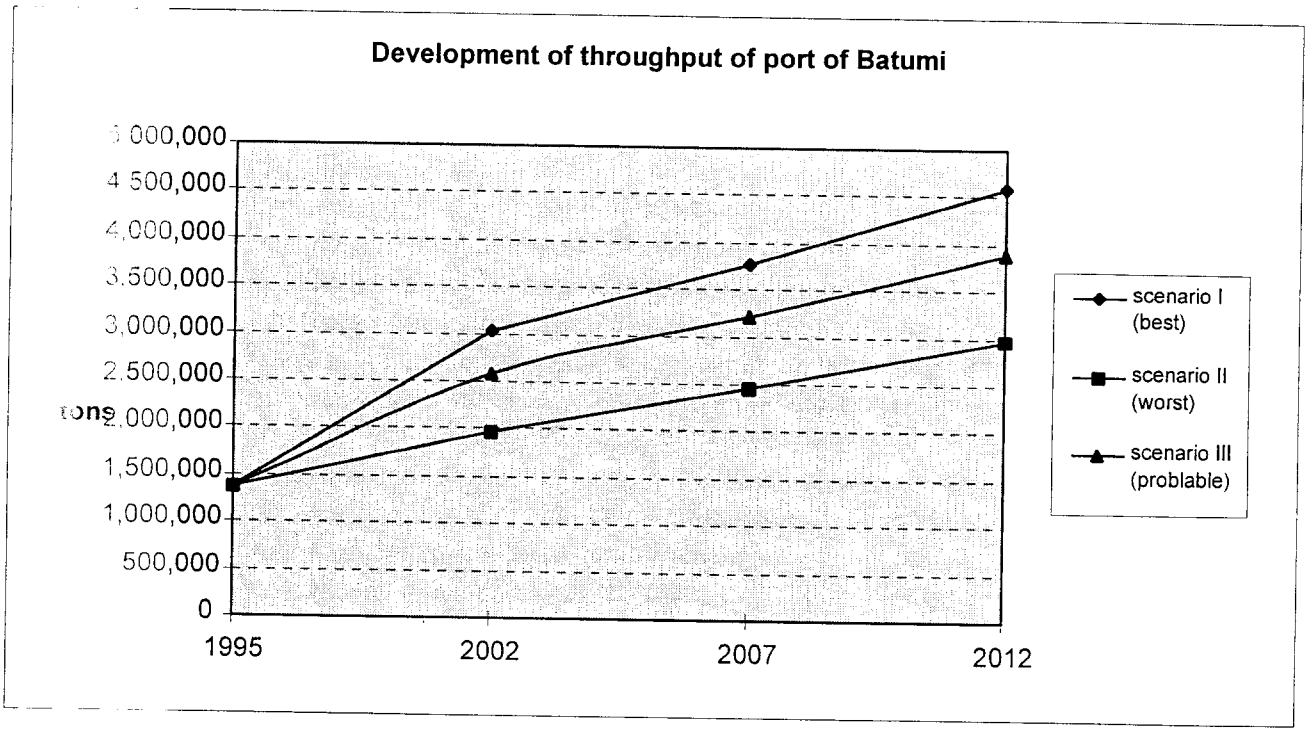
it is assumed, that the railway system is not developed with high priority. Therefore, the railway transport has a share of about 69%. In the "probable" scenario III the railway share is about 78%.

Considering the different commodities, it is obvious, that bulk is mainly predestined for rail transport (about 80%). Oil products are almost completely transported by rail (98%). It has to be mentioned, that crude oil is not handled to a considerable share through the port of Poti and Batumi. The transport is led through the pipeline to the oil terminal in Supsa. General cargo indicates by the nature of the commodities a higher share of road transport. The share of road transport for general cargo is in scenario I about 25%, in scenario II 40% and in scenario III 30%. The transport of container is by 70% carried out by rail in scenario I. Scenario II assumes a share of 56% for rail transport and in scenario III 34% of containers are transported by road.

The shares of railway transport for general cargo and containers seem to be, compared with statistical data of Western Europe, relatively optimistic. Considering the transport structure within the TRACECA region it is obvious, that Tbilisi is even today and to a much higher degree in future a hub (within an interregional/international hub and spoke system) for national and international freight traffic flows. Tbilisi has the important function of the consolidation and distribution of goods in north-east direction and east-west direction. In addition, Tbilisi is the industrial centre of Georgia. Therefore, the use of block trains between the Georgian sea ports and Tbilisi is an economic solution for the transport of general cargo and container.

The detailed tables for the ports of Poti and Batumi indicate the following results. The throughput of the port of Poti increases in scenario I from 1995 with 1,778,000 tons per year up to 9,264,300 tons in the year 2012. In scenario II the cargo volume in 2012 is 6,021,700 tons and in scenario III 7,874,600 tons. The port of Batumi starts in the year 1995 with a throughput of 1,383,000 tons, it increases up to the year 2012 to 4,585,700 tons in scenario I, 2,980,700 tons in scenario II and 3,897,900 tons in scenario III.





For the port of Poti the in- and outbound cargoes show a relation of about: 1.0 : 1.2 in the average. For the port of Batumi the in-/outbound relation is about 1.0 : 1.8 for the year 2012. The reason for the imbalance for Batumi is the large quantity of export of oil products.

Considering the commodities handled by the ports, a certain kind of "division of labour" is visible. The main branch of Poti is the handling of bulk and container, Batumi has its main branch in the export of oil products. With respect to general cargo both ports have shares of about 20 - 30% of in- and respectively outbound goods.

The tables with the detailed groups of commodities reflect the assumptions above made with respect to the future development of the different sectors of the economy.

The sensitivity of the results of the traffic forecast depends on the following governing factors:

- political development of the region
- economic development of the countries
- political priorities set for the rehabilitation of infrastructure
- competition of alternative transport corridors

The first three items are already discussed above. Unfavourable political and economic developments enforce the tendency to lower growth rates in the turnover of the ports. The last item will be discussed in detail later when evaluating the route connections between TRACECA and the TEN. The TRACECA corridor has the obvious disadvantage, that the Caspian Sea and the Black Sea have to be crossed. Frequent throughputs within a transport chain result in longer transport times, risks of damage of the cargoes and additional costs. The transport of i.e. Uzbekistan cotton could be organised via the railroad network directly to Europe or the TRACECA route. The requirements of the customer, who is responsible for the transport order, play the major role for the decision of the transport route. Therefore the comparison of competing transport corridors with respect to the relevant requirements make an evaluation of the TRACECA corridor possible.

9 Recommendation of the Most Viable Route Connections between TRACECA and the TEN

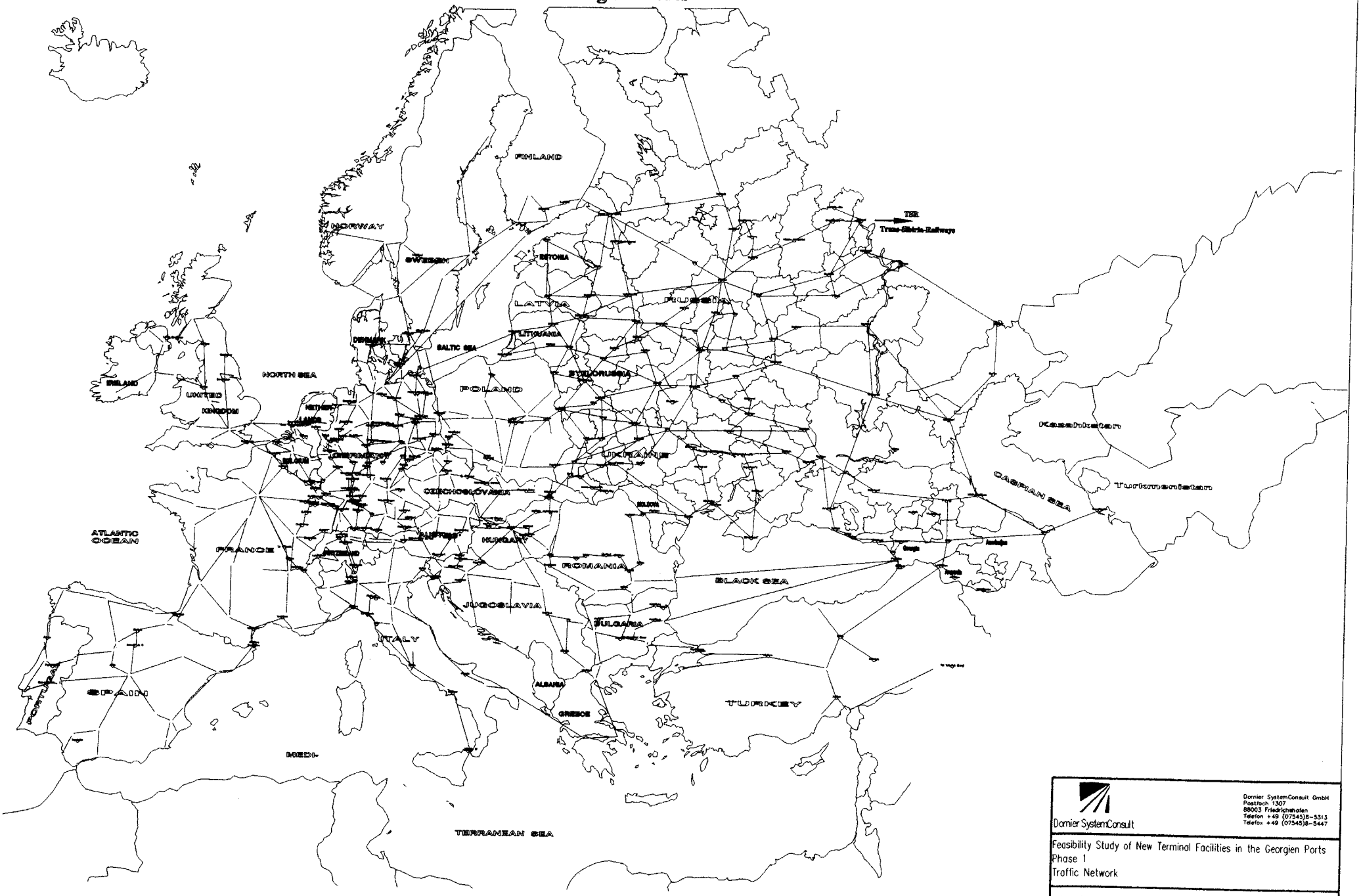
In this step, the multimodal transport simulation model is developed and adapted to the regional aspects. The tool LOCOMOTIVE is used for this modelling. The model covers the European regions together with the Caucasus Regions Georgia, Armenia and Azerbaijan, together with Kazakhstan, Kyrgyzstan, Turkmenistan, Tadjikistan and Uzbekistan (see map). The model is developed to assist the strategic planing of the ports of Batumi and Poti and assess the impacts of various forecast scenarios as well as different corridor scenarios.

To adapt the model, current information on road, rail and ship network and operation are collected for the TRACEA countries. The multimodal network includes all major road, rail and sea routes. This main network is shown in the following Traffic Network map without the sea links.

For each link item the database provides information concerning mode, distance, speed, delay factors and link quality. This information is provided for each transport mode (rail, rod, sea). The sea links are modelled, but not shown in the map. Only the main sea links in the Black Sea are shown in the map. For the sea links, we assume an average speed of 17 Knots (which corresponds to 31,5 km/h).

For each mode item the database provides information concerning geographical position, link connections, transfer possibilities and interchange costs between modes.

Feasibility Study of New Terminal Facilities
Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Phase 1
Traffic Network

Date / Name / objektive

Verkehrsnetz und Korridore
08.01.1998 Hoppel

For the database of the simulation model we choose the following main cities. For Europe, 500 cities were chosen.

Furthermore, as a large part of the traffic to Central Asia is organised from the Ukraine, Belarus and the Russian Federation 130 cities of this area were selected. For the TRACECA regions, 20 main cities were chosen.

The transportation network between these European and Central Asian cities are described in the database of the model. To simulate the shipping, the choice of several seaports was necessary. The relevant seaports selected are:

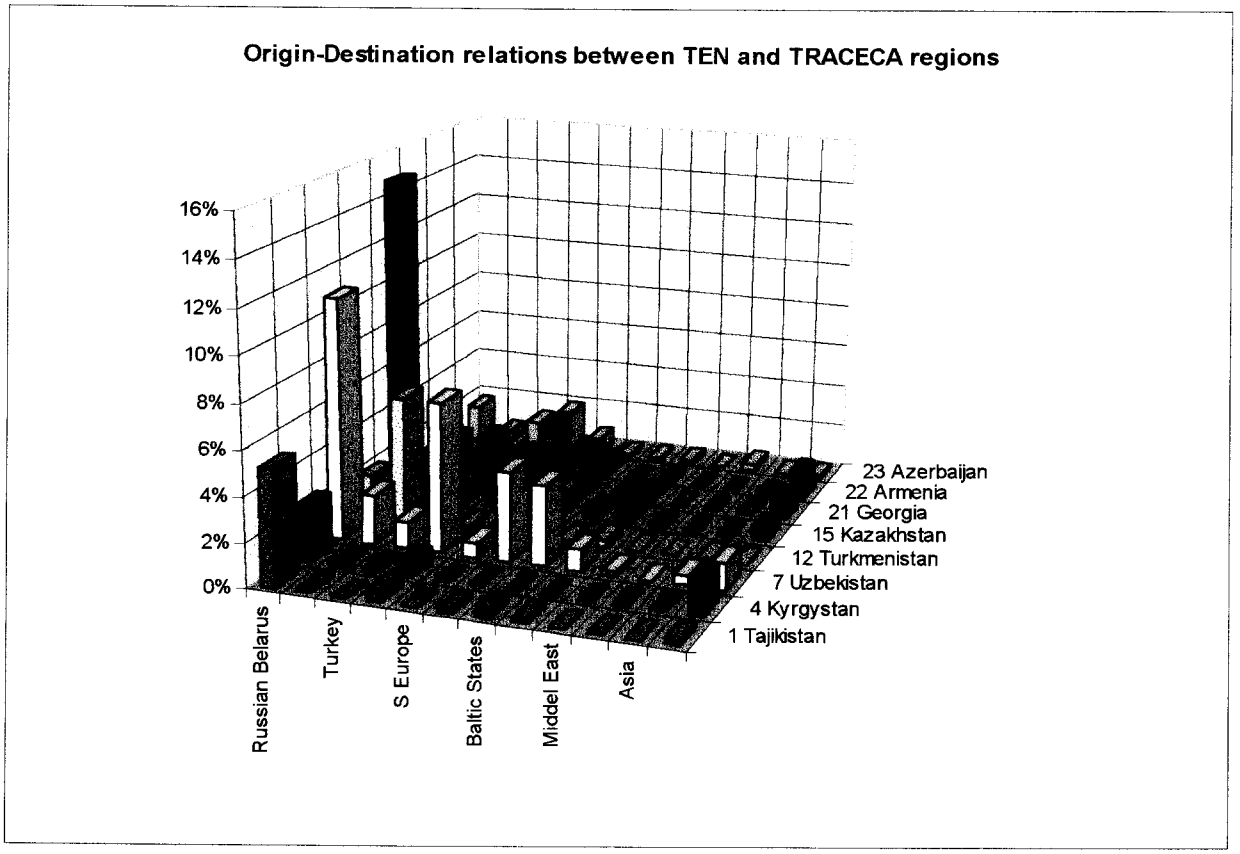
- Trieste,
- Genoa,
- Valencia,
- Barcelona,
- Rotterdam,
- Hamburg,
- Marseilles,
- London,
- Dublin

and for the eastern European part :

- Constanta,
- Bourgas,
- Odessa,
- St. Petersburg,
- Batumi,
- Poti,
- Mersin,
- Istanbul,
- Baku
- and Krasnovodsk

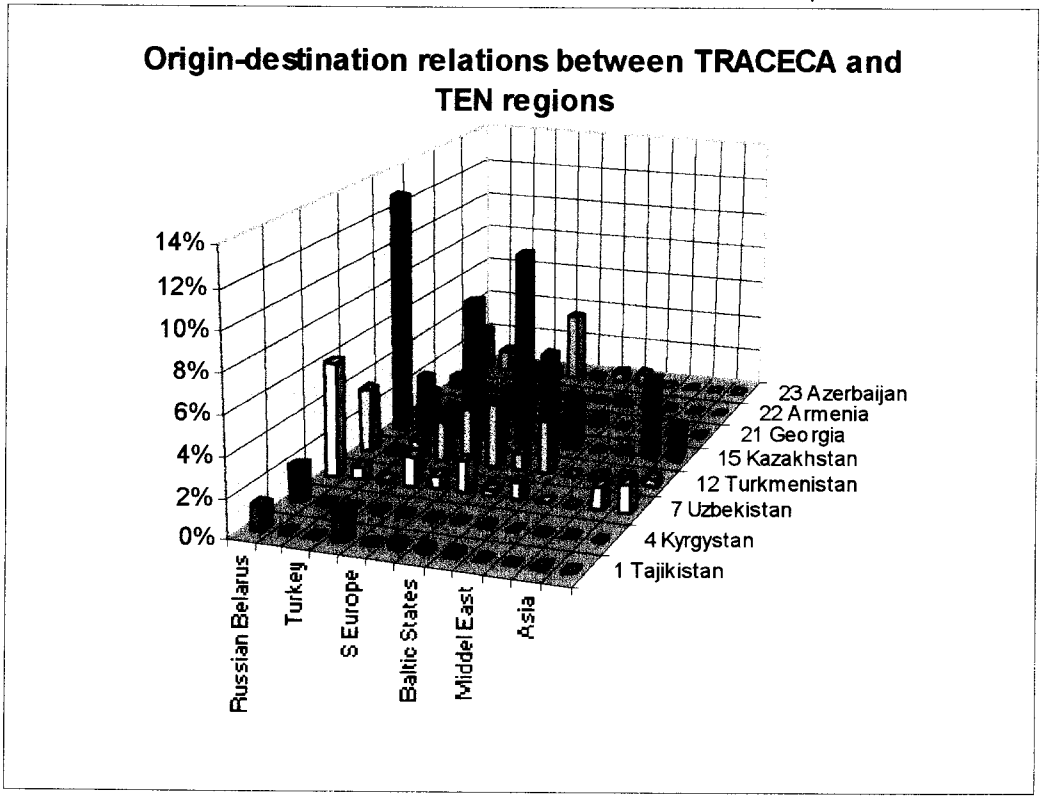
The relevant origin - destination relations between TEN and TRACECA regions are followings:

- Russia/Belarus, Ukraine/Moldova, Turkey, Europe and America and the
- TRACECA region with the countries Uzbekistan, Kazakhstan and Georgia.



The relevant origin- destination relations between TRACECA and TEN regions are the following:

- TRACECA region with the countries Kazakhstan, Turkmenistan, Uzbekistan and Azerbaijan and the
- TEN regions Russia/Belarus, Ukraine/Moldova and Europe.



There are three kinds of transport modes in different transport corridors: Road, Rail and Ship. The following map gives an overview of the different main corridors between the TRACECA and TEN regions. Six main transport routes are competing in the transport market.

Corridor No. I

The Corridor No. I is most popular for freight with origin and destination Kazakhstan from/to Russia/Belarus and basis on the TEN corridor II and partly on TEN IX. The sea link via St. Petersburg is a natural route to the North Sea ports. The shipping route via the Caspian Sea Ib is the alternative corridor to the land link via Uralsk Ia. This corridor, a rail link via the Russian Federation, under strong influence of the MPS, is quite reliable. For countries such as Kazakhstan this corridor is still the preferred choice. Road transport is also possible on this land link.

Corridor No. II

The second Corridor No. II is mainly the TEN corridor III for rail and road with the origin and destination TRACECA and Central Europe. The transport mode by rail is characterised by transhipment of the goods via Brest/Przmeyal.

Corridor No. III

This corridor is the link between TRACECA corridors and the TEN corridors IV for rail/road and VII on the Danube through Constanta in Romania

Corridor No. IV

Corridor IV is the most southern European route on shore. It connects the south of France, northern Italy and the Balkan States Yugoslavia, Albania and Bulgaria the TEN route VIII. The Black Sea ports of Varna and Burgas in Bulgaria are the link to the Georgian ports and the TRACECA route.

Corridor No. V

The sea link through the Black Sea and the Mediterranean Sea is the Corridor V. The main commoditiy here is the container.

Corridor No. VI

At last the corridor VI is the shorebound link on road through Turkey. Therefore the cargo doesn't flow through the Georgian ports.

Corridor map see following page

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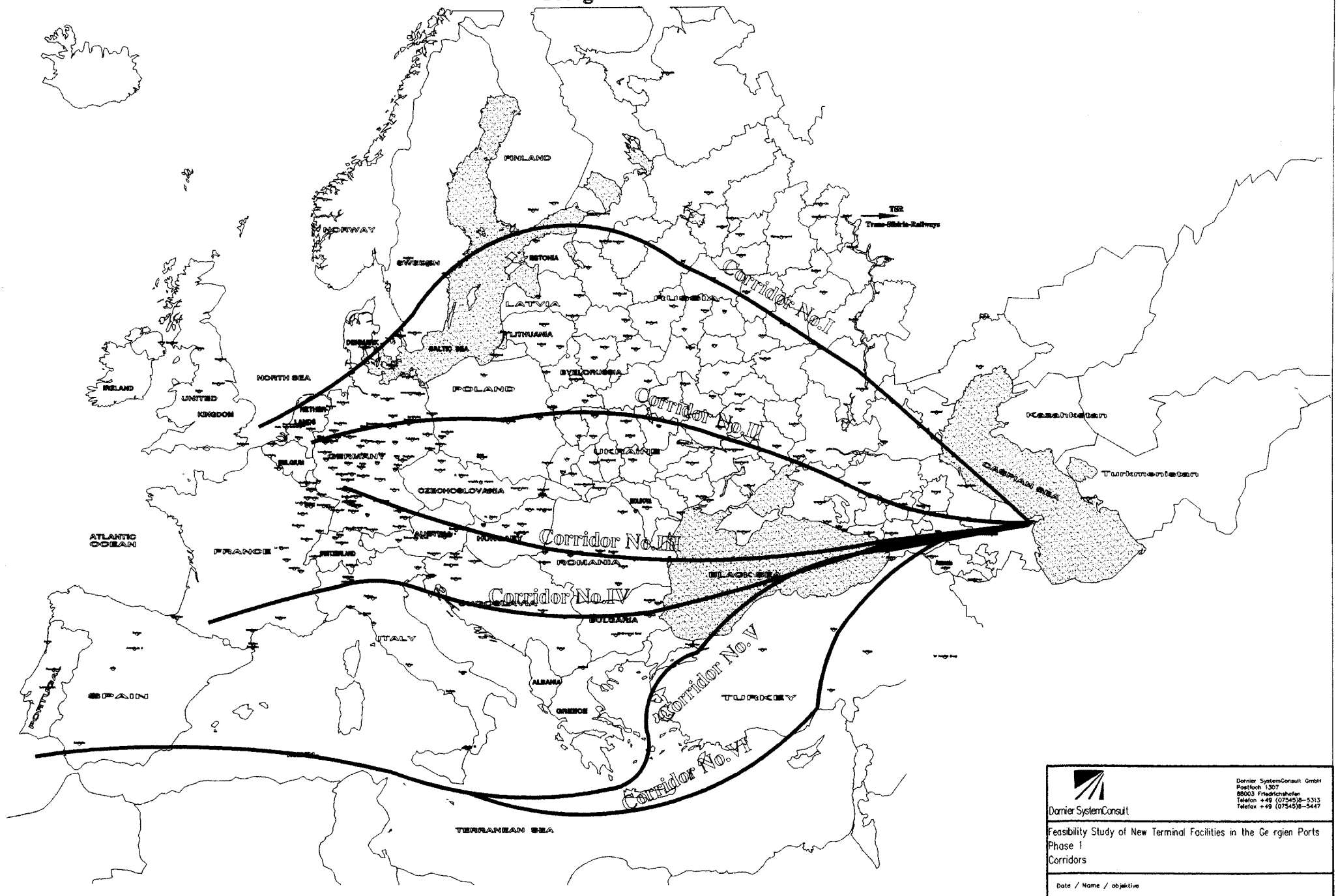

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Feasibility Study of New Terminal Facilities in the Ge rgien Ports
Phase 1
Corridors

Date / Name / objektive

Verkehrsnetz und Korridore
08.01.1998 Hoppel

The simulation is based on three different variants with respect to the kind of commodity transported. Simulation 1 assumes the transport of technical equipment from central Germany to Azerbaijan (Baku). In simulation 2 the transport of cotton from Uzbekistan to Ireland is assumed for the simulation runs. In simulation 3 oil products are transported from Baku to the region of Madrid/Spain.

For the relevant transport prices and transhipment charges the following sources are used:

- Tacis/TRACECA "Joint venture(s) for the Caucasian Railways" Interim Report April 1997
- Tacis "Development of the Port of Baku, Port Master Plan, Traffic Forecast and Economic Assessment" Phase III Report March 1997
- Tacis "Port Network Plan and Improvement Programme" Phase 3, Economic and Financial Evaluation Report - Baku April 1997

Especially in the first of the mentioned studies some peculiarities concerning the transport prices and port charges are contained:

- The transport of goods by truck from Poti to Baku seems to be very high, compared with i.e. Europe or Russia. The transport charge of a 20' container has a charge of 1,800 to 2,100 US$. The reason seem to be extraordinary road usage fees. This may be a serious impediment for the future development of road haulage sector.
- The processing costs of a 20' container in the port of Poti amounts 190 US$. Within this price the document processing costs are 110 US$. Compared with international standards this charge is very high and not comprehensible.
- The delays at border crossing points are much longer compared to usual international standards.

In the simulation runs these actual prices are the basic data for the first series of results. In the second series moderate transport costs and charges are assumed and in addition the delays at borders are set to international standards.

For each simulation different alternatives for the transport from the origin to the destination are defined. In detail the following essential information describe the assumptions for the simulation runs.

The results of the simulation are shown in the following tables. The routes are optimised by transport costs. The costs are standardised to the transportation of a TEU to make a comparison of the prices possible.

Simulation 1

Selected kind of good:	technical equipment for oil industry in Azerbaijan (Baku)		
Origin of good:	central Germany		
Destination of good:	region of Baku/Azerbaijan		
Transport:	in container		
Volume:	2002:	10,000 t	1,000 TEU
	2007:	20,000 t	2,000 TEU
	2012:	25,000 t	2,500 TEU
Transport chain			
Alternative I:	railway transport via Russia to Baku		
Alternative II:	railway transport to Constanza (Romania), transport with container ship to Poti, railway transport to Baku		

Result (first series)

Simulation 1	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor II	4899	307	13	3.658
Corridor III	4758	468	19	3.137

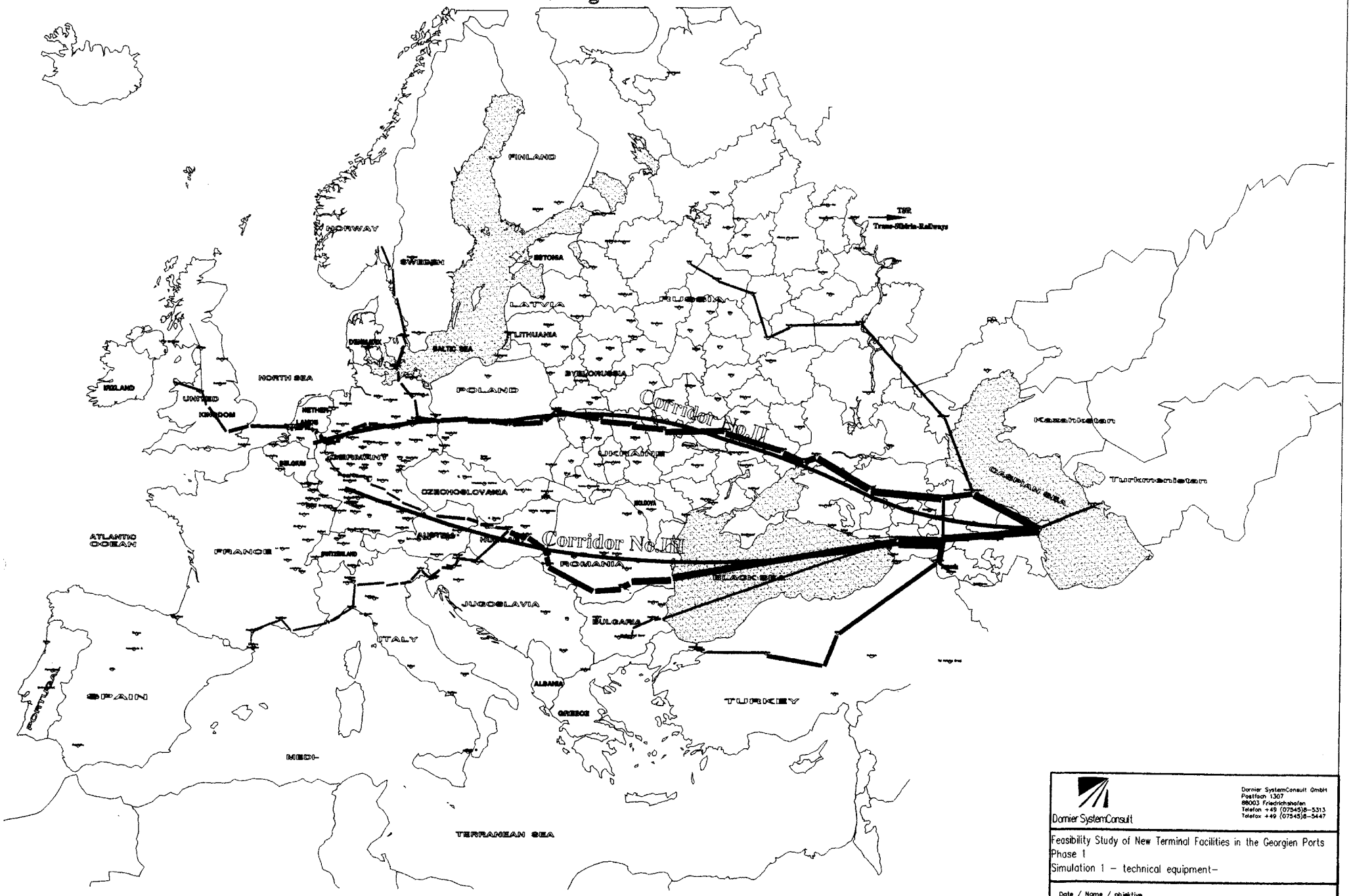
Result (second series)

Simulation 1	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor I	4899	147	6	3.434
Corridor III	4758	204	8	2.437

In simulation 1 (technical equipment from Germany to Baku) Corridor III (via port of Poti) is the optimal route with respect to cost but the time of transport is, due to the transhipments, 6 days longer than Corridor I.

Feasibility Study of New Terminal Facilities

Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Phase 1
Simulation 1 – technical equipment–

Date / Name / objektive

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Simulation 2

Selected kind of good:	cotton
Origin of good:	Uzbekistan
Destination of good:	Ireland
Transport:	bulk, alternative: transport with container
Volume:	2002: 15,000 t
	2007: 20,000 t
	2012: 25,000 t
Transport chain	
Alternative I:	railway transport from Tashkent to the port of St. Petersburg
	transport by sea ship to Ireland
Alternative II:	railway transport to Turkmenbashi,
	roro-ferry to Baku,
	rail transport (or road transport) to the port of Batumi
	(via Tiblisi)
	transport by sea ship to Ireland
Alternative III:	railway transport to Turkmenbashi,
	ferry transport to Baku,
	road transport via Tiblisi to the port of Mersin/Turkey
	transport by sea ship to Ireland
	transport by sea ship to Ireland

Result (first series)

Simulation 2	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor I	7895	295	12	1.985
Corridor V	7103	426	18	3.243
Corridor VI	8628	479	20	4.034

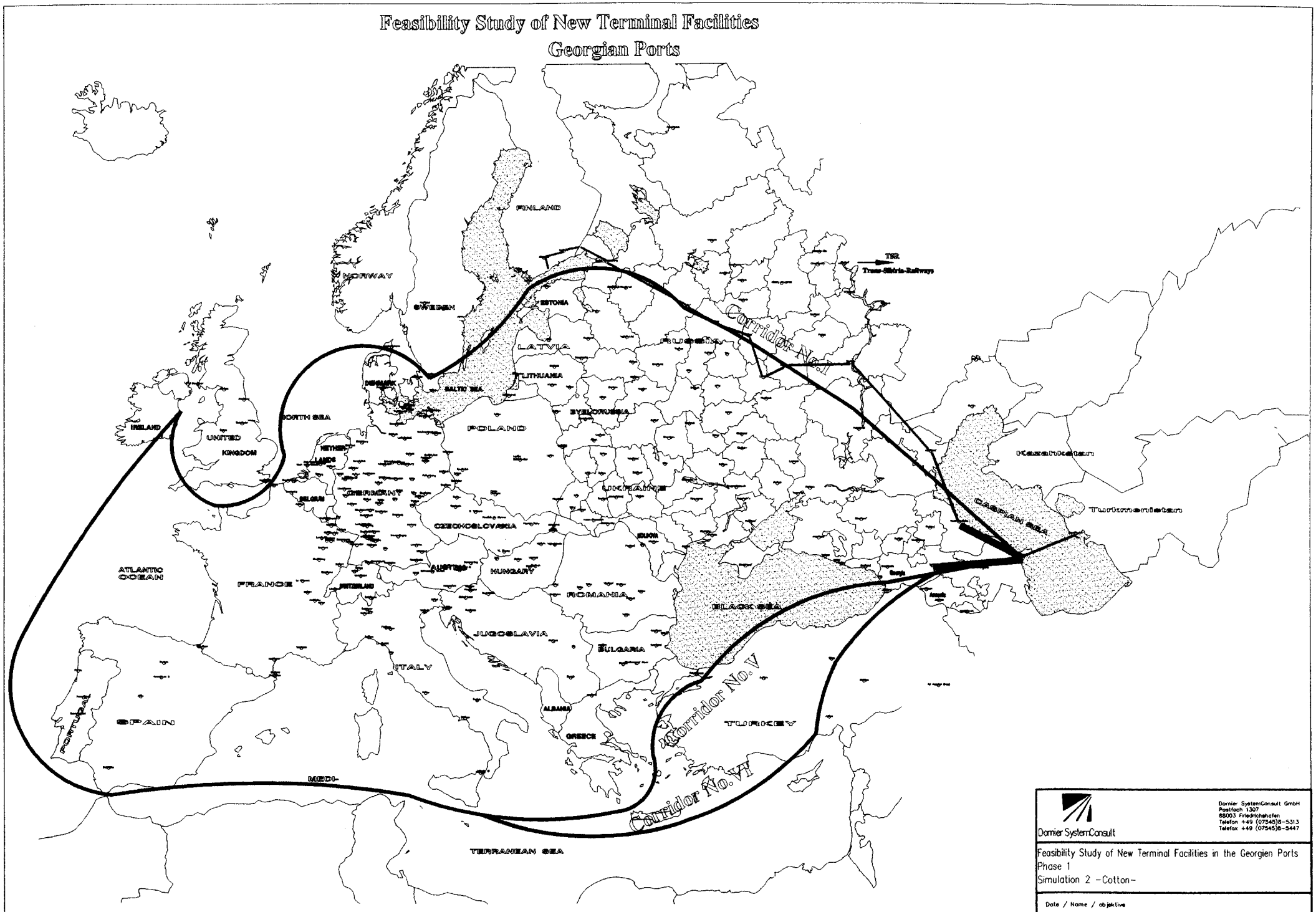
Result (second series)

Simulation 2	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor I	7895	255	11	1.959
Corridor V	7103	272	11	1.913
Corridor VI	8628	323	13	2.587

Simulation 2 (cotton from Uzbekistan to Ireland) the clearly best Corridor is number I (railway transport to St. Petersburg). The price for the transport via Mersin/turkey is more than the double price.

Feasibility Study of New Terminal Facilities

Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Phase 1
Simulation 2 -Cotton-

Date / Name / objektive

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Simulation 3

Selected kind of good:	oil products
Origin of good:	Baku
Destination of good:	Spain (region of Madrid)
Transport:	liquid bulk
Volume:	2002: 100,000 t
	2007: 150,000 t
	2012: 120,000 t
Transport chain	
Alternative I:	railway transport via Ukrain to Madrid
Alternative II:	railway transport Baku to Batumi transport by sea ship to Valencia, rail transport to the region of Madrid
Alternative III:	road transport from Baku to Poti, roro-ferry to Constanta, road transport to Madrid
Alternative IV:	road transport from Baku via Tiblisi to the port of Mersin/Turkey, transport by sea ship to Valencia,

Result (first series)

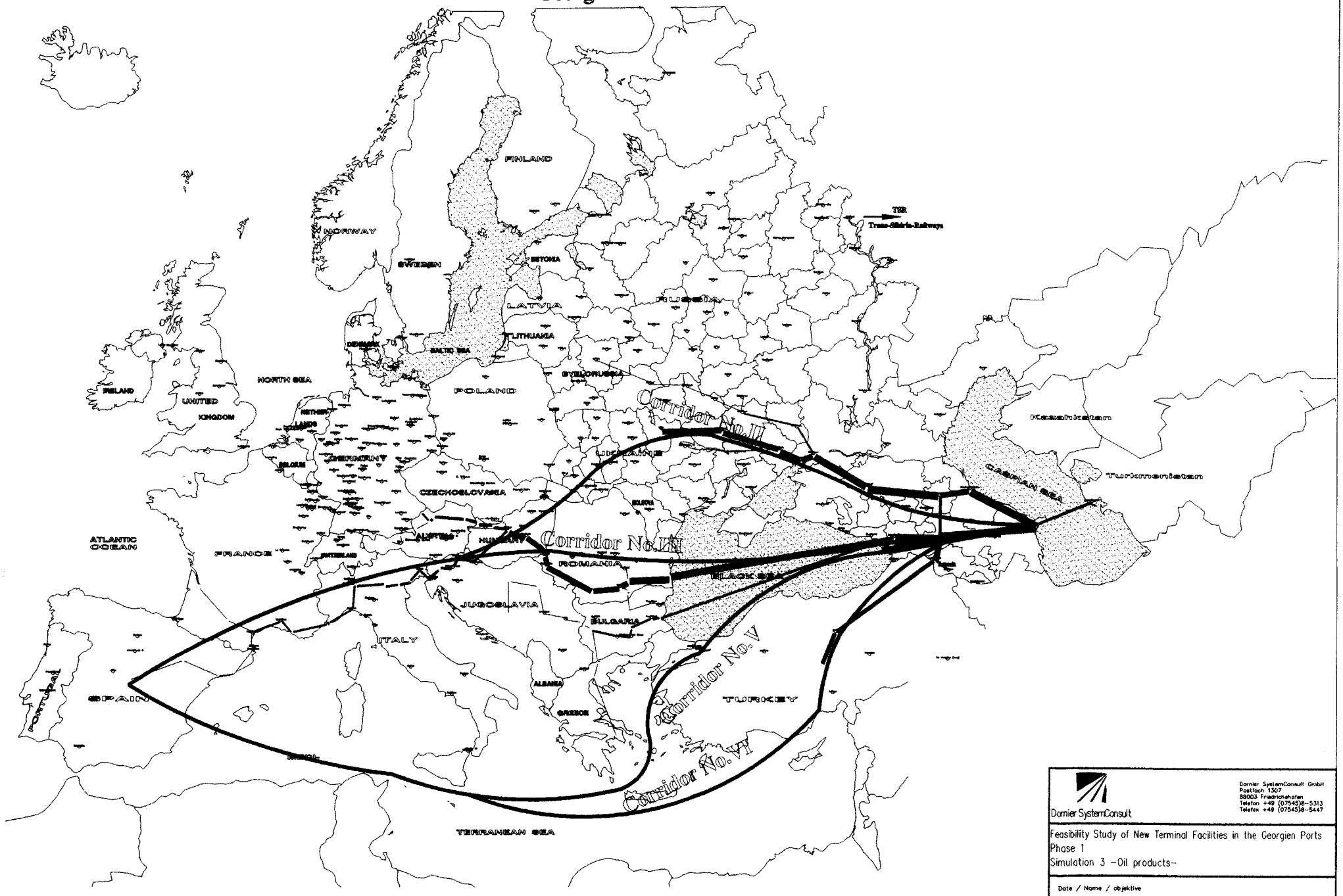
Simulation 3	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor II	6095	323	13	1.538
Corridor V	4346	252	10	1.336
Corridor III	6098	299	12	5.316
Corridor VI	5739	304	13	2.909

Result (second series)

Simulation 3	Distance	Time (h)	Time (days)	Costs / TEU ($)
Corridor II	6095	163	7	1.538
Corridor V	4346	174	7	1.169
Corridor III	6098	167	7	2.971
Corridor VI	5739	224	9	1.929

Simulation 3 (oil products from Baku to the region of Madrid/Spain) leads to very different transport costs. The best Corridor with respect to transport time and costs is number V (railway transport to Batumi and sea transport to Spain). The road transport via the roro-ferry Poti to Constanza (Corridor III) has the highest costs in comparison to the other three Corridors. This result is in main due to the unusually high transport cost in the TRACECA countries.

Feasibility Study of New Terminal Facilities
Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Phase 1
Simulation 3 -Oil products-

Date / Name / objektive

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08.01.1998 Happel

As a result, the TRACECA route via Poti/Batumi is in the case of simulation 1 and 3 the most cost efficient connection between origin and destination of goods and has therefore an acceptable competitive position to other transport corridors. In the case of cotton from Uzbekistan to Ireland the TRACECA route is not competitive. Due to the high road transport costs in the TRACECA countries railway transport is the best alternative within the different simulations.

In simulation 1 corridor III is (in comparison to the first series) furthermore the cost optimal variant. Due to the moderate transport and transhipment prices the gap to alternative I expands to about 1,000 US$ per 20' container. Transport time reduces to 8 days (in comparison to the first series).

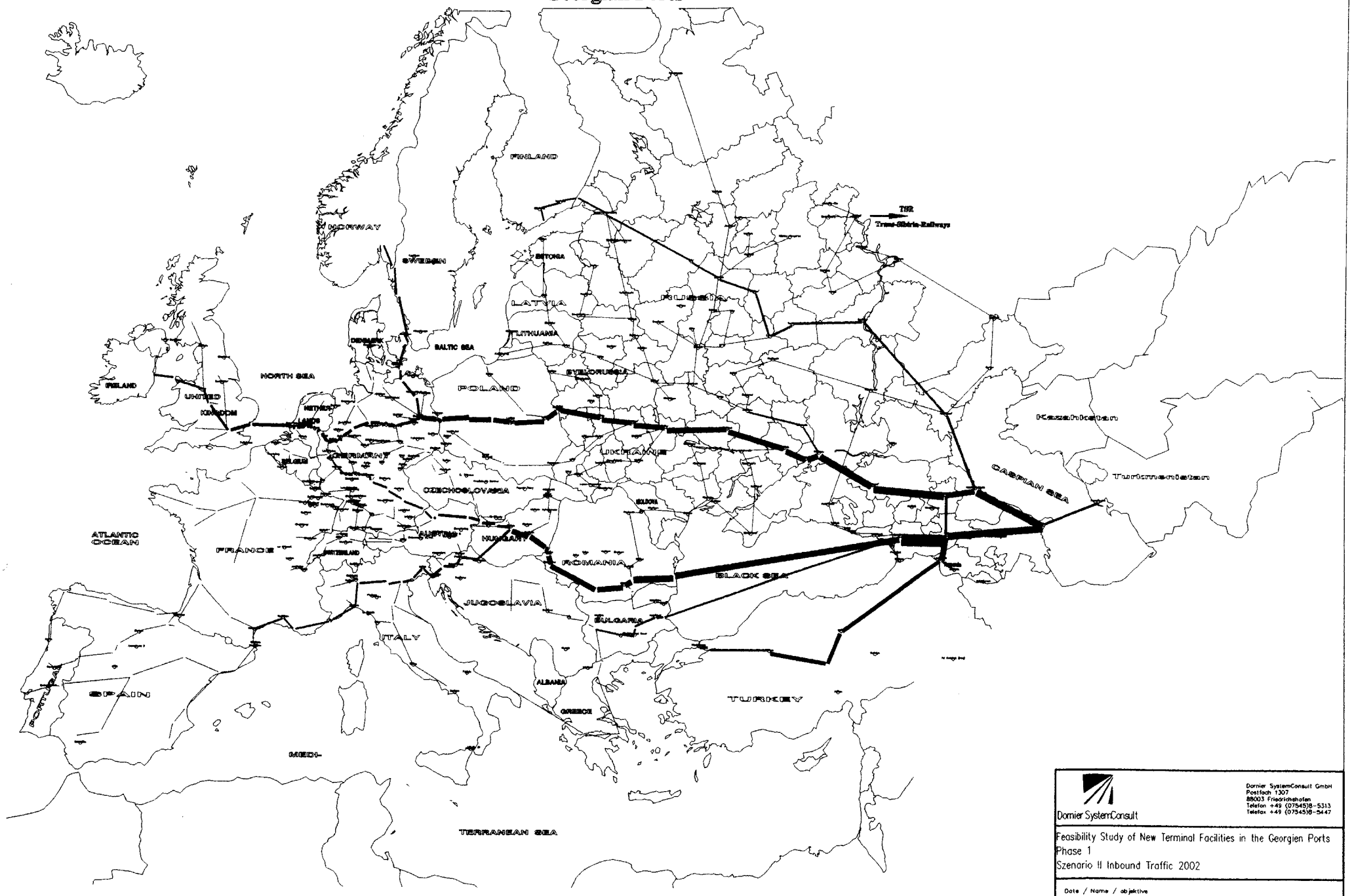
In difference to the first series simulation 2 shows, that the alternative corridor V is the cost optimal one. However, the difference to the price of corridor could be neglected. Therefore, the rail transport to St. Petersburg is highly competitive to the transport via the port of Batumi.

Despite the assumed moderate road transport prices in the TRACECA countries railway transport from Baku to the Georgian ports is the most competitive route. Transport by road via the ports of Poti and Constanta is again the most expensive way to transport oil products to Spain. Transport via the port of Mersin/Turkey with respect to prices is not competitive.

The evaluation of the second series of simulation leads to the same conclusions like the first series: the TRACECA route is for destinations within Europe a competitive corridor. This position is strengthened by the realisation of international usual prices for road transport and transhipment charges in the ports.

Feasibility Study of New Terminal Facilities

Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Phase 1
Szenario II Inbound Traffic 2002

Date / Name / objektive

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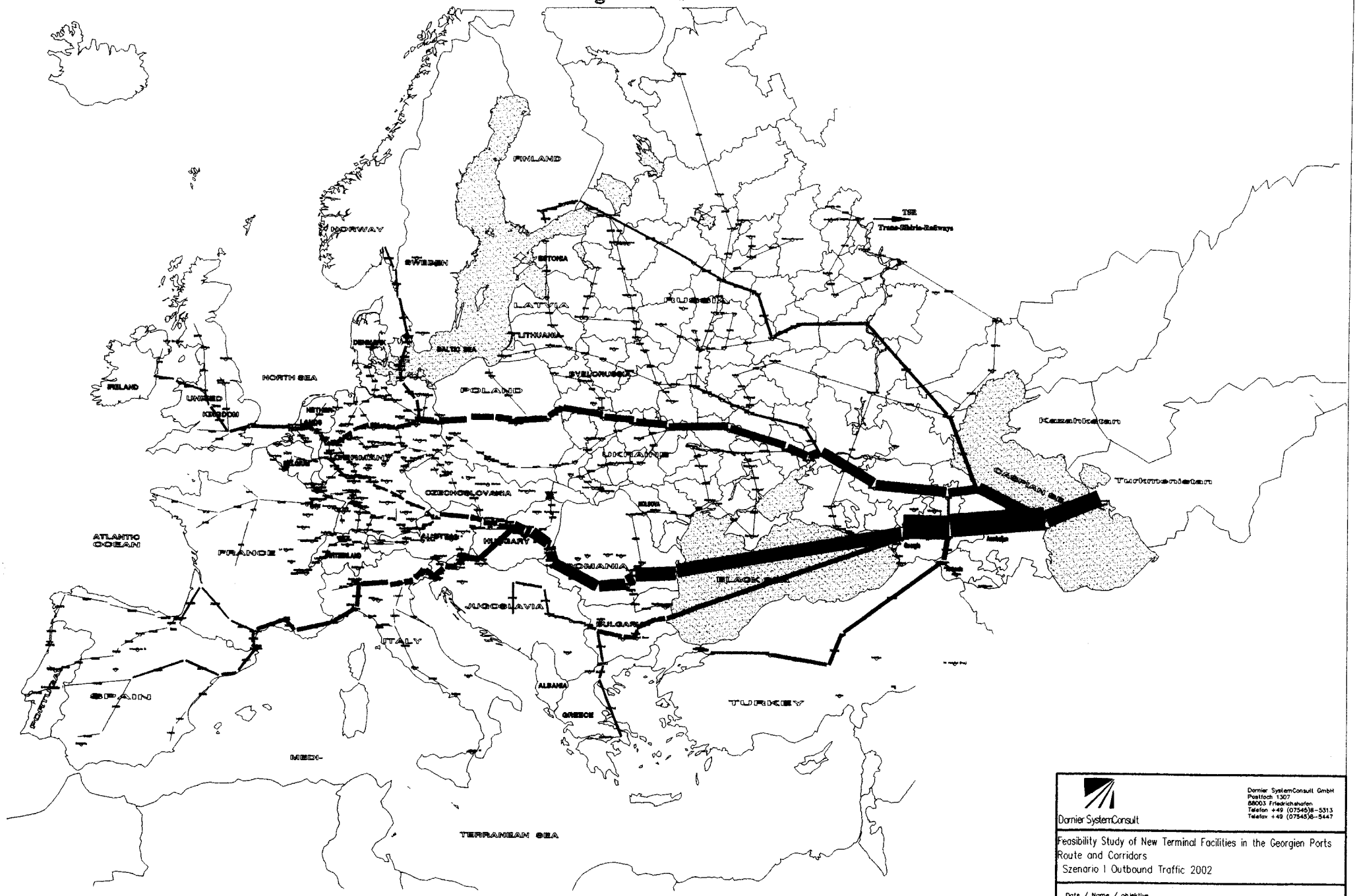
Feasibility Study of New Terminal Facilities

Georgian Ports



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Feasibility Study of New Terminal Facilities in the Georgien Ports
Route and Corridors
Szenario I Outbound Traffic 2002

Date / Name / objektive

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Recommendation for the most viable route connections. The more frequently used routes have been selected in the simulation. These routes are the following :

Truck

No usual routes exist. The truck routes are mainly routes using the shipping lines through the Black Sea. After the simulation, we realise that:

- The trucks travelling to Baku pass the ports Poti or Batumi. They are using the shipping link through the Black Sea from and to Constanta or Varna/Bourgas.
- Trucks travelling to Turkey are mostly using the land link.
- Relations with origin and destination between Central Asia (Kazakhstan, Uzbekistan) and North Europe are using the north link to Moscow and through Brest/St. Petersburg/Kaliningrad. However, this link is mainly a railway link.

The main corridor for the trucks are the corridors through the Black sea to the ports of Constanta or Varna/Burgas.

Railway

- The largest part of the railway transport uses the link via Moscow and Brest in Belarus or the link via the Ukraine to Poland. The transhipment, related to the track gauge difference with the Russian system is a bottleneck in this transport system.

Multimodal

- Two major routes exist. The first one passes St. Petersburg and the second one by the ports of the Black Sea (Poti and Batumi).

There is strong competition between the classical north routes (by St. Petersburg) and the south TRACECA routes (by Poti or Batumi). In some cases the European cities are located near various seaports. In those cases all possible transports between the origin city and the various seaports have been simulated. All these sea routes have the starting /ending point in the ports of Poti/Batumi.

The Black Sea routes between the ports of Poti and Batumi and the ports of Constanta and Varna/Burgas with the direct link from the TEN to the TRACECA corridors will have an important role in the future in the economic development between Europe and the TRACECA regions. Three major routes extend from Europe to the TRACECA regions:

- One travels from central Europe via Poland, Ukraine and Russia using TEN corridors II, III, V and IX to Baku.
- The second travels from middle and south Europe to Hungary and along the Danube to Constanta (TEN corridor IV and VII) and further to the ports of Georgia.
- The third route is the sea link from the ports of Georgia through the Bosphorus and the Mediterranean Sea to the ports of Europe.

Corridor No.		I	II	III	IV	V	VI	Georgian Port Volume Szenario I	Georgian Port Volume Szenario II	Georgian Port Volume Szenario III
2002	Inbound	150,000	1,400,000	2,000,000	560,000	640,000	400,000	3,206,474	2,084,208	2,725,503
Szenario	Outbound	110,000	2,160,000	2,950,000	950,000	1,000,000	350,000	4,893,526	3,180,792	4,159,497
2007	Inbound	130,000	1,300,000	1,900,000	400,000	510,000	350,000	4,326,721	2,812,368	3,677,713
Szenario	Outbound	95,000	1,800,000	2,500,000	810,000	800,000	290,000	6,373,279	4,142,632	5,417,287
2012	Inbound	240,000	2,200,000	3,000,000	860,000	1,200,000	640,000	5,951,162	3,868,255	5,058,488
Szenario	Outbound	150,000	3,000,000	3,950,000	1,120,000	1,650,000	480,000	7,898,838	5,134,245	6,714,012

Sensitivity Analysis

The deciding question is how an independent corridor reacts to changes. Here a sensitivity analysis can be carried out and establish how strong the throughput of the Georgian ports is and how dependent it is on changes. The causes of such changes are the relief of barriers in international trade and traffic so it reflects on politics and economics. These changes depend on a lot of uncertain factors and cannot have concrete significance in the traffic forecast.

In the model these results get interpreted as increase in transport costs on the particular corridors which is assumed for the amount of up to 500 US$. The sensitivity analysis will be carried out for changes in every independent corridor.

Possible political and economical developments, that are accepted by the model is the increased transport costs on the grounds that they lay in the following considerations.

Increase of transport costs in Corridors I and II

- Increase in the boarder formalities between Russia and the TRACECA states
- Increase the capacity of the tracks could not be attained as planned, there the problem through different gauges was not relieved
- Increase in the transport costs on the street through internalisation form external costs in Eastern Europe

Increase of transport costs in Corridors III, IV and V

- Intermodal traffic becomes more expensive since the handling facilities in the relevant states are not extended as planned
- Sea transport becomes more expensive since the Georgian ports are not extended as planned

Increase of transport costs in Corridor VI

- Diplomatic relations between Turkey and Georgia get worse and hamper consequently trade and boarder crossings

The following Sensitivity Analysis map shows the results of the three calculated cases.

1. The alteration of transport costs to the extent of 500 US$ effects on the Corridors I and II a decrease of cargo volume of 72 %. The benefiting corridors are number III with an increase of 48 %, number IV with only 3 % (due to different origin/destination relations) and corridor V with 21 %.
2. The increase in transport costs effects the volume of minus 15 % for the corridors III, IV and V. Benefits are the corridor I with 8 %, corridor II with 6 % and corridor VI with 1 %.
3. The increase has also a strong influence on corridor VI. The cargo volume decreases by 69 %. Die single corridors benefit hereby with 8 % on corridor I, 7 % on corridor II, 13 % on corridor III, 2 % on corridor IV and 39 % on corridor V.

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