

From Wellhead to Market

**Oil Pipeline Tariffs and
Tariff Methodologies
in Selected Energy Charter
Member Countries**

January 2007



Energy Charter Secretariat

FROM WELLHEAD TO MARKET

OIL PIPELINE TARIFFS AND TARIFF METHODOLOGIES IN SELECTED ENERGY CHARTER MEMBER COUNTRIES

ENERGY CHARTER SECRETARIAT

JANUARY 2007

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First Edition, 2007

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ISBN: 9789059480445

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PREFACE

The international energy economy depends on the reliable operation of oil and gas pipeline networks; in many parts of the world, these pipelines are the arteries that bring energy supplies from wellhead to market, and any interruption to flows of energy can quickly have repercussions along the energy chain. Recent events have again demonstrated the importance of reliable transit both for oil and for gas, and it is therefore vital to minimise the risks that can affect cross-border energy supply and energy flows in transit.

This is a particularly sensitive issue in Eurasia, where oil and gas supplies often cross multiple national boundaries and jurisdictions on their way from producer to consumer. Through the Energy Charter Treaty, governments across Eurasia have created a binding legal framework – to which countries all along the energy chain subscribe – supporting reliable cross-border energy trade and providing mechanisms for settling disputes if and when they arise.

The present study – the first of its kind – concentrates on two key issues that can affect the reliability of oil transportation by pipeline: rules on access to pipelines and the disciplines regarding tariffs. It reviews the arrangements in these areas for the main cross-border oil pipelines in Eurasia, and assesses the consistency of oil transit tariffs and tariff methodologies with the provisions and principles of the Energy Charter. This complements a similar report on gas transit tariffs, completed by the Charter in 2006. These publications are part of an initiative by the Energy Charter Secretariat to enhance transparency on existing and future oil and gas transit arrangements across Eurasia.

The report has been prepared by the Directorate for Trade, Transit and Relations with Non-Signatories of the Energy Charter Secretariat, under the direction of Ralf Dickel. The authors are Miharu Kanai, Gürbüz Gönül and Thea Khitarishvili using input from a report prepared for the Energy Charter Secretariat by Andrei Zimakov of Oil House Consulting, Moscow. The report benefited greatly from discussions among Energy Charter member states in 2006 in the meetings of the Energy Charter's Trade and Transit Group.

This study is published under my authority as Secretary General and is without prejudice to the positions of Contracting Parties or to their rights or obligations under the Energy Charter Treaty or the WTO Agreements.



André Mernier
Secretary General
Brussels, 15 January 2007

THE ENERGY CHARTER TREATY

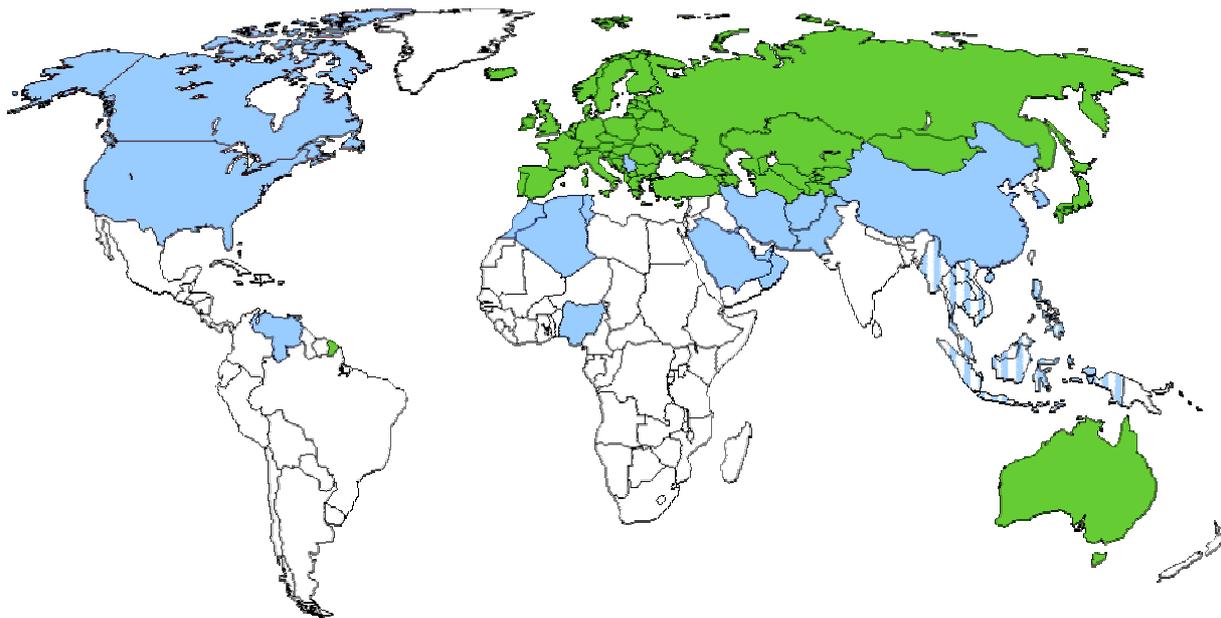
The Energy Charter Treaty provides a multilateral framework for energy cooperation that is unique under international law. It is designed to promote energy security through the operation of more open and competitive energy markets, while respecting the principles of sustainable development and sovereignty over energy resources.

The Energy Charter Treaty was signed in December 1994 and entered into legal force in April 1998. To date the Treaty has been signed or acceded to by fifty-one states plus the European Communities (the total number of its Signatories is therefore fifty-two).

The Treaty's provisions focus on four broad areas:

- the protection of foreign investments, based on the extension of national treatment, or most-favoured nation treatment (whichever is more favourable) and protection against key non-commercial risks;
- non-discriminatory conditions for trade in energy materials, products and energy-related equipment based on WTO rules, and provisions to ensure reliable cross-border energy transit flows through pipelines, grids and other means of transportation;
- the resolution of disputes between participating states, and - in the case of investments - between investors and host states;
- the promotion of energy efficiency, and attempts to minimise the environmental impact of energy production and use.

The Treaty was developed on the basis of the Energy Charter Declaration of 1991, but while this Declaration signalled the political intent to strengthen international energy ties, the 1994 Treaty is a legally binding multilateral agreement. It is the only agreement of its kind dealing with inter-governmental cooperation in the energy sector, covering the whole energy value chain (from exploration to end-use) and all energy products and energy-related equipment.



Countries marked in green are signatories of the Energy Charter Treaty, and members of the Energy Charter Conference. Countries marked in blue are observers (blue vertical stripes denote the countries of ASEAN).

ABBREVIATIONS AND ACRONYMS

AIOC: Azerbaijan International Operating Company

BOTAS: Boru Hatlari ile Petrol Tasima A.S.

BPS: Baltic Pipeline System

BS: Baku-Supsa

BTC: Baku-Tbilisi-Ceyhan

CIS: Commonwealth of Independent States

CNPC: China National Petroleum Corporation

CPC: Caspian Pipeline Consortium

FEC: Federal Energy Commission

FERC: the Federal Energy Regulatory Commission

FTS: Federal Tariff Service of the Russian Federation

FSU: former Soviet Union

mb/d: million barrels per day

mm: millimeter

mt: metric ton

m³/h: cubic meter per hour

MT: million metric tons

MT/Y: million metric tons per year

NKRE: National Committee for Control of Energy Industry of Ukraine

PSA: production sharing agreement

RFFI: Russian Fund of Federal Property

SOCAR: State Oil Company of Azerbaijan

tkm: ton per kilometer

US\$: US dollar

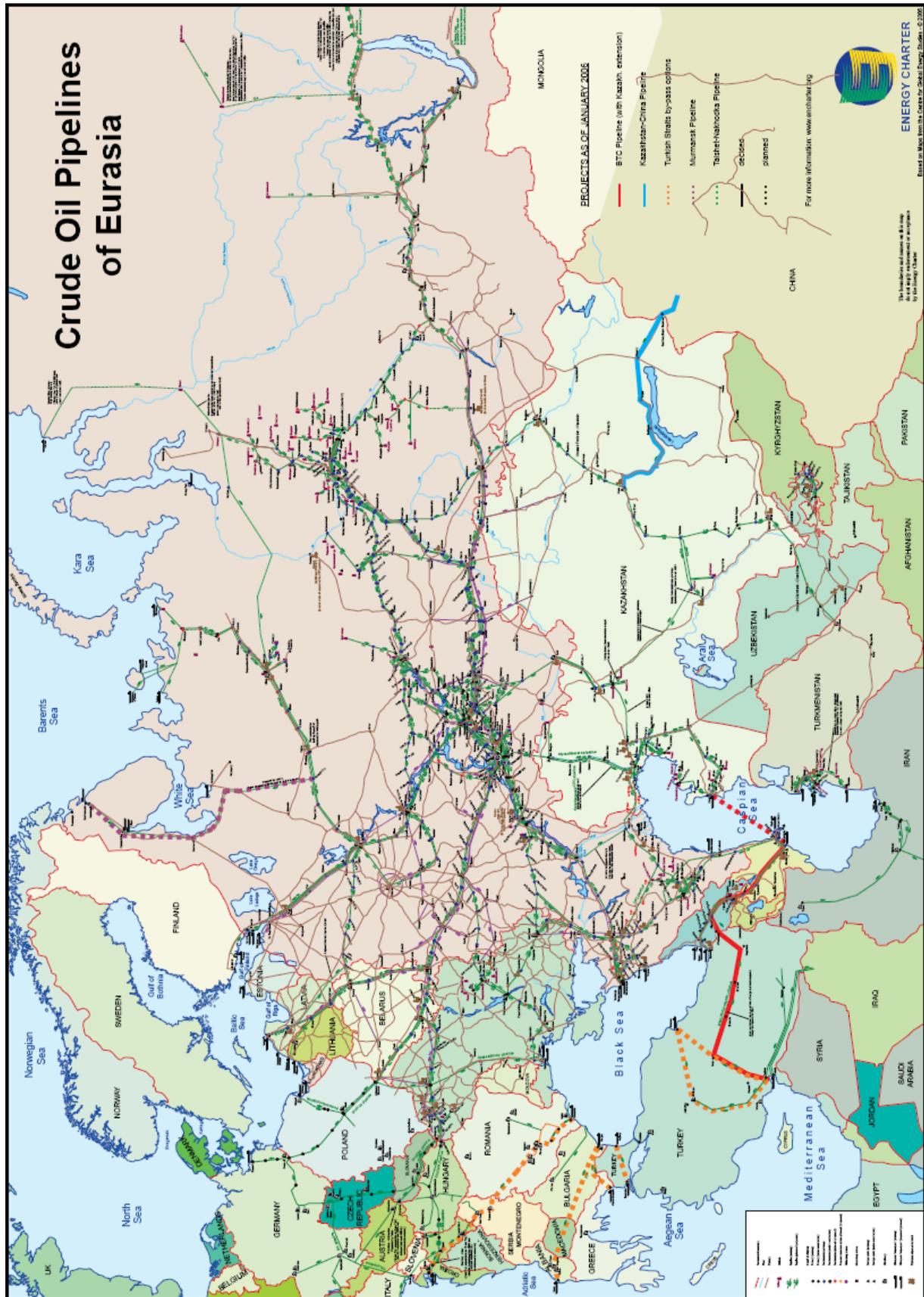
USSR: Union of Soviet Socialist Republics

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(Based on Pipeline Map from the Centre for Global Energy Studies)

Executive summary

1.1 Background

The pipeline system in West Siberia and Eastern Europe dates back to 1970-1985, when the pipeline network was built by the USSR to serve the needs of the domestic oil refining industry and for export purposes. Starting initially in the Volga region, the main oil source of the system soon shifted to West Siberia. The peak of crude oil production was reached in 1988 (612 MT/Y or 12.2 mb/d). By that time the trunk lines formed one system in terms of oil flows, pipeline diameters, throughput capacities and pipeline connections.

After the collapse of the USSR, the pipeline system was at once divided into separate parts by emergence of new independent states. Each new country developed its own natural monopoly regulation to govern its portion of the pipeline system. The former Soviet export trunk lines are now separated and crude oil exports have to pass more borders than they used to.

1.2 Objectives

The key problems for the transit pipelines are tariffs and rules for access. The main objectives of this study are to describe and analyze existing crude and oil product transport tariffs and methodologies as well as rules for access, where relevant, to existing and new cross-border oil pipeline systems across selected countries of the former Soviet Union – Russia, Ukraine, Belarus, Azerbaijan, Georgia, Kazakhstan and Uzbekistan. For this purpose, essential technical and economic elements influencing costs of oil pipeline transportation are described, as well as typical tariff methodologies. Amounts and methodologies of oil pipeline tariffs are examined and, where relevant, cross-border tariff regimes are compared with those for domestic transport.

1.3 Sources

This report was written by staff at the Energy Charter Secretariat, using input from a report prepared by Oil House Consulting, Moscow, Russia. Oil House Consulting collected factual information from a variety of publicly available sources. Wherever possible, information from ministries, state-owned enterprises, government agencies and private sector operators in the FSU countries were added. Oil House Consulting consulted with Transneft, Transnefteproduct and Federal Tariff Service of Russia.

1.4 Conclusions

- Lack of transparency of transit tariffs is an important challenge within the Energy Charter Treaty area. In most of the countries, such tariffs are negotiated at the state level and set through intergovernmental agreements. Such negotiations are often conducted under strict confidentiality and the outcomes are very rarely (or only partially) revealed to the public. Similarly, for project-driven transit pipelines which are built by private companies, a system of negotiated access and tariff-setting (between pipeline shareholders and companies requesting access) is predominant.

In case of negotiated access, more transparency would be required on the outcome of negotiations involving state parties, including those at inter-state and state-investor levels (i.e. treaties and other agreements involving governments).

- In the countries where pipeline transport of oil is regarded as natural monopoly, access and tariffs for domestic transport are regulated by the state and they are often published. In Western Europe, oil transport activities are commercially driven among private actors without state interference and only subject to general competition rules of the EU and the country itself.
- The system of negotiated access to pipelines for transit, which is widely used across the Energy Charter constituency, can be in conformity with the Energy Charter Treaty so long as its requirements are fully met, in particular as in Article 7 and including the need for non-discrimination and transparency in the associated procedures.
- The lack of transparency makes a thorough assessment of the degree of cost-reflectiveness of transit tariffs difficult. The peculiarities of each transit case associated with its technical, economic, geographical, legal/regulatory and other characteristics would result in a range of possible cost-reflective tariffs. Therefore, a reliable assessment of cost-reflectiveness with respect to a specific case would require a more elaborated analysis of all variables.
- There are few cases where national and transit flows are comparable and where tariffs are publicly available. Moreover, in the absence of sufficient transit tariff data in most cases, such an analysis cannot be based solely on a comparison of tariffs charged, but requires a detailed review and analysis of relevant legal and regulatory regime and practical implementation.

2 Introduction

2.1 Objectives and scope

Freedom of energy transit is an important element of the Energy Charter process. The Energy Charter Treaty obliges its member countries to facilitate energy transit on a non-discriminatory basis, and to refrain from imposing unreasonable delays, restrictions or charges on energy in transit.

A main focus for the Energy Charter process has been the conditions for transit of natural gas. Tariffs, along with access to energy transit infrastructure, are the basis of free transit. To examine gas transit flows and tariff methodologies, the Energy Charter Secretariat published a study on gas transit tariffs in selected Energy Charter member countries in January 2006.

This report follows on from the gas tariff study and examines oil transit flows and oil transit tariffs. The Energy Charter constituency in the land-locked part of the Eurasian continent has the world's largest oil pipeline system, which was originally built during the Soviet era. After collapse of the Soviet Union the pipeline system was divided into separate parts by emergence of new borders, and oil transported by the pipeline now has to cross multiple borders before it reaches its destination.

The main objectives of this study are;

- to review transit tariff methodologies for existing and new oil transit pipeline systems across selected member countries of the Energy Charter;
- to compare transit tariff regimes with those for domestic transport; and
- to assess the overall consistency of these transit tariffs vis-à-vis the provisions of the Energy Charter Treaty and draft Transit Protocol.

Geographically, this study covers the following key oil transit countries;

- in Eastern Europe, the Caucasus and Central Asia: the Russian Federation, Belarus, Ukraine, Azerbaijan, Kazakhstan, Georgia; and
- in Western Europe: France, Switzerland, Germany, Austria, Italy, Norway and the UK.

2.2 Outline

This report consists of the following chapters;

- Chapter 3 gives a brief review on main domestic and cross-border oil flows in the countries examined.
- Chapter 4 describes essential technical and economic features which determine pipeline transport tariffs.
- Chapter 5 deals with rules of access to cross-border and transit oil pipelines.
- Chapter 6 touches upon principles of pipeline tariff methodologies applied in the FSU countries.
- Chapter 7 describes tariff methodologies in place for domestic, cross-border and transit oil pipelines in the FSU countries.
- Chapter 8 gives an overall comparison of tariffs for transit, cross-border and domestic oil pipelines.
- Chapter 9 offers conclusions and recommendations.

2.3 Freedom of Transit (Article V, GATT)

Freedom of transit is a basic principle of the international economic system. The general international rules on transit are set out in Article V of the General Agreement on Tariffs and Trade (GATT 1947). The article stipulates the following principles;

- Freedom of transit through the territory of a member country to or from other member countries
- Transit via the routes most convenient for international transit
- Non-discrimination based on nationality, ownership, origin/destination, or, entry/exit
- Transit without any unnecessary delays or restrictions
- Most-Favoured-Nation (MFN) treatment to goods in transit; and
- Transit traffic shall not be a source of fiscal revenue.

In particular, Article V sets out specific requirements regarding charges on transit. According to Paragraph 3 of the article, traffic in transit is exempt from customs duties, all transit duties and other charges in respect of transit, except for two. They are charges for (i) transportation and (ii) administrative expenses caused by transit or services rendered. All charges have to be reasonable, having regard to the conditions of the traffic (paragraph 4) and non-discriminatory (paragraph 5).

Box No 1

Article V Freedom of Transit, the General Agreement on Tariffs and Trade

1. Goods (including baggage), and also vessels and other means of transport, shall be deemed to be in transit across the territory of a contracting party when the passage across such territory, with or without trans-shipment, warehousing, breaking bulk, or change in the mode of transport, is only a portion of a complete journey beginning and terminating beyond the frontier of the contracting party across whose territory the traffic passes. Traffic of this nature is termed in this Article "traffic in transit".
2. There shall be freedom of transit through the territory of each contracting party, via the routes most convenient for international transit, for traffic in transit to or from the territory of other contracting parties. No distinction shall be made which is based on the flag of vessels, the place of origin, departure, entry, exit or destination, or on any circumstances relating to the ownership of goods, of vessels or of other means of transport.
3. Any contracting party may require that traffic in transit through its territory be entered at the proper custom house, but, except in cases of failure to comply with applicable customs laws and regulations, such traffic coming from or going to the territory of other contracting parties shall not be subject to any unnecessary delays or restrictions and shall be exempt from customs duties and from all transit duties or other charges imposed in respect of transit, except charges for transportation or those commensurate with administrative expenses entailed by transit or with the cost of services rendered.
4. All charges and regulations imposed by contracting parties on traffic in transit to or from the territories of other contracting parties shall be reasonable, having regard to the conditions of the traffic.
5. With respect to all charges, regulations and formalities in connection with transit, each contracting party shall accord to traffic in transit to or from the territory of any other contracting party treatment no less favourable than the treatment accorded to traffic in transit to or from any third country.

6. Each contracting party shall accord to products which have been in transit through the territory of any other contracting party treatment no less favourable than that which would have been accorded to such products had they been transported from their place of origin to their destination without going through the territory of such other contracting party. Any contracting party shall, however, be free to maintain its requirements of direct consignment existing on the date of this Agreement, in respect of any goods in regard to which such direct consignment is a requisite condition of eligibility for entry of the goods at preferential rates of duty or has relation to the contracting party's prescribed method of valuation for duty purposes.
7. The provisions of this Article shall not apply to the operation of aircraft in transit, but shall apply to air transit of goods (including baggage).

2.4 Energy Transit (Energy Charter Treaty and Transit Protocol)

The Energy Charter Treaty further developed international transit rules for the energy sector, when it entered into force in 1998. The Energy Charter Treaty's transit provisions included in Article 7 were built on the non-discrimination principle of Article V of the GATT. Furthermore, they explicitly cover grid-bound energy transport facilities, including;

- high-pressure gas transmission pipelines,
- high-voltage electricity transmission grids and lines,
- crude oil transmission pipelines,
- coal slurry pipelines,
- oil product pipelines; and
- other fixed facilities handling energy materials and products.

Under the provisions, member countries are obliged to facilitate energy transit on a non-discriminatory basis, and they are prohibited from imposing unreasonable delays, restrictions or charges. A conciliation procedure is available if a dispute arises regarding energy transit.

Provisions related to transit and transit tariffs are also found in the draft Transit Protocol, which is designed to elaborate and strengthen the Treaty's existing rule, and is currently being negotiated among the Energy Charter member states. Multilateral negotiations on the draft Protocol have provisionally been concluded, and consultations on the text remain on a bilateral basis between the European Union and the Russian Federation.

Article 10 of the draft Transit Protocol, made publicly available in October 2003, stipulates that transit tariffs shall be objective, reasonable, transparent and non-discriminatory. It also states that transit tariffs and other conditions should not be affected by market distortions resulting from transit countries' abuse of their dominant positions. The article goes on to say that transit tariffs shall be based on operational and investment costs, with a reasonable rate of return.

Box No 2

**DRAFT ENERGY CHARTER PROTOCOL ON TRANSIT
ARTICLE 10 (TRANSIT TARIFFS)**

1. Each Contracting Party shall take all necessary measures to ensure that Transit Tariffs and other conditions are objective, reasonable, transparent and do not discriminate on the basis of origin, destination or ownership of Energy Materials and Products in Transit.
2. Each Contracting Party shall ensure that Transit Tariffs and other conditions are not affected by market distortions, in particular those resulting from abuse of a dominant position by any owner or operator of Energy Transport Facilities used for Transit.
3. Transit Tariffs shall be based on operational and investment costs, including a reasonable rate of return.
4. Subject to paragraphs 1, 2 and 3 of this Article, Transit Tariffs may be determined by appropriate means, including regulation, commercial negotiations or congestion management mechanisms.

Source: FINAL ACT OF THE ENERGY CHARTER CONFERENCE WITH RESPECT TO THE ENERGY CHARTER PROTOCOL ON TRANSIT, 31st October 2003

3 Cross-Border and Transit Flows

3.1 Oil Flows and Transportation Infrastructure in the FSU

The pipeline system in West Siberia and Eastern Europe dates back to 1970-1985, when the pipeline network was built by the USSR to serve the needs of the domestic oil refining industry and for export purposes. Starting initially in the Volga region, the main oil source of the system soon shifted to West Siberia. The peak of crude oil production was reached in 1988 (612 MT/Y or 12.2 mb/d, without Natural Gas Liquids). By that time the trunk lines formed the shape of one system in terms of oil flows, pipeline diameters, throughput capacities and pipeline connections.

After the collapse of the USSR, the pipeline system was at once divided into separate parts by emergence of new independent states. Each new country developed its own natural monopoly regulation to govern its portion of the pipeline system. The former Soviet export trunk lines are now separated and crude oil exports have to pass more borders than they used to.

In the wake of political and economical transition, FSU oil output fell to 7 million barrels per day in the mid-1990s. It started recovering in the late 1990s and has shown a robust growth for the last ten years. Although increases in Russian production slowed for the last two, three years, Caspian output is set to increase with capacity expansions at the Tengiz field in Kazakhstan and the Azeri field in Azerbaijan as well as start-up of the Kashagan field in Kazakhstan.

Export pipelines in the FSU are divided into two categories; those left from the Soviet time and newly added capacities.

The existing export capacities are as follows:

- The Druzhba pipeline system, which is now divided between Russia, Ukraine and Belarus;
- A pipeline system that leads to port terminals on the Black Sea (Novorossiysk and Tuapse in Russia, Odessa in Ukraine);
- A pipeline from Polotsk (Belarus) to Latvia; and
- The Atyrau-Samara pipeline used to connect Kazakh crude oil to the Transneft system.

The new export capacities are:

- The Caspian Pipeline Consortium (CPC) pipeline;
- Upgraded existing systems, for example, the Baku-Novorossiysk pipeline;
- The Baltic Pipeline System (BPS);
- The Odessa-Brody pipeline;
- The Baku-Supsa pipeline;
- The Baku- Tbilisi-Ceyhan (BTC) pipeline; and
- A newly built terminal of Yuzhny in Ukraine.

Most pipelines are laid on flat lands. The Baku-Supsa and Baku-Tbilisi pipelines as well as the BTC pipelines are the exceptions, since they run through the mountains of the Caucasus. The western part of the Ukrainian section of the Druzhba pipelines goes also through the Carpathian Mountains.

Most pipelines use commingled stream operations. Crude from various fields in Russia and the former Soviet republics is mingled when transported by Transneft's pipeline system, and becomes the Urals grade. Currently around 4 million barrels per day of the Urals grade are exported. The export volume is the second largest in the world after Saudi Arabia's Arabian Light.

However, some pipelines are used for batch operation. There is an upper grade called Siberian Light, which is transported by a separate line of Transneft. Its export volume is around several hundred thousand barrels per day. In addition, there is light crude oil transported through the Baku-Novorossiysk pipeline. The CPC and BTC carry their own crude grades, CPC Blend and Azeri Light, through batch operations.

The problem Urals faces is that its markets are limited. Urals is sold mainly to Eastern Europe via the Druzhba pipeline, to Northwest Europe by tanker from the Baltic Sea ports and to the Mediterranean by tanker from the Black Sea ports through the Turkish straits. This causes Urals' unfavourable pricing conditions. One aim of the East Siberia-Pacific pipeline, currently under construction, is to develop new markets for Russian crude in the Asia-Pacific and US West coast.

3.1.1 Caspian Pipeline Consortium

The CPC pipeline system is one of the largest foreign investment projects in the FSU. For that region an unusual characteristic of the CPC pipelines system is that the ownership lies in the hand of suppliers. The CPC was funded and established by a group of oil companies including the Tengiz partners who were planning to produce and transport oil.

The 1,580-km pipeline connects the Tengiz fields in Western Kazakhstan with the Russian coast of the Black Sea. The pipe diameter from the *Kropotkinskaya* pumping station to the sea terminal is 1,067 mm, while the rest measures 1,016 mm. The total number of planned pumping station is 15, of which five have been built for the first stage operation. The Black Sea terminal plans to have three single mooring points in total, of which two mooring points have been commissioned in the first stage. They can load tankers of deadweight of up to 300,000 mt simultaneously, with immersed pipes of 1,067-mm diameter. The transmission capacity of each pipeline is 12,700 m³/h. The storage facility of the sea terminal consists of ten tanks, including four for the first stage. Each of them is a steel reservoir with a capacity of 100,000 m³.

In April 2003 the first stage of the CPC oil pipeline system was brought into regular operation. The transmission capacity of the first stage is 0.56 mb/d or 28.2 MT/Y. However, the construction of the entire CPC system remains unfinished. The CPC project was designed to increase its initial transmission capacity by 2.5 times in the second stage. Ultimately, the CPC is expected to transport 1.34 mb/d or 67 MT/Y.

Half of the shares of the consortium belong to governments: Russia holds 24%, *Kazakhstan* 19% and *Oman*. 7%. The second half is divided up between private companies. These companies are: *American Chevron Caspian Pipeline Consortium Co.* (15%), *Mobile Caspian Pipeline Co.* (7.5%) and *Oryx Caspian Pipeline LLC* (1.75%), Russian-American joint venture *LUKARCO* (12.5%), Russian-British joint venture *Rosneft-Shell Caspian Ventures Ltd* (7.5%), Italian *Agip International* (2%), British *BG Overseas Holdings Ltd* (2%), and *Kazakhstan Pipeline Ventures LLC* (1.75%). The shareholders have quotas to transport oil

through the CPC system relative to their individual shareholdings. Two joint stock companies have been established and registered; CPC-R (Russia) and CPC-K (Kazakhstan), based on the jurisdictions of the two countries. An oil quality bank has been established based on density and sulphur content.

3.1.2 Baku-Supsa

The *Baku-Supsa* pipeline connects oil fields in Azerbaijan with the *Supsa* Terminal on the Georgian coast of the Black Sea. The 827-km pipeline begins at the *Sangachal* Terminal in Azerbaijan and comprises 772 km of new steel pipes (diameter 530 mm) and 55 km of the rebuilt section. Along the route six pumping stations and two pressure reducing stations have been installed. The transmission capacity is 0.11 mb/d or 5 MT/Y.

The *Sangachal* terminal in Baku is designed to handle 0.11 mb/d or 5.7 MT/Y of oil. The terminal has been operational since 25 December 1997. It has four tanks with floating roofs. The storage capacity of each tank is 160,000 barrels or 22,000 mt. The terminal is equipped with both metering devices and pumping units. The terminal distributes oil to both the northern export pipeline (*Baku-Novorossiysk*) and the western pipeline (*Baku-Supsa*).

In Georgia a new 13-km branch line has been built from the existing *Samgory-Batumi* pipeline to a new terminal in Supsa. The *Samgory-Batumi* pipeline section has been upgraded. The oil terminal in Supsa consists of four reservoirs each with a 1.8-million-barrel (250,000 mt) capacity, metering stations, a 5-km pipeline of 900-mm diameter that connects the terminal with a filling buoy. The last component between the terminal and an oil tanker is a 50-meter-deep loading system located on the sea bed approximately three kilometres offshore.

Participants in the project are: Amoco Caspian Petroleum Limited, BP Exploration (Caspian Sea), Delta Nimir Khazar Limited, Den Norske Stats Ojeselskap a.s., Exxon Azerbaijan Limited, LukOil, McDermott Azerbaijan Inc., Pennzoil Caspian Corporation, Ramco Khazar Energy Limited, the State Oil Company of the Azerbaijan Republic (SOCAR), Turkiye Petroleri A.O. and Unocal Khazar Ltd.

3.1.3 Baku-Tbilisi-Ceyhan

During the OSCE Summit in Istanbul in November 1999 the governments of Azerbaijan, Georgia and Turkey signed an intergovernmental agreement agreeing to the construction of an oil pipeline from Baku, Azerbaijan, to Ceyhan on the Mediterranean coast of Turkey.

The Baku-Tbilisi-Ceyhan pipeline is 1,773-km long and runs through three countries; Azerbaijan (449 km, with a pipe diameter of 1,067 mm), Georgia (235 km, with a pipe diameter of 1,168 mm), and Turkey (1,059 km, with a pipe diameter of 864-1,067 mm). The construction of the pipeline began in April 2003. Approximately 10 million barrels (1.37 MT) of oil are required to fill the line. The design transmission capacity is 1.00 mb/d or 50 MT/Y.

Both the construction and the operation of the entire route of the oil pipeline are under the contractual commitment of the BTC pipeline company. The BTC pipeline consortium is made up of BP with a 30.1% stake as project operator, Azerbaijan's State Oil Company (SOCAR) holding 25%, the American companies Unocal (8.9%), Conoco-Phillips (2.5%), and Amerada Hess (2.35%), Norway's Statoil (8.7%), Turkish Petroleum (6.5%), Italy's ENI (5%), Total of France (5%), and the Japanese-based Itochu and Inpex with 3.4% and 2.5% stakes respectively. The BTC awarded a contract to BOTAS, Turkey's state-owned pipeline

company, for both the construction and the operation of the Turkish section of the pipeline. The contract stipulates a fixed amount of contract money.

The pipeline is expected to contribute to the development of resources in the Caspian Basin. In addition to oil from *Azeri-Chirag-Guneshli*, in Azerbaijan, it could possibly carry oil from the *Kashagan* field in Kazakhstan to the market. The first tanker is expected to be loaded at the Ceyhan terminal in mid-2006.

3.1.4 Ukraine

Ukraine enjoys a well-developed trunk pipeline system, with a total length of more than 4,600 km. The oil transportation system consists of two transmission systems; one in the east of the country (*Pridnestrovsky Magistralny Nefteprovody*) and one in the northwest of the country (oil transportation system *Druzhba*). Recently these two systems have been linked by the *Odessa-Brody* trunk pipeline. *Ukrtransnafta*, a subsidiary of *Naftogaz Ukrainy* is the trunk oil pipeline operator in Ukraine.

Transit through Lisichansk

The *Pridnestrovsky Magistralny Nefteprovody* Company transports oil through the eastern Ukrainian pipeline to oil refineries situated in both the east and the south of the country; and to the oil terminal in Odessa (0.16-mb/d or 8-MT/Y capacity). This system can also transport oil to the Russian port of Novorossiysk. The total length of the pipeline of the *Pridnestrovsky Magistralny Nefteprovody* Company is 2,200 km. The company's headquarters is in the city of Kremenchug.

Odessa-Brody Pipeline

The objectives of the project are to diversify oil delivery routes to the Ukrainian oil refineries and to transit oil from the Caspian Sea and the Black Sea through to Central Europe. The project will be capable of rerouting the Caspian oil from *Baku* via *Supsa-Yuzhny* Terminal (*Odessa-Brody* (western Ukraine) to central Europe. This will not only alleviate oil traffic problems in the Bosphorus strait, but will also enable the transportation of crude oil to the attractive markets of Central and Northwestern Europe. The project was initiated by the Ukrainian Government.

The length of the pipeline is 670 km, and its transportation capacity is approximately 0.18 mb/d or 9 MT/Y. It can be increased up to 0.60-0.80 mb/d or 30-40 MT/Y.

It is believed that the *Odessa-Brody* line would provide a shorter route from the Black Sea through the southern branch of the *Druzhba* oil pipeline to reach refineries in Slovakia, the Czech Republic and Hungary. If short connecting lines were to be built deliveries could be made to Austria (*Schwehat* Refinery), Germany (*Leuna* Refinery) together with other consumers. The extension of the *Yuzhny-Brody* pipeline to the Polish town of *Ploczk* would unite the system with the western branch of the *Druzhba* oil pipeline and provide access to the new markets of Poland, Germany and the Baltic Sea (via the port of *Gdansk* in Poland).

In August 2001 the construction was completed but oil producers/traders showed insufficient interest in the use of the pipeline. Finally, however, *TNK-BP* agreed to provide the necessary oil for the line-fill and thus guarantee the deliveries but only in reversed mode operation from *Brody* to *Odessa*. At present the pipeline is operated in this reversed mode and transports

Russian oil to Odessa. TNK-BP is the operator of the section. In 2005, 0.12 mb/d or 5.8 MT of crude oil was transported.

Ukrainian Oil Transportation Company Druzhba

This company transports Russian oil to the western Ukrainian border with Slovakia and Hungary. Two parallel lines of 530-mm and 720-mm diameters respectively comprise a core of the pipeline. The length of the pipeline is around 1,000 km. The company's headquarters is in the city of Lvov. The average throughput is around 0.38 mb/d or 19 MT/Y at the exit.

3.1.5 Belarus

The Belarusian Oil Transportation Company *Druzhba* brings Russian oil to the western border with Poland and for further delivery to Germany (Adamova Zastava), Ukraine (for further transit), the border with Latvia for delivery to the Mazeikiiai Refinery; and the Butinge terminal of Lithuania. The pipeline consists of two parallel lines of 1,020-mm and 820-mm diameter, coming from Russia. This splits into two flows near the Mozyr refinery (1.6 mb/d or 81 MT/Y). One flow of 530-mm and a 720-mm parallel pipe goes to the Ukraine (0.40 mb/d or 20 MT/Y). The second flow goes to Poland and Germany and consists of 630-mm and 820-mm parallel pipes (1.0 mb/d or 50 MT/Y). The total length of the pipeline is around 1,600 kilometres. The company's office is located in the city of Gomel.

3.1.6 Baltic States

The pipeline to the Baltic States consists of two lines (720 mm (28 inch), 530 mm (21 inch)), diverted from the Polotsk pumping station. The pipeline has a total capacity of approximately 0.56 mb/d or 28 MT/Y. Polotsk receives crude oil from two directions; one from Nevel (Russia) through a pipe of 1,020-mm diameter with a throughput capacity of 0.62 mb/d or 31 MT/Y and the other through two parallel lines of 820-mm (0.30 mb/d or 14.9 MT/Y). Both lines originate from the Russian *Druzhba* pipeline. The line is currently under-loaded now. In 2005 the Nevel station received only 0.38 mb/d or 19 MT from *Druzhba* plus 0.07 mb/d or 3.6 MT/Y from Nevel, and transported only 0.30 mb/d or 15 MT/Y to Latvia. This accounts for the halting of deliveries in 2003 to the Ventspils terminal and which led to a shift of the deliveries to the port of Primorsk.

3.1.7 Russian Export Pipelines

Transneft's trunk pipeline system transports oil exports both westwards through the Baltic Pipeline System (BPS) and the *Druzhba* pipeline and southwards through the ports of Novorossiysk and Tuapse as well as eastwards through pipeline to the loading depots of *Meget* and the *Angarsky refinery*. Transportation of oil further east is assured by railway. *Transneft* also carries oil from Azerbaijan, Kazakhstan and Turkmenistan.

Oil Transportation company Druzhba

This company takes oil from the *Severo-Zapadny Oil Transportation Company*, *Verkhne-Volzhsy Oil Transportation Company*, and *Privolzhsknefteprovod* company. The *Druzhba* Oil Transportation Company delivers oil to the border with Belarus. The core of the export pipeline consists of two lines of 1,200-mm and 1,000-mm diameters. Pipelines of the *Druzhba* Oil Transportation Company run through the Penza, Tambov, Orel and Bryansk regions. The route length is approximately 3,700 km. Its head office is located in the city of Bryansk. The average throughput at the exit to Belarus is around 1.6 mb/d or 81 MT/Y.

Chernomortransneft

This company receives oil from fields in the Krasnodar region, Stavropol area, Northern Caucasus and Azerbaijan, as well as the *Privolzhsknefteprovod* company. It delivers oil to refineries in the Krasnodar area as well as the ports of Novorossiysk and Tuapse. The *Chernomortransneft* company possesses the pipeline network that runs through the Rostov region as well as the Stavropol and Krasnodar areas. The following pipelines transport oil to the ports on the Black Sea: *Tikhretsk-Tuapse*, *Baku-Tikhoretsk*, and *Tikhoretsk- Novorossiysk*. The total length of the pipelines is approximately 2,700 km. The *Chernomortransneft* company owns the transshipment terminals of *Grushevaya*, *Sheskharis* (Novorossiysk), *Zarechie* (Tuapse), and *Kamysh-Burun*, in addition to a storage depot in *Tikhkoretskaya*. The headquarters are in the city of Novorossiysk. Novorossiysk is the export terminal for Urals and Tuapse is used for Siberian light exports. The loading capacity of the two ports are 0.96 mb/d (48 MT/Y) and 0.10 mb/d (5 MT/Y) respectively. Both Azeri oil delivered from the Baku-Novorossiysk pipeline and Kazakh oil through the route of Atyrau-Samara-Novorossiysk are exported from the port facilities of Novorossiysk.

Baku-Novorossiysk

The Baku-Novorossiysk pipeline was rerouted, through Makhachkala, bypassing Chechnya. The total length of the *Baku-Novorossiysk* pipeline is 1,411 km, while its throughput capacity is 0.14 mb/d or 7 MT/Y. The pipe diameter is 720 mm. A portion of this pipeline known as the Makhachkala-Novorossiysk section is used for the transit of Turkmen and Kazakh oil, after they are delivered to the port of Makhachkala by tankers via the Caspian Sea.

Atyrau-Samara

The *Uzen-Atyrau-Samara* pipeline runs 1,232 km and its pipe diameters vary from 720 mm to 1,020 mm. It delivers oil from the Buzach oil field and high-pour-point oil from the Mangyshlak field. The oil is heated to prevent it from solidifying.

Baltic Pipeline System

After the break-up of the former Soviet Union Novorossiysk was the only one large sea terminal in the Russian Federation to ship crude oil for exports. The Russian Government therefore decided to establish a project of the Baltic Pipeline System. The Baltic Pipeline System (also called *Baltnefteprovod*) is an oil export facility to Northwest Europe and beyond, from the Timano-Pechorsky Basin, via a port on the Baltic sea in the city of Primorsk.

Currently, BPS consists of the Yaroslavl-Kirishi section (two lines of 720-mm diameter pipes, 540 km in length), the Kirishi-Primorsk section (one line of 720-mm diameter pipes, 261.5 km in length), and the Palkino-Promorsk section (one line of 1,020-mm diameter pipes, 713 km in length). The pipeline runs through the territory of Leningrad, Novgorod, Tver, Ivanovo, and Yaroslavl regions, and also the Republics of Tataria and Udmurtiya. The throughput capacity reaches 1.2 mb/d or 60 MT/Y. In 2005 the total amount of crude oil loaded at the Primorsk terminal exceeded 1.14 mb/d or 57 MT/Y.

Main Export Pipelines				
Route	Diameter (mm)	Length (km)	Throughput capacity	Utilisation in 2005
<i>Druzhba Russia</i>	820 / 1,020	1,603	1.64 mb/d (82 MT/Y)	1.64 mb/d (82 MT/Y)
<i>Druzhba Belarus</i>	630 / 820	521	1.00 mb/d (50 MT/Y)	1.00 mb/d (50 MT/Y)
<i>Druzhba Ukraine</i>	530 / 720	634	0.38 mb/d (19 MT/Y)	0.34 mb/d (17 MT/Y)
<i>Baltic Pipeline System</i>	720 / 1,020	1514	1.20 mb/d (60 MT/Y)	1.15 mb/d (57.4 MT/Y)
<i>Novorossiysk</i>	530/820	242	0.92 mb/d (46 MT/Y)	0,92 mb/d (46 MT/Y)
<i>Tuapse</i>	530	247	0.10 mb/d (5 MT/Y)	0.10 mb/d (4.9 MT/Y)
<i>Velikotsk- Odessa</i>	720/1,020	1,097	0.16 mb/d (8 MT/Y)	0.16 mb/d (8 MT/Y)
<i>Baku-Supsa</i>	530	827	0.10 mb/d (5 MT/Y)	0.10 mb/d (5 MT/Y)
<i>Baku-Novorossiysk</i>	720	1,411	0.16 mb/d (7.8 MT/Y)	0.16 mb/d (7.9 MT/T)
<i>Odessa – Brody</i>	1,020	674	0.18 mb/d (9 MT/Y)	0.12 mb/d (5.8 MT/Y)
<i>CPC</i>	1,016	1,580	0.56 mb/d (28.2 MT/Y)	0.61 mb/d (30.5 MT/Y)
<i>BTC</i>	1,067	1,773	1.00 mb/d (50 MT/Y)	-

3.2 Intra-FSU Flows

Oil deliveries to refineries are the basis of intra-FSU flows. Oil is mainly delivered from the fields in Russia to refineries in Ukraine and Belarus.

3.2.1 Russia

Transneft

The Russian oil transportation system is centralised and managed by *Transneft*. *Transneft* prepares a unified technical policy of the system's development, research programmes, technical improvement, and an oil pipeline development scheme. The company acts as a centre for construction of major transportation facilities. It funds research and also designs pilot work that are of priority in the sector.

The Russian oil transportation system includes a network of trunk pipelines, storage depots, loading depots and pumping stations. The length of the trunk pipeline exceeds 48,000 km. The trunk pipeline facilities consist of 416 pumping stations, 885 tanks with a total capacity of 14.7 million cubic meters. The diameter of the trunk oil pipelines varies from 159 to 1,220 mm. More than 80% of the pipelines have a diameter of 720 mm.

Transneft holds 11 daughter joint stock companies which transport oil through the trunk pipeline system. Three daughter companies are described in the previous section "Flows to the EU and Sea Export Terminals", namely *Druzhba*, *Chernomortransneft* and *Baltic pipeline system*.

Sibneftprovod

This company receives oil from producers in the Tyumen region and delivers it to Centralnoy Sibiri, Transsibneft, Uralo-Sibirskiye and Severo-Zapadnye, which transfer the oil to the central parts of the country and to refineries.

The *Sibneftprovod* company has a network of pipelines that are laid in the Tyumen, Yekaterinburg and Kurgan regions, including pipeline sections of Ust-Balyk-Kurgan-Ufa-Almetyevsk, Surgut-Polotsk, Surgut-Anzhero-Sudjensk, Krasnoleninsk-Shaim-Volgograd and Nizhnrvartovsk-Kurgan-Samara. The total length of the pipeline route is around 9,990 km. The head office is located in Tyumen.

Centralnoy Sibiri

This oil transportation company manages a part of the Surgut-Anzhero-Sudjensk trunk pipeline which is located in the Tomsk region. The route length is 1,393 km. The company receives oil from the Tomsk region and Sibneftprovod, and then delivers it to the Transsibneft company. The head office is located in the city of Tomsk.

Transsibneft

This company transports oil from Sibneftprovod and Centralnoy Sibiri. It delivers the oil by pipe to the Uralo-Sibirskiye oil transportation company, Kazakhstan, Omsk refinery, Arkhangelsk petrochemical plant and Achinsk refinery; by railway to the Kabarovsk and Komsomolsk refineries; and exports to China. It incorporates; a part of the Tobolsk-Pavlodar pipeline that is located in the Omsk region; a trunk pipeline that is located in the Omsk, Novosibirsk and Kemerov regions; and the Andjero-Sudjensk-Angarsk trunk pipeline that runs through the Kemerovo, Krasnoyarsk and Irkutsk regions. The total length of the routes is around 4,200 kilometres. The head office is located in the city of Omsk.

Uralo-Sibirskiye

This oil transportation company receives oil from the Bashkir and Orenburg fields and from the main pipelines; namely Sibneftprovod, the Severo-Zapadnye oil transportation company and Transsibneft. The *Uralo-Sibirskiye* oil transportation company delivers oil through pipelines to refineries in Bashkiria, and further transfers oil to Privolzhsknefteprovod and the Severo-Zapadnye oil transportation company. The company's pipelines run through the territories of Bashkiria, Chelyabinsk, Kurgan and Omsk regions. The Uralo-Sibirskiye oil transportation company possesses sections of the Ust-Balyk-Kurgan-Ufa-Almetyevsk and Nizhnevartovsk-Kurgan-Samara trunk pipelines. The length of the routes totals 7,565 km. The head office is located in Ufa (the Republic of Bashkortostan).

Privolzhsknefteprovod

This company transfers oil from the fields of the lower Volga river area and also from the trunk pipelines of the Uralo-Sibirskiye oil transportation company, from Severo-Zapadnye oil transportation company, and also from Kazakhstan. The company possesses a network of pipelines that run through the Samara, Saratovsk and Volgograd regions, as well as sections of the Nizhnevartovsk-Samara, Samara-Lisichansk and Samara-Tikhoretsk pipelines in the Rostov region. The total route length is around 5,300 km. The company delivers oil; by pipe to the Samara, Syzran, the Novokuybyshev refineries, Saratov refinery, Volgograd refinery and Orsknefteorgsintez Company, and by railway to Chernomortransneft, Ukraine, the Druzhba oil transportation company. The head office is located in the city of Samara. The

company has two tank car loading stations in Krotovka and Medveditsa, as well as an oil mixing station in Samara.

Severo-Zapadnye

This oil transportation company; receives oil from the fields in Tatarstan, the Perm region, Udmurtiya, the Uralo-Sibirskiye oil transportation company and Sibnefteprovod. The oil is subsequently transferred to the Verkhne-Volzhskiye oil transportation company and oil transportation company Druzhba; and delivers oil to refineries in Tatarstan, Bashkiria, and the Perm region. The oil transportation company has a network of pipelines that are located in the Perm region, Udmurtia, Mariya, Tatarstan, Bashkiria, including sections of the Almetyevsk-Nizhny Novgorod and Surgut-Polotsk trunk pipelines. The total length is around 6,110 km. The head office is located in Kazan.

Verkhne-Volzgsokye

This oil transportation company; takes oil from the Severo-Zapadnye and Severny oil transportation companies; and delivers it to the Druzhba oil transportation company, as well as to refineries in the European part of Russia. The oil transportation company holds oil pipelines that run across the Mari Republic, Nizhegorodsky, Vladimir, Ryazan, Moscow, Yaroslavl, Tver, Pskov, Vitebsk, Kirov, and Sankt-Peterburg regions, including a section of the Surgut-Polotsk trunk pipeline. The total length is 4,470 km. The head office is located in Nizhny Novgorod.

Severny

This oil transportation company operates the *Usa-Ukhta* and *Ukhta-Yaroslavl* oil trunk pipelines. The oil transportation company transports oil to the Ukhta refinery and the *Verkhne-Volzskoye* oil transportation company. It also transports oil by railway from the Vetlosyan loading station. The Usa-Ukhta pipeline crosses through the territory of the Republic of Komi. The *Ukhta-Yaroslavl* pipeline starts in the Republic of Komi and runs through the Arkhangelsk, Vologda and Yaroslavl regions. The total length of the pipeline is approximately 1,570 km. The main office is located in Ukhta (the Republic of Komi).

3.2.2 Belarus

The Belarusian oil transportation company delivers Russian oil to the *Novopolotsk* and *Mozyr* refineries.

3.2.3 Kazakhstan

Kazakhstan has developed an infrastructure that transports oil from the fields in the country, through the Russian and other oil transportation systems to world markets. The *KazTransOil* Company operates the oil transportation pipelines. The company's role is to ensure uninterrupted delivery of oil to the domestic and foreign consumers. The company consists of four branches (a research centre and three oil pipeline operators).

The western branch (in the city of Aktau) is an operator of 3,012-km pipelines and 3,140-km trunk lines that are laid on the Caspian Seabed, including the 1,232-km Uzen-Atyrau-Samara pipeline. Its pipes are of 720-mm and 1,020-mm diameter respectively. These pipelines provide transportation of oil from the Buzachi field and the Mangyshlak field. As crude oil from the Mangyshlak field has a high pour point, it is heated in the pipe to prevent its

solidification. Throughput capacity of the Uzen-Atyrau-Samara pipeline is 0.30 mb/d or 15 MT/Y.

The *Aktobsky* branch (in the town of Aktobe) is an operator of the *Zhanozhol-Kenkiyak-Orsk* pipeline (total length of 891 km). Crude oil from the *Aktobe* field is delivered to the Orsknefteorgsintez refinery in Russia.

The eastern branch (in the city of Pavlodar) is an operator of the pipeline which crosses Kazakhstan from north to south (2,574 km). Built between 1977-1988, this pipeline delivers oil from western Siberia to refineries in Kazakhstan (Pavlodar and Chimkent) and Turkmenistan (Charjou).

A Russian trunk pipeline transits northern Kazakhstan for a distance of 187 km. It is a section of the TON-2 pipeline, which has been managed by Uralo-Sibirskiye Magistralniye Nefteprovody (a daughter company of the *Transneft*) since 1996. As a property of the Republic of Kazakhstan, this section was leased to Altayfrakht in accordance with a decision made by the Severo-Kazakhstansky regional government.

In order to use the available oil reserves of Kazakhstan more effectively and keep up with growth in hydrocarbon exports, it is necessary to build more reliable and economically efficient oil transportation infrastructure that will ensure both uninterrupted oil exports, and meeting demand from the domestic market. Kazakhstan's mid-term future strategy will be based on development of multiple export routes to mitigate vulnerability in transit.

3.2.4 Uzbekistan

The pipeline system in Uzbekistan is autonomous delivering indigenous production to refineries in the Fergana valley.

3.2.5 Turkmenistan

The Turkmen oil transportation company is also technically autonomous, and features shorter pipelines. Oil is delivered by pipe from the local fields to the Krasnovodsky refinery, by railway to Fergannefteorgsintez, and by ship to the Krasnovodsky refinery, Azerbaijan (Baku) and Russia (Makhachkala). The total length of the pipelines in Turkmenistan is around 280 km. The head office is located in the city of Nebit-Dag.

3.3 New Projects

3.3.1 Eastern Siberian Pipeline

Pursuant to Order #1737-p of the government of the Russian Federation dated 31/12/2004, and in accordance with the energy strategy of Russia for the period up to 2020, Transneft has been engaged in the construction of the Eastern Siberia-Pacific Ocean oil pipeline system to transport Russian oil to countries in the Asian Pacific region. This project will allow an expansion in oil exports to China, which currently amounts to approximately 0.18 mb/d or 9 MT/Y. In addition, an oil loading terminal in the Perevoznaya bay will provide an outlet point for exports to other Pacific markets, such as Japan.

The intended pipeline route is: Tayshet-Kazachinskoye-Skovorodino-Khabarovsk-Perevoznaya Bay (Far East). Its length will total 4,368 km. The system's capacity will be 1.6

mb/d or 80 MT/Y. Complicated ground conditions (tectonics, permafrost, loose ground, mud, rivers, and canyons) together with environmental considerations (the pipeline routes run close to the lake of Baikal and a number of national wildlife sanctuaries of Russia) will have a significant impact on the project cost and, subsequently, costs of oil transportation.

In the first stage, the project will comprise the construction of the pipeline section of Tayshet-Skovorodino (2,355 km, pipe diameters 1067 mm and 1220 mm), six pumping stations, oil metering stations in Tayshet, and a storage capacity of 714,000 m³, as well as the construction of an oil loading terminal in the Perevoznaya bay (Far East). Oil will be transported by railway from Skovorodino to the terminal. The first stage construction must be finished in 2008.

In the second stage, the construction of the *Skovorodino-Perevoznaya* section will start when oil producers begin commercially developing the fields in Eastern Siberia. Since the development of the fields of Eastern Siberia will take time, the line will be filled with oil in the first stage from Western Siberia (up to 219 million barrels or 30 MT). Subsequently oil from the *Yurubchano-Takhomsky* area, *Verkhnechonsky* structures and Sakhalin area will be added.

The transmission costs through the Eastern Siberia-Pacific Ocean pipeline are estimated to be US\$ 38.8 per metric ton for both the Perevoznaya bay terminal and China. The transfer cost at the Perevoznaya Bay is US\$ 3.1 per metric ton. The project received the final approval of Rostekhnadzor (Russian Technical Control office) in March 2006.

3.3.2 Kazakhstan-China Pipeline

The idea to build a pipeline from Kazakhstan to China came as a result of the involvement of Chinese National Petroleum Corporation (CNPC) in the projects at the Aktyubinsk and Uzen fields. Following *the General Agreement dated 24 September 1997 between the Ministry of Energy and Natural Resources of the Republic of Kazakhstan and the CNPC*, the two Republics signed a number of important documents, including an agreement for a joint survey and stage-by-stage construction of the pipeline in early July 2003 in the city of Astana.

In March 2003, Kazakhstan commissioned the first stage of the Kenkiyak-Atyrau oil pipeline of 448.8-km long and of 0.12-mb/d (6-MT/Y) capacity (the capacity will increase up to 0.24 mb/d (12 MT/Y)). Currently the pipeline is functioning in the reversed mode. It transports oil from Atyrau. A part of the oil goes to CPC (Caspian Pipeline Consortium) and the rest to the Atyrau-Samara pipeline.

In May 2003 the KazMunaiGaz company and CNPC started the pipeline construction of the Atasu-Alashankou section, which is the second stage of the Kazakhstan-China project. The length of the pipeline totals 962.2 km, while the diameter of the pipes is 813 mm. The throughput capacity at the first stage amounts to 0.20 mb/d or 10 MT/Y, with an expansion to 0.40 mb/d or 20 MT/Y. The cost of the pipeline Atasu-Alashankou is estimated at US\$700 million. Construction of the Atasu-Alashankou pipeline was completed in 2005 and the pipeline is supposed to become operational by end-2006. CNPC has agreed to purchase at least 0.40mb/d or 20 MT/Y of Kazakhstan oil.

3.3.3 Baltic Pipeline Expansion Project

Pursuant to *Order #1699-p of the government of the Russian Federation dated 23/12/04*, *Transneft* has started expanding capacities of the BPS from 0.42 mb/d or 21MT/Y to 1.2 mb/d or 60 MT/Y. Oil through the BPS will mainly target the European market. Oil will be exported from the Primorsk port. The aim is to build a linear pipeline of 141 km with pipe diameters of 720 mm and 1020 mm, upgrade pumping stations, create a new transfer station, upgrade the port of Primorsk, build a new oil loading terminal together with treatment and power supply facilities. The project is planned for completion in 2006.

3.3.4 Western Siberia-Barents Sea

In the past, some Russian oil companies proposed a project to build a pipeline from the Western Siberian region to the coast of the Barents Sea. The location of a terminal was planned to be in the vicinity of the city of Murmansk. The length of the line (depending on a route selected) would total 2,800-3,900 km. However, *Transneft* thinks it more expedient for the purpose of exporting oil produced in the Timano-Pechyorsk area that a pipeline be built from Kharyaga to the coast of the Barents Sea to an oil loading terminal of a 0.48-mb/d or 24-MT/Y capacity near Indiga (*Bolshoy Rumyanichny Tong*). Surveys proved that for such factors as ice, depth, wind and wave conditions, location of a transfer terminal in the area of Indiga would be quite acceptable. *Transneft* has finished preliminary engineering calculations and figured out that length of the pipeline will be 467 km and that the cost of construction will total US\$2.2 billion (in prices of 2004).

Nonetheless, the question of building the Kharyaga-Indigo oil transmission system has not yet been decided. For the issue to be decided, it is necessary to analyze the future of oil production in the Timano-Pechyorsk oil basin as well as the cost of pipeline construction, funding, and consents from oil companies to pay tariffs.

3.3.5 Odessa-Brody Expansion Project

At present a feasibility study for construction of an additional section of the Brody-Plotsk-Gdansk pipeline is in its final stage. The Ministry of Fuel and Energy of Ukraine believes that the project will solve issues of Caspian oil exports in an optimal way; beginning from the length of the route (actually it will be a straight line), which will significantly reduce the transportation costs; and ending with the fact that Ukraine is a large and promising market for crude oil.

The main bottleneck of the project is a fixed tie-in to the Eastern European market, which does not have a large consumption capacity. In addition, transportation of Russian oil via the *Druzhba* pipeline will compete with this route. Preliminary calculations show that transportation costs of this Ukraine route will be US\$ 3-5 more expensive than exports via Novorossiysk.

3.3.6 Yuzhny-Predniprovisky

In September 2005 Ukraine and Kazakhstan signed a document to establish a joint venture to expand the infrastructure of the *Yuzhny* terminal and construct a 52-km oil pipeline from the *Yuzhny* terminal to the system of the *Pridneprovsky* oil transportation company. This project was to start in the first quarter of 2006.

3.3.7 Kazakhstan-Turkmenistan-Iran Pipeline Construction Project (KTI)

This project is a proposal by Total (France) to transport Kazakh crude oil from the *Tengiz* and Novy Uzen areas, and possibly, Turkmen crude oil from the fields in the vicinity to Iran. The throughput capacity of the pipeline will be; 0.50 mb/d or 25 MT/Y in case of delivery to Teheran (a base variant); and 0.50-1.0 mb/d or 25- 50 MT/Y for delivery to the Hargue terminal.

3.3.8 Central Asian Pipeline Project

This project is a proposal by UNOCAL (USA) that asserts that a southward route to the Indian Ocean is still the most economically feasible route to transport hydrocarbons from Kazakhstan to the Asian markets. There is, however, a serious hindrance to starting construction -- lack of political stability in Afghanistan.

3.3.9 Kazakhstan-Persian/Arabian Gulf Pipeline Project

This is a proposal of the Kazakhstan pipeline company, which since 1991 has prepared a number of projects to export Kazakh oil via the Persian/Arabian Gulf to the Mediterranean Sea. The project will provide transportation of 0.30 mb/d or 15 MT/Y of oil, with a possible increase in throughput capacity. Given possible increases in oil production in Kazakhstan, it is an option to increase transport capacity of the pipeline. The capacity can be expanded to 0.40, 0.60, 0.90 mb/d (20, 30, 45 MT/Y).

3.3.10 Petroleum Products Transportation Pipelines

Transnefteprodukt

Transnefteprodukt coordinates and manages transportation of petroleum products via pipelines in the Russian Federation and the FSU countries. *Transnefteprodukt* controls eight petroleum products companies and seven service entities. It receives petroleum products from 14 Russian and two Belarusian refineries. The main light petroleum products that are transported are; jet kerosene, gasoil and automobile gasoline of A78 and A80 grades.

The network of the product pipelines of *Transnefteprodukt* runs through the territory of the Russian Federation, CIS countries and the Baltic Sea countries. The company has pipelines of 19,900 km (including 15,000 km of trunk lines) in the territory of the Russian Federation, 1500 km in Ukraine, and 1,300 km in Belarus, 300 km in Kazakhstan, and 400 km in Latvia and Lithuania.

Operating pressure in various sections of the product pipeline varies from 25 to 64 kg/cm². Pipes of different type are used; longitudinally welded tubes (with one or two longitudinal welds), spiral welded tubes, seamless pipes. The capacity of the tanks varies from 1 to 20 thousand m³, totalling 4.63 million m³. 98 pumping stations are in operation, with approximately 500 pumping units. *Transnefteprodukt* uses 38 types of pumps. The company operates 80 surface and 1,500 submerged pipelines.

3.3.11 Ukraine

Transportation of petroleum products in Ukraine is carried out by *Yugozapadtransnefteprodukt* and *PrikarpatZapadTrans*, both daughter companies of *Transnefteprodukt*. The company's facilities are scattered through seven provinces in

Ukraine; Zhitomir, Khmelnytsky, Rovensk, Volynsk, Ternopol, Lvov, and Zakarpatsky provinces. The length of the pipelines in these provinces exceeds 1,200 km and the capacity of petroleum product storage exceeds 320 thousand m³. The system of trunk pipelines is connected to lateral pipes with 21 storage depots in eight provinces in Ukraine.

3.3.12 Belarus

Transportation of petroleum products through Belarus is carried out by *Zapad-Transnefteprodukt*, a daughter company of *Yugo-Zapad Transnefteprodukt* (a daughter company of the *Transnefteprodukt*). The trunk petroleum product pipelines in Belarus are a technologically integrated system, consisting of namely; *Nizhny Novgorod-Ryazan-Orel, Samara-Unecha-Ventspils, and Samara-Unecha-Mozyr-Rovno_brest-Uzhgorod*. Length of the pipelines totals 1,300 km. Pipe diameter varies from 350 mm to 500 mm.

3.3.13 Kazakhstan

The *Uraltransnefteprodukt* company (a daughter company of *Transnefteprodukt*) carries out transportation of petroleum products via Kazakhstan. There are 300 km of pipelines belonging to the Russian Federation in Kazakhstan. The diameter of the pipes varies from 350 mm to 500 mm.

In accordance with *the Agreement between the Russian Federation and Kazakhstan for cooperation in operation of the trunk petroleum product pipelines dated 20/01/1995, namely; the trunk petroleum product pipelines and communication systems, Ufa-Omsk* (from the 842nd km to 1027th km) and *Ufa-Petropavlovsk* (from the 840th to 912th km) are the property of the Russian Federation; the trunk petroleum product pipelines and communication systems *Travniki-Kustanay* (from the 0th km to 144th km) and *Samara-Uralsk* (from the 0th to 200th km) are the property of Kazakhstan.

At the present time the pipeline, which belongs to Kazakhstan, is out of operation due to lack of demand for imports. The *Travniki-Kustanay* pipeline is almost fully disassembled.

3.4 Transit Pipelines in Western Europe

This section looks into three oil transit pipelines in Western Europe; Transalpine (TAL), South Europe pipeline (SPSE) and Norpipe. These three are the main transit pipelines in Europe, apart from those in the former East bloc. TAL goes through Italy, Austria and Germany, while SPSE supplies crude to refineries in France, Switzerland and Germany. The Norpipe oil pipeline connects the Ekofisk field in the Norwegian sector of the North Sea with the terminal at Teesside, UK (and from there crude is shipped out by tankers).

TAL and SPSE were built by consortiums of oil refiners which exclusively use the pipeline. Similarly, main users of Norpipe are shareholders of the pipeline company, who are in turn shareholders of the producing fields. Under the Norwegian laws and regulations, however, Norpipe has to allow pipelines to tie in and use the pipeline's spare capacity when there is an adjacent new field development. Tariffs of these pipelines are cost-based.

In the European Union oil pipelines are generally not regarded as natural monopolies, since they face competition from other oil transportation vehicles, such as lorries and barges. Neither the EU nor the countries do not have legislations specific to oil pipelines. Oil transport issues are regulated under the general competition rules. Related business

arrangements and market access are monitored and regulated by the competition authorities in accordance with the general domestic and EU competition provisions. As there is no oil transit directive at the EU level, oil transit is subject of the legislation related to the free movement of goods within the EU. Thus, oil transport is treated differently from that for nature gas and electricity, which has related directives at the EU level and regulations at the state level.

3.4.1 TAL

The Transalpine (TAL) pipeline starts at the oil terminal in Trieste, Italy, crosses Austria before reaching Germany. TAL is a joint venture of eight oil companies to transport crude to their refineries and storage facilities in Austria and Germany. Shareholding is as follows.

- OMV 25%
- SHELL 24%
- ExxonMobil 16%
- Ruhr Oel 11%
- ENI 10%
- BP 9%
- ConocoPhillips 3%
- Total 2%

The TAL pipeline consists of three parts; TAL-IG, TAL-OR and TAL-NE. The 465-km TAL-IG pipeline carries crude from the Trieste marine facility to Ingolstadt, Germany, while the 266-km TAL-OR runs from Ingolstadt to the Mineraloil refinery in Oberrhein (MIRO) near Karlsruhe. TAL-NE is a 21-km extension from Ingolstadt to the Bayernoil refinery in Neustadt.

There are three operation companies by country (Italy, Austria and Germany) for operation and administration of the pipeline. In 2004, the TAL pipeline system unloaded from 405 ships and carried 35.95 million tonnes of crude to various delivery points. From the beginning of the operation, 966 million tonnes of crude oil have been transported.

3.4.2 SPSE

The South European Pipeline (SPSE) runs from the French Mediterranean port of Fos through Switzerland to Karlsruhe, Germany. The total length is 769 km. Currently the pipeline transports approximately 23 million tonnes per year of crude and petroleum products. SPSE was created by sixteen oil companies in 1958. In 1962, the pipeline started commercial operation, connecting the Mediterranean to the upper Rhine region. In 1996, cumulative volumes transported by SPSE reached the one-billion-tonne mark.

The consortium consists of;

- BP 12.1 %
- CONOCO 2.0 %
- SHELL-DEA 4.0 %
- EXXON 22.0 %
- SHELL 10.3 %
- TOTAL 27.8 %

- RUHR OEL GmbH 7.5 %
- WINTERSHALL 14.3 %

SPSE supplies crude to the following refineries;

- Feyzin near Lyon, France (Total),
- Cressier in Switzerland (Petroplus),
- Reichstett (CRR) near Strasbourg, France (Shell/Total/BP) and
- Miro in Karlsruhe, Germany (Conoco/DEA/Esso/RuhrOel [owned 50% by Veba Oel AG and 50 % by Petroleos de Venezuela SA]).

It also provides the Carling plant (Atofina) in France with naphtha and condensate. Similar to the EU countries, Switzerland does not have domestic oil pipeline legislations.

3.4.3 Norpipe

The Norpipe oil pipeline starts at the Ekofisk field in the Norwegian sector of the North Sea, carrying crude to the export terminal at Teesside, UK. Ekofisk was the first Norwegian offshore field to come on stream in 1971. The Ekofisk field, with its satellites, currently produces 280,000 barrels per day of oil and 260 million cubic feet per day of natural gas (The Norpipe gas pipeline carries natural gas from the Ekofisk field to Emden, Germany). Operator of the field is ConocoPhillips. Remaining resources in the Ekofisk area are substantial and oil and gas production is expected to continue for another 30 years.

The Norpipe oil pipeline is owned by Norpipe Oil AS and operated by ConocoPhillips. Shareholding of Norpipe Oil AS is;

- ConocoPhillips 35.05%
- Total 34.93%
- Statoil 15.00%
- Eni 6.52%
- SDFI 5.00%
- Norsk Hydro 3.50%

The shareholding is similar to that for the Ekofisk field. The 354-km pipeline was commissioned in 1975. Starting at the Ekofisk centre, the pipeline is tied in by several UK fields at 50-km downstream of Ekofisk. The pipeline capacity is 900,000 barrels per day, while the receiving facility has only an 810,000-barrels-per-day capacity. In 1973 the Norwegian and UK governments agreed on a bilateral treaty for operation of the Norpipe oil pipeline from the Ekofisk field and adjacent areas to the UK.

4 Technical and Economic Principles of Calculating Tariffs

Tariffs for trunk oil pipelines are calculated on the basis of the tariff proceeds that an oil transportation company gains, either from an individual oil pipeline, or, from a section of a pipeline (which normally consists of a linear section and a pumping station). Tariff proceeds consist of costs, net profits and profit tax.

Tariff setting approaches in the advanced economies are based on normalization of profits. A rate of profitability is established (typically an average rate of profitability in similar businesses in a competitive environment), and net profit is a multiplication of that rate by the profile assets of a pipeline company.

There are other methods in case this normative approach does not work. These methodologies calculate profits after assessing costs for re-construction and upgrading of the main assets. In particular, the methods used in Ukraine and Russia recognize costs of construction of new pipelines, only if the government, as the only voting shareholder of the oil transportation company, approves the plan.

The delivery costs can be split into those dependent on the volume of transmission (variable cost) and independent from the volume (fixed cost). Accordingly, a unit transmission cost (delivery cost) is equal to a ratio of the total costs divided by the volume transported.

The fixed costs include depreciation, wages and salaries, and maintenance. Under Russian practice the following are included under maintenance, cost of diagnostics, security, taxes and fees that are related to the delivery cost (deductions for social insurance funds, property tax, payment for land, etc) as well as other costs that can be related to the delivery cost (transportation service, property insurance, personnel training, start-up, business travelling and other). These can reach 75% of all transmission costs.

The variable costs are mainly related to payments for power supply and fuel for operation. In the FSU countries, electric motors are used in the pumping units and fuel costs are insignificant. Practically all variable costs are payment for power consumption. The variable costs in case of a fully loaded pipeline do not exceed 25-30% at current prices for electricity. A special case is a pipeline with heating for transportation of high viscosity and paraffin oils. In this case the cost of fuel for heating is included in the variable costs.

4.1 Capacity Utilization and Pipe Diameter

Levels of capacity utilization are a decisive factor in the delivery cost. In view of the predominant share of fixed costs in the structure of delivery cost, a reduction in capacity utilization will result in an increase in tariffs.

The pipeline diameter makes a significant impact on the value of a unit delivery cost (per metric ton of oil). According to the existing technology regulations the optimum throughput capacity is proportional to the diameter for the power of 2.5:

$$Q_{\text{optimal}} \approx D^{2.5}$$

The excerpt from the existing technology regulations is shown below.

Throughput capacity, mb/d (MT/Y)	Diameter (outer), mm
0.08-0.18 (4-9)	530
0.14-0.26 (7-13)	630
0.22-0.38 (11-19)	720
0.30-0.54 (15-27)	820
0.46-1.00 (23-50)	1020
0.82-1.56 (41-78)	1220

Unit variable cost is lower when the diameter is larger. On fixed costs, depreciation is proportional to the square of the diameter. Although maintenance costs depend on the diameter, they are insignificant at the beginning of operations. Taking into account the share of depreciation in fixed costs, the tariffs decrease quickly when the diameter is larger.

It is useful to analyse the influence of different technical and economic factors when tariffs are calculated for pipeline sections or oil pipelines. In the FSU countries, tariffs are calculated for the whole company. Nevertheless, discussions are possible on a company basis. In cases of comparable average capacity utilization, delivery tariffs are less in those companies which have a larger average hydraulic diameter of the pipeline.

4.2 Impact of Other Technical Parameters

Climatic and natural conditions, including terrain, affect construction costs and, subsequently, depreciation. Northern conditions significantly increase construction costs and make operation more costly.

Quality control (except from quality control of petroleum product pipelines, which are primarily designed for transmission of different types of product) does not affect the tariffs significantly. Normally quality management issues are solved at the initial stage of the project. Pipelines are designed for either batch or commingled stream operation. Batch operation is the most natural solution. In this case the pipeline operates as it is designed and no extra expenditures are necessary.

In case of commingled stream operation, quality management is usually aimed at stabilising oil quality at the output. *Transneft* is an example for this. Designed to serve the needs of the centralized economy of the Soviet Union, it carries out distribution of quality within the centralized management of the pipeline system to the extent that production capacity and oil storage capacity allow.

Other economic factors, such as prices for metal and power, have impacts on the cost of the fixed assets and electricity expenses for delivery. The depreciation rate and depreciation policy are most significant.

5 Access to Cross-Border and Transit Pipelines

5.1 Introduction

Before looking into oil pipeline access regime in the former Soviet Union countries, this section briefly describes history of regulatory developments in the US, where oil pipeline has been under the federal regulatory oversight since 1906. In early days of modern oil industry in the US, Standard Oil, founded by John D. Rockefeller in 1970, was establishing monopoly by controlling refineries and oil transportation. There was public outrage against Standard Oil's monopoly (which ultimately led to break-up of the company in an anti-trust suit in 1911) and then president Theodore Roosevelt enacted the Hepburn Act of 1906. The act brought oil pipelines under the Interstate Commerce Act of 1887. Under the coverage of the Interstate Commerce Act,

- Interstate oil pipelines must be common carriers,
- Tariffs must be just and reasonable,
- Undue discrimination and preferences are prohibited, and
- Carriers must report to the federal authority and post tariffs publicly.

However, the act left the following unregulated:

- construction and abandonment of oil pipelines,
- sales and leases of oil pipeline assets, and
- securities transaction of pipeline companies.

Later in 1977 the Federal Energy Regulatory Commission (FERC) was formed as an independent agency to regulate the interstate transmission of natural gas, oil and electricity. Nonetheless, the above-described elements from Interstate Commerce Act have remained as basic principles to regulate oil pipelines to date.

To compare regulation on oil pipelines with that of gas pipelines in the US:

- oil pipelines are regarded as common carrier and gas pipelines as public utilities;
- oil pipelines are normally in a highly competitive market, facing competition from barges, lorries and railways, while gas pipelines are natural monopolies; and, therefore,
- oil pipelines are under a unique regulatory model, while gas pipelines are under a natural monopoly model.

Most former Soviet Union countries have chosen to adopt the natural monopoly model on oil pipelines in their countries. These governments have established rules of non-discriminatory access to services and tariffs. In the rules the main specific features of the economic mechanism in oil transportation system are equal access and control of pipeline tariffs. It is also important that the systems be open and transparent, in order for the pipeline capacities to be allocated fairly and for the shippers and public to be informed.

As to transit cooperation in the FSU countries, heads of the CIS countries signed "The Agreement for coordination of the policy on crude oil and petroleum products transit via trunk-pipelines" in Moscow on 12 April 2006. The agreement is complemented by annual

bilateral or multilateral protocols and agreements which provide details of the transit cooperation.

5.2 Russia

In accordance with *the Law on the Natural Monopolies* the right of access to the Russian trunk pipelines and sea port terminals for exports to outside of the customs territory of the Russian Federation ‘*shall be provided to the companies that carry out production of oil ... in proportion to the volumes of oil delivered to the system of trunk pipelines within flow capacities of the trunk pipelines*’¹. Therefore, access to the export pipelines is confined to the oil producers. Other legal entities do not have the right to use the *Transneft* system.

Procedure of export quota distribution is as follows;

- The shipper submits an application for oil delivery stating a desired destination of the oil export together with the volume proposed in the next quarter to the *Rosenergo (Federal Energy Agency of Russia)* and *Transneft* no later than 40 days prior to the quarter.
- *Transneft* provides an information notice to the *Rosenergo* no later than 30 days prior to the quarter about existing flow capacities of exporting routes and planned quantities of the oil received from the oil producing companies to the trunk pipeline system.
- *Rosenergo*, in compliance with the transmission capacity of *Transneft* and the planned reception of oil, prepares its proposals for a delivery schedule, and no later than 20 days prior to the quarter presents them for approval by the Ministry of Industry and Energy of Russia. If the transmission capacity increases in a certain direction, *Transneft* can propose to review the delivery schedule.

5.2.1 Crude Oil Transit through the Transneft Pipeline System

Oil transit through the *Transneft* pipeline system is based on the inter-government agreements for oil transit: *A Treaty between the Russian Federation and the Government of the Azerbaijan Republic on Transit of Azerbaijani Oil through the Territory of the Russian Federation* and *Agreement between the Government of the Russian Federation and the Republic of Kazakhstan for Transit of Oil*.

At present, an inter-government agreement for Turkmen oil transit between Russia and Turkmenistan is under preparation. At the same time the transit of Turkmen oil is underway (oil is delivered by tankers via the Caspian Sea to the Makhachkala port where it goes into the *Transneft* system). The same agreements can fix the transit tariff rate, which applies to the Baku – Novorossiysk flow. Usually these agreements are accompanied by annual protocols, confirming and providing details of the annual volume and the route of oil deliveries.

The oil transit schedule of the FSU member countries through the territory of the Russian Federation is usually prepared in the same way and at the same time as an export schedule for the Russian producers. The respective authorised bodies of the FSU member states submit their orders for transit noting delivery direction and volumes with a request to include the

¹ excerpt from Article 6

order into the transit schedule not later than 40 days before the beginning of a quarter. This is all done in accordance with inter-governmental agreements.

Rosenergo prepares its proposal for a transit schedule based on the orders of the respective authorised bodies of the FSU member countries, inter-government agreements and annual protocols and available flow capacities of *Transneft*. This is done no later than 20 days before the beginning of a quarter and is submitted for the consideration and approval of the Ministry of Industry and Energy of the Russian Federation.

Rosenergo makes operative decisions to correct the appropriate access of the oil producers and FSU member states. The corrections are made with regard to the right to access a system of trunk oil pipelines and the sea terminals. Assignment of this right is not allowed for producers that found to be in arrears with tax payments to either the Federal Budget, the budgets of the entities of the Russian Federation or, local budgets.

The settlement procedure on access disputes is not clearly outlined anywhere and, as a general rule, disputes are settled without work interruption. Normally, for an individual producer it is practically impossible to check whether the calculation is made correctly or not, because no one is legally required to provide information about flow capacities and total orders. However, it is possible to obtain a quarterly coefficient, which is a percentage of the ordered quantity applied to any producer in the same manner for a particular quarter. Usually the coefficient varies from 36% to 42% for export and sea ports (40% for the second quarter 2006). Intra-FSU deliveries to refineries in Belarus and Ukraine are included in this procedure and receive a coefficient from 8 to 9.5% (8.9% for the second quarter 2006). Multiplication of the ordered quantity by the coefficient results in a quantity for export.

5.3 Kazakhstan

The procedure and guidelines of equal access of the consumers to the oil and petroleum products pipelines in Kazakhstan is regulated by the Rules (approved by *the Order #100-OD of the Chairman of the Company of the Republic of Kazakhstan for regulation of the Natural Monopolies dated 24 March 2005*) that were approved in compliance with *the Law #272 of the Republic of Kazakhstan on The Natural Monopolies dated July 9, 1998*.

Equal access to regulated services in transportation of oil and/or petroleum products through the trunk pipelines is based upon the following principles.

- equal access to the regulated services in oil and/or transportation through the trunk pipelines for all consumers (natural and legal entities);
- a unified tariff policy in relation to all consumers of the regulated services in transportation of oil and petroleum products through the trunk pipelines;
- transparency of the regulated services of a pipeline company, and tariffs for the services.

A consumer in the Republic of Kazakhstan has the right of equal access to the regulated services of transportation of oil and petroleum products through trunk pipelines. The regulated services in oil and petroleum products transportation through the trunk pipelines is provided to consumers in accordance with a delivery schedule.

If there are technical problems to limit provision of the regulated services in transportation of oil and petroleum products through the trunk pipelines due to lack of free capacities of the

trunk pipelines, then a priority access to the regulated services in transportation of oil and petroleum products through trunk pipelines can be provided to a consumer who;

- carries out delivery of oil to the refineries of the Republic of Kazakhstan;
- provides oil and petroleum products of required quality which allows to match the transported mixture of oil and petroleum products in compliance with the technical requirements of quality established by the pipeline companies;
- is involved in investment to expand the transmission capacity of a trunk pipeline or parts of it in accordance with the contract;
- provides implementation of the resolutions of the Government of the Republic of Kazakhstan and/or international agreements which Kazakhstan is a party to;
- does not have an alternative technical possibility to transport its oil and petroleum products.

The pipeline quotas between the consumers, except for those indicated the above, is distributed in proportion to the volumes ordered by the consumers.

5.3.1 CPC

The CPC shareholders determine the rules of access. This right is laid out in the Shareholder Agreement. The shareholders or their affiliates enjoy the right of access to the pipeline. Access by other shippers can be granted if there is spare capacity and unanimous approval of all shareholders. Currently only CPC shareholders (or their affiliates) are transporting crude oil through the pipeline.

The CPC shippers are,

- *Tengizchevroil* (providing the pipeline's base load)
- *Karachaganak Petroleum Operating B.V.* (the second largest CPC shipper after *Tengizchevroil*, affiliated with several CPC shareholders)
- *Arman* (affiliated with *Oryx Caspian Pipeline LLC*, now owned by *Shell*)
- *Embamuraigaz* and *Kazakhoil-Aktobe* (affiliated with *Kazakhstan Pipeline Ventures LLC*)
- *CNPC-Aktobemunaigas* (ships and lifts crude under the access rights of the Government of the Republic of Kazakhstan)
- *Litasko* (affiliated with *Lukarco B.V.*)
- *NaftaTrans* (*NaftaTrans* and its affiliates are authorised to ship oil into the CPC on behalf of Russian producers in accordance with the rights to access of the Russian Federation).

5.4 Ukraine

Transit of Russian oil through Ukraine is carried out in accordance with *Agreement between the Russian Federation and the Cabinet of Ministers of Ukraine for Transit of Oil*. Under this Agreement the Ukrainian party informs the Russian party of transit capacities of the trunk pipelines. The Russian party uses this information when preparing its oil export schedules.

Oil transit is carried out on the basis of contracts for services signed between the authorised organisations of the parties as well as between the authorised organisation of the Russian party and the oil shipper in a quantity that is determined in the oil delivery schedules approved by the Russian party in an established manner. The quantity and direction of oil

transit through Ukraine is specified in annual protocols signed by the competent bodies of the parties. The Ukrainian party ensures safety of the quantity and quality of oil that is delivered from the Russian Federation.

According to the National Committee for Control of Energy Industry of Ukraine (NKRE) Resolutions No. 857 *On the Approval of License Condition for Performance of Economic Activities in Oil Transportation by Trunk Pipelines* (30.09.2005) and No.858 *On the Approval of License Condition for Performance of Economic Activities in Oil Products Transportation by Trunk Pipelines*, activity in oil and oil products transportation by trunk pipelines is carried out based on the principles of the provision of equal rights for access to the trunk oil and oil products pipelines system for all customers of oil and oil product trunk pipeline transportation services, and, in case of insufficiency of trunk pipeline throughput capacity, the observance of the established practice of distribution. The mechanism of distribution of trunk pipeline throughput capacities is not determined under the laws of Ukraine.

5.5 Belarus

In accordance with Article 27 of the *Law #813 of the Republic of Belarus dated 9 January, 2002 On the Trunk Pipelines Transport*, the services in oil and petroleum product transportation through trunk pipelines are provided with regard to available transmission capacity and actual capacity utilization of the pipelines, proceeding from the principle of equal access and non-discrimination.

If transmission capacity of a trunk pipeline does not ensure transmission of the whole volume of product ordered, each supplier has a right to transport an equal portion of the ordered volume, equal to a ratio of transmission capacity of a trunk pipeline to the same destination and the total amount of demand in transportation of the product to this destination that is ordered by all suppliers of the transported product.

The operator of the trunk pipeline that was built for a particular target has the right to grant priority to that product which was assumed for transportation when the trunk pipeline was designed and built.

5.6 Azerbaijan-Georgia

When building a pipeline between Baku and Supsa, the contractual parties agreed that access to the export capacities is enjoyed by the project participants only. However, there is a clause in the contract which allows transportation of oil that belongs to outside producers. This must be initiated by the project member oil companies. The proposal must be agreed upon by SOCAR after a notification from the Georgian party.

Searching for additional sources of oil to fill in the excess capacities is the responsibility of the operating company. However, a contract with an outside producer must be worded in such a way that, in case of a decrease of the excess capacities, or, lack of them, the contract can be terminated by the operating company.

6 Tariff Methodologies for Cross-Border and Transit Flows

6.1 Introduction

As with the previous chapter, this review of tariff methodologies starts with a reference to methodologies in the US. The legal bases for oil pipeline tariffs are the Interstate Commerce Act and Energy Policy Act of 1992. The Interstate Commerce Act stipulates that oil pipeline tariffs should be just and reasonable. The methodology of setting oil pipeline tariffs has seen many revisions since 1906. The main issues were about establishing appropriate profit levels and defining a base for profit calculation.

Tariffs are set at a level so that pipeline operations generate just and reasonable profits. Technically profit limitation is based on the rate-of-return methodology. The profit levels refer to dividend of companies in the competitive market. Discussions about the basis for profit calculation were what to include in the basis – initial cost of fixed assets with or without depreciation, whether to consider inflation or not, to include a cost of the right to use land or not, whether to include current assets or not, etc., etc.

In Opinion 154-B in 1985 the USFERC adopted TOC (trended original cost) and SRB (starting rate base) for oil pipeline tariff calculations. The basic concepts are as follows.

TOC

nominal rate of return	16%
inflation	7%
real rate of return	9%
rate base	\$1,000
return on rate base	9%
current earnings	\$90
inflation rate	7%
deferred earnings	\$70

SRB

$$SRB=O*d+R*e$$

- O: book net depreciated original cost as of 31 December 1983
- R: net depreciated cost of reproduction new from 1983 valuation
- d: debt ratio as of 28 June 1983
- e: equity ratio as of 28 June 1983

Although Opinion 154-B was intended to provide a basis for a cost-based rate methodology, many details were left to individual cases. In 1988, the Buckeye case created options of market-based rates and cost-of-service rates. Finally, the Energy Policy Act of 1992 reorganized the oil tariff methodologies.

The act grandfathered all existing rates and stipulated that these rates could be challenged only on a demonstration of substantially changed circumstances. There are four alternatives for existing rates:

- indexation,
- settlement rates,
- cost-based rates, and
- market-based rates.

The act also provides for three options for new service:

- negotiated rates,
- cost-of-service, and
- market-based rates.

Indexation sets the ceiling. Actual rates can be below the ceiling. If indexation rate is above the ceiling, it must come down or alternative rate justification must apply. Indexation rates are reviewed every five years.

Cost-of-service rates are not immediately available, unless pipeline operation revenues substantially diverge from the revenues based on indexation rates. In addition, the costs must be justified under the Option 154-B model.

To adopt market-based rates, a minimum anti-trust showing is required. The carrier must demonstrate that there is adequate competition in both the origin and destination markets.

6.2 Cost-of-Service Methodology

In developing economies there are no adequate indicators of profitability. Furthermore, the economic situation usually features a lack of stability and high inflation rates as was characteristic in Former Soviet Union countries, in particular, in Russia (For subsequent discussion the Russian Federation is used as an example. This country is usually the first to apply a methodology, and in many cases the other FSU countries will follow suit).

Specific features of the Russian tax system have resulted in severe regulations on the list of costs that can be included into the delivery cost. A number of required production costs, for example expenses for maintenance of inhabited areas at oil transfer stations, remote from residential areas, expenses for insurance of environmental damage, are allowed to cover from net profit only. High inflation in Russia (in years 1992-1995 and 1998) and associated deposit banking rates prevented a sizeable profit in the regulated tariffs (which is within the rate of profitability of other capital investment) to occur. Consequently Russian methodology of tariff setting incorporates a justified need for technical upgrading of the equipment, social development of a company and insurance into planned tariff proceeds. In all subsequent Russian tariff calculations for oil transportation this approach is adopted. Thus, the pipeline tariffs must provide a company with tariff proceeds that are sufficient to reimburse operational costs. Additionally justified net profits required for normal production and economic activity, and payment of taxes are required by law.

The easiest way to calculate a tariff is to sum up the real costs of oil delivery per section, their overheads and also rate of profit. The difficulty, however, is that cost accounting is

undertaken in a company as a whole, but not by section. Therefore obtaining real costs per section is problematic. The accurate calculation of a pattern of transportation costs based on theoretical assumptions is virtually impossible because there is an established level of costs which differs according to the pipeline. These cost differences are not always explained by physical and technical aspects but often as a consequence of social, political, geographic and other factors, which are difficult to take into account. Experience shows that the planned costs at a particular section, whilst based on accurate assumptions, do not necessarily coincide with real costs, and often significantly divert from them. As a result of these reasons tariffs in Russia are set by each pipeline company individually.

6.3 Long-Term Tariff

Other types of tariff approaches derive themselves from specific requirements of some pipeline systems. Long-term tariffs are established for shippers who presented guarantees to oil pipeline companies for transportation of minimum volumes of oil as a pledge, at the time of pipeline capacity expansion or new construction. The period of validity of the long-term tariffs can be 5, 10 or even 15 years. Stable, transparent long-term tariffs fully correspond to the interests of the oil producing, oil processing and oil transmitting companies because they attract investments and significantly decrease the impact of inflation when transporting oil to the export terminals. Due to a shortage of funds to finance the projects or to expand capacities of the pipelines, a long-term tariff methodology was developed. It ensures investment gains and the repayment of investment-related credits.

6.4 Negotiated Tariff

Negotiated tariffs can be regarded as a short-term form of a long-term tariff. This tariff is required when, for example, the transmission capacity of either a pipeline system or its separate section has to be expanded. The users of the system who do not use the services in particular (for example, a narrow section) will continue to pay an old tariff rate. The users, who need expansion, pay, in addition to the old tariff, a negotiated new tariff. The funds that a pipeline company gains from the negotiated tariffs are used to finance expansion arrangements of transmission capacity of the system (e.g., expansion of the narrow sections). The validity period of the negotiated tariff varies from one to three years.

6.5 Difference between cross-border and domestic pipelines

In principle, there should not essentially be a difference between cross-border and domestic pipelines. A difference however can be made by a value added tax which is not collected when deliveries are for export or transit. Nevertheless, when there is a significant difference between the oil prices in the domestic and world markets, a significant difference arises in profits for the shippers when they export oil or deliver oil to refineries. This explains why on occasions the government is often tempted to take a part of the profits from the oil producers by means of higher tariffs for export. This happened in Russia in the 1990s when a special export tariff was added as a per ton rate in US dollars. At present the tariffs are practically the same.

7 Tariff Methodologies in the FSU Countries

7.1 Russia

7.1.1 Cross-Border and Domestic Crude Oil Pipelines

Russia was the first FSU country to have introduced methodological bases to define tariffs for oil delivery. Formally, the regulation of trunk oil and oil products transportation systems was to be started by the approval of corresponding Federal laws. Nevertheless, *the Federal Law No.147-FZ «On Natural Monopolies»* was approved only in August 17, 1995. But *the Resolution No. 555 (dated by October 18, 1991) «On the formation of “Rosneftegaz” Russian State oil-and-gas Corporation»* commissioned *Rosneftegaz* (an entity which included *Glavtransneft*) to introduce payment for trunk oil transportation services based on tariffs in 1992.

Within a short period of time the document entitled *«Methodology of Tariffs Calculation for oil transfer, reloading and filling-in trunk oil pipelines»* was worked out and agreed by the Price Committee under the Ministry of Economics of Russia. In December, 1991 it was approved by the Minister of Fuel and Power of the Russian Federation.

During the period 1992 to 1994 tariffs for oil transportation services were sanctioned by the Price Committee under the Ministry of Economics of Russia; then by the Committee for Pricing Policy, followed by the Ministry of Economics of Russia and *Mintopenergo* (Ministry of Fuel and Power) of Russia. In 1995-1996 tariffs were under the approval of *Mintopenergo* of Russia, and since October 1996 the Federal Energy Committee (recently transformed into the Federal Service for Tariffs - FTS of Russia), which was established as the body to control natural monopolies in the Fuel and Power Complex, has been in charge.

The first domestic methodology of tariff calculation, which was developed in an extremely short period of time for various reasons, was unable to completely adopt the principles of profit formation, used in the countries with advanced market economies. The main provisions of the first Russian methodology of tariff calculation were based on the following concepts;

- Tariffs should provide a transport company with the means to cover objectively essential levels of costs for oil transportation, reloading and loading operations, and standard profits;
- Tariff proceeds should include appropriate amounts to cover all kinds of operational expenses, insurance charges for oil loss and ecological damage as well as profits to provide self-financing of the oil-pipeline transportation system, including investment requirements.

Significant differences between Russian and Western methodological approaches towards tariffs calculation (discussed in Chapter 4) create dissatisfaction for international investors and international organisations. The latter are of the belief that these differences made Russian tariffs unpredictable, and the method used for profit calculation in tariff structure was not sufficiently transparent. This was one of the obstacles for the Russian oil industry to attract foreign investment.

Discussions in 1997 aimed at developing a new (second) tariff methodology started. Subsequently, the adoption of this methodology became one of the obligations of the Russian

party under the Third Loan for Structural Reorganization of the Economy (SAL-3) from the World Bank. The new methodology was approved on 30 October 1998 by the FTS. According to the second methodology;

- the control of tariffs is based on the limitation of natural monopolists' net profits through the profitability norm established under the ratio of allowed net profit;
- tariffs are the only type of payment to be collected from a user of a trunk-oil-pipeline system for oil transportation services;
- planned tariff proceeds should not provide an opportunity to accumulate cash for investment funds or development funds, aimed at the subsequent financing of new projects.

The development and introduction of the new calculation methodology of oil pipeline tariffs undoubtedly became a step forward both in theory and practice. The new methodological approach did not arouse objections from users, was supported by international organizations, and met conventional standards of world practices.

However, due to a number of reasons (including the financial crisis in 1998), the compulsory introduction of the second methodology tariff calculation was not followed through. Attempts to adapt this methodology in day-to-day activities were not successful. It also failed to attract credits to fund new construction projects. Eventually, the second methodology was abandoned. In truth, it was a situation in which the methodology declared one thing, but practices implemented another.

In view of the situation the third methodology (*Resolution of July 10, 2002 No. 42-э/5*) was worked out and approved by the Russian authorities. It legitimated tariff setting practices which had already been developed and used. These include;

- a two-tier tariff structure (the first for oil transfer and the second for services provided for order performance and dispatching) which had in practice been in place since May, 1999;
- special tariffs (tariffs of the *Mahachkala-Novorossiysk* oil pipeline (the year 2000), the *Suhodolnaya-Rodionovskaya* route (the year 2001), etc.);
- limitation of the planned net profit which included the amount required to finance upgrading, reconstruction and trunk oil pipeline system development programmes and for other economically justified expenses;
- contractual and long-term tariffs a (long-term tariff had been working since 2001 in the trunk oil pipeline system for TOTAL of France, which had been working under a product sharing agreement.

This third methodology does not exclude an opportunity to use several methods of tariffs calculation such as indexing, cost-based, and competitive. However, the subsequent implementation under the third methodology revealed some shortcomings. The FTS of Russia outlined them as follows:

- Currency risks: Tariff rates for dispatching and export orders were denominated in US dollars. The regulation body makes calculations based on the forecasted rate accepted in the federal budget. The official forecasts tend to be more optimistic than the reality turns out to be. This leaves the FCS of Russia to compensate lost income due to exchange rate losses.

- Although the methodology defines in principle how to calculate tariffs for each oil transport company, the FTS of Russia alone carries out general system revision and sets tariffs for the system as a whole.
- Application of contractual and long-term tariffs was not necessary successful. It became necessary to have more studies and detailed regulation.

Taking into account the above, development of a new methodology was undertaken and on August 17, 2005 the FCT of Russia in its *Order No. 380-э/2* approved the *Provisions on Definition of Services Tariffs for Trunk-Oil-Pipeline Transportation* to replace the third tariffs calculation methodology. The current methodology takes into account the goals of this revision. It is necessary to note that the principles of tariffs regulation and calculation are not applied in case of transit services.

The planned tariff proceeds are determined by two methods. In the first case, the amount required for financing of modernization, reconstruction and development programmes, purchases of land and other economically justified expenditures are defined in the net profit. The essence of the second method is to set up the profitability norm which is determined as a ratio of the planned net profit to the profitability base. Regulation of tariffs requires a separate account for expenses of the controlled activities.

In other words, the net profit includes;

- financing of economically justified programmes of technical modernization and reconstruction of basic production assets which are not covered by depreciation charges;
- reserves for dividend payments;
- financing of other justified expenses.

While calculating tariffs, the following factors are taken into account;

- expenses for the materials used for production and economic needs;
- expenses for electric power and heat power consumed;
- expenses for labour payments basing on predicted number of the personnel;
- social allocations (uniform social tax);
- depreciation;
- rent;
- expenses for services of all types of transport;
- services rendered by other agencies (expenses for payment of communication services, departmental and outside security, legal, information, auditing, consulting, marketing and other services);
- expenses for capital repairs;
- expenses for diagnostics;
- expenses for personnel training;
- expenses for labour safety and safety precautions;
- expenses for insurance, including voluntary medical but not state pension insurance;
- expenses for carrying out research and development studies, and technology improvement, including the development of branch standards, regulations and documents;
- balance of operational and non-merchandising incomes and expenses of regulation subject in the part referred to rendering of oil transportation services;
- other expenses in accordance with the laws of the Russian Federation.

Tariffs for oil transportation services are set in rubles and, according to the decision of the FCT of Russia, tariffs can be fixed per 100 t/km, or, per 1 ton, or per 100 ton.

The following different tariff rates can be applied based on the type of operation:

- a tariff rate for performance order and dispatching of oil deliveries to refineries of the Russian Federation and participants of the Customs Union Agreement;
- a tariff rate for performance order and dispatching of oil deliveries across the borders of customs territories of the Russian Federation and participants of the Customs Union Agreement;
- a tariff rate for oil transfer;
- a tariff rate for oil reloading, discharging/loading, acceptance/release in each point of oil reloading;
- the rate of coordinated tariff;
- the rate of long-term tariff;
- the rate of competitive tariff;
- the rate of network tariff.

Coordinated tariffs can be set as an additional rate to working tariffs, in case of the necessity to undertake actions aimed at the expansion of throughput of a trunk oil pipeline system or increasing the reliability of its functioning when the expenses for such activities have not been taken into account in the planned tariff rates.

Long-term tariffs can be set with the consent of trunk pipelines system users and under regulatory consents to conclude long-term contracts for oil transportation under the fixed tariff rate, depending on the current and perspective load of the tariff route. A long-term tariff is fixed for three-year period as minimum. Long-term tariffs can be established in foreign currencies.

In the case when a certain tariff route has alternative ways of oil transportation, competitive tariffs can be set for the route in the form of the maximum tariffs rates or in the form of correlation with the cost of oil transportation along the alternative route as long as it does not contradict the principle of equal accessibility to trunk pipeline systems.

Network tariff for reloading can be set with a view of optimization of freight traffic on separate routes of trunk pipelines, if there is more than one terminal point of oil delivery. Network tariffs are calculated per ton of oil shipped.

7.1.2 Transit

Since 1996 the transit tariff for Azerbaijan oil, set under the inter-governmental agreement and corresponding transit contract between the Russian Federation and the Azerbaijan Republic, is in force. The tariff was fixed at a rate of US\$15.67 per mt. The rate is still in force. It has never been reviewed.

Transit tariffs for Kazakhstan oil have been introduced since 1 January 1999. Originally, the logic of introducing special transit tariffs for oil producers of the Republic of Kazakhstan was based on the following circumstances. The Atyrau-Samara oil pipeline section served by “*Privolzhsknefteprovod*” (a Transneft daughter company) does not transfer any other oil but that from Kazakhstan. This oil pipeline is equipped with advanced heating facilities specific for Kazakhstan oils. Consequently, the expenses of “*Privolzhsknefteprovod*” for this oil

pipeline constitute a significant part of the company's total expenses. Thus, actually Russian oil shippers were contributing to expenses of the Kazakhstan producers. Therefore these expenses were included into the tariff of the pipeline company. The volumes of Kazakhstan oil loaded through the system of *Transneft* grew steadily (from 0.18 mb/d (9 MT/Y) to 0.38 mb/d (19 MT/Y)). In this connection *Transneft* had to expand the bottlenecks of its trunk oil pipelines system on a regular basis in order to allow the delivery of increasing Kazakhstan oil volumes.

Taking into account these circumstances and based on current tariff calculation methodology the *FEC* approved in Resolution No. 46/9 of 4 December 1998 transit tariff. The amount of tariff (0.73 US dollars per 100 t/km) was calculated based on the expenses to be made to guarantee the transfer of Kazakhstan oil volumes.

All revenues received by *Transneft* from transit of Kazakhstan oil are considered by the *FEC* of Russia as the additional financial sources during the following annual tariff setting session while calculating the domestic tariffs of *Transneft*. At present, the amount of transit tariff for Kazakhstan oil is US\$0.73 per 100 t/km and has remained unchanged for the last five years.

7.1.3 Product pipeline

Basic principles and methods of tariffs calculation for oil products transportation by trunk pipelines in the Russian Federation are established by the Methodology approved under *FEK Resolution No. 314 of 16.10.2002. No. 70-э/5*. The main principle of definition of the tariffs for oil products transportation by trunk pipelines is the conformity between planned incomes and expenses of products pipeline transportation companies. The expenses of products pipeline transportation companies are planned separately for each type of operations. The expenses cover;

- economically justified expenses, including taxes and duties;
- economically justified operational and non-merchandizing expenses required for maintenance of normal industrial and economic activities;
- expenses of a capital character;
- payments of profit tax of the enterprise.

Expenses include material inputs, labour expenses, deductions for social needs, depreciation, other expenses (communication services; transport services; services of external security; expenses for technical diagnostics of a trunk-pipelines systems; deductions to repair fund; rent of the ground and land tax; expenses for insurance; taxes and duties; expenses for personnel training; deductions for scientific-and- research activities, experimental and design works and other expenses).

To define tariffs for oil products transportation, the *FCT* of Russia approves the following maximum tariffs by type of operation for each products pipeline transportation company.

- The maximum cost of oil products transportation by trunk pipelines is defined in rubles per ton of oil products, if the stabilization of oil products markets is necessary.
- The maximum specific rates of tariffs
- For oil products transfer services, these rates are defined in rubles per 100 t/km, dividing planned tariff proceeds for oil products transfer services by the planned value of commodity transportation work (freight turnover).

- For oil products discharge, reloading, filling and release services, these rates are defined in rubles per ton for each point of discharging, reloading, filling and release, dividing planned tariff proceeds for oil products discharge (reloading, filling and release) services by the planned volume of work for each terminal or tank farm.
- Maximum percentage ratio of transportation costs to alternative types of transport of the similar nomenclature oil products on similar directions.

The structure of planned tariff proceeds includes the planned expenses of oil product pipeline transport enterprises for rendering of corresponding services. Distribution of expenses is based on the regulations on separate accounting of the expenses, which is developed by the oil product pipeline transport enterprises in order to reflect them in book keeping.

The regulatory body sets the maximum tariffs rates for services on performance of the order and delivery dispatching of oil products for each company of oil product pipeline transport. Tariff rates for both exports and domestic markets within the customs territories of Russia and the state participants of Customs Union Agreements are defined in rubles per ton for all delivery directions. Tariffs for oil products transportation by trunk pipelines are determined by oil product pipeline transport enterprises within the limits of restrictions established by the regulation body.

The regulatory body can approve contractual tariffs. Contractual tariffs are applied, for example, in case oil products transportation is carried out by the only shipper to the given tariff site (terminal). Rates of contractual tariffs are established in for the period of not less than one year. The long-term tariff can be established if a shipper is ready to conclude the contract for products transportation under a fixed tariff rate. The rate depends on the current and perspective load of the tariff route. Rates of long-term tariffs are established in fixed currency terms for a period of no less than three years.

7.2 Ukraine

7.2.1 Cross-border and domestic pipelines

In accordance with clause 5 of the Law of Ukraine No. 1682-III *On Natural Monopolies* dated by April 20, 2000, the activity of natural monopolies in the sphere of oil and oil products transportation by pipelines system is a matter for state regulation in Ukraine. Regulation of activity in the sphere of oil and oil products transportation by trunk pipelines is performed by the National Committee for control of energy industry of Ukraine (NKRE).

The basic methods of tariffs calculation are determined in the tariffs calculation methodology for oil transportation, reloading and filling services provided by trunk oil pipelines on the territory of Ukraine. This methodology was approved by the Resolution of NKRE No. 993 dated by 30.07.1999. Previously oil transportation companies of Ukraine set a methodical substantiation of their prices themselves.

Regulation of tariffs for oil transportation is based on limitation of net profit of the company performing its activity in the sphere of natural monopolies. Planned tariff proceeds are used as the basic settlement and control value for the definition of tariffs for oil transportation by trunk pipelines.

Tariffs for oil transportation by trunk oil pipelines are formed by oil transportation companies in accordance with the methodology. Tariffs cover:

- economically justified expenses;
- planned net profit required for performance of normal economic activities of oil pipeline transport companies;
- Payment of all taxes and duties established by the legislation of Ukraine;
- Tariffs for oil transportation services are defined based on the expenses related to type of activity.

The expenses related to rendering of services in oil transportation by oil pipelines based on the methodology are defined in accordance with methodological recommendations on formation of industrial production cost approved by the State Committee for Industrial Policy of Ukraine in the Order No. 47 dated by 02.02.2001. But these recommendations are not obligatory. According to the methodological recommendations, production cost includes material inputs, labour expenses for labour payment, deductions for social activities; depreciation of fixed capital; other operational expenses. The expenses for payment of services rendered by *Naftohaz Ukrainy* (expenses for the maintenance of parent organization) are included into the expenses of oil transportation companies.

Tariffs for oil transportation by oil pipelines are set by NKRE from January 1 every year. Tariffs for oil transportation services consist of one or several tariff rates:

- the *tariff for filling (reloading)* of oil for each filling point (tank farm) is determined per 100 t;
- specific tariff for oil transportation:
 - the first rate of oil transportation tariff is the specific tariff for payment of capacity reservation. It should cover conditionally permanent expenses for oil transportation and includes the profit allocated for reconstruction of pipeline system and taxes referred to these values. This rate is set per 100 t/km;
 - the second rate of oil transportation tariff is the specific tariff for payment of transportation services. It is defined as a difference between the specific tariff (calculated as the ratio of transportation tariff proceeds to freight turnover) and the first rate of oil transportation tariff. This rate is set per 100 t/km;
- *the section tariff* calculation of the tariff is made by multiplication of the specific tariff set for the given oil transportation company by the length of each section. It is determined per 100 ton;
- *special tariff* of route oil transportation. It is determined by the sum of corresponding section tariffs. It is determined per 100 ton.

With the agreement of the trunk pipelines system user and the consent of the oil-pipeline transport company to conclude a long-term contract for oil transportation under a fixed tariff, a long-term tariff can be set up. If the long-term tariff is lower than the oil transportation tariff established by NKRE, this body registers the tariff. If the long-term tariff is higher, NKRE analyses the tariff validity and then approves it after due consideration. Long-term tariffs are established for a period of no less than three years.

The described methodology was developed with a view to provision of a uniform methodological approach on the territories of the Russian Federation and Ukraine in the matter of establishment of tariffs for oil pipelines transportation. As a whole, the Ukrainian methodology is based on an early Russian methodology version approved under the Resolution of the FEK of Russia No. 43/2 dated by 30.10.1998.

7.2.2 Transit

In 2000 the Cabinet of Ministers of Ukraine introduced a so-called *rent payment* for oil transportation by trunk oil pipelines and product-pipelines on the territory of Ukraine. This rent is paid to the State budget. *Ukrtransneft* is the rent payer for oil transportation. The expenses for rent payments are taken into account during the calculation of tariffs for users of pipeline transport system of Ukraine. According to the Law of Ukraine *On the State Budget for 2005*, the rent rate is raised from \$0.685 to \$0.89 per ton. For 2006 the rate remains without changes.

Together with this, in Ukraine there are a number of operator companies which have concluded contracts with *Naftohaz* for operation of some terminals and oil pipelines. The operator undertakes to search for clients for the maximum loading of free capacities and, in some cases, is obliged to undertake modernization. In this case tariff setting bears itself also a market element as the premium for the operator company. No precise principles of tariffs establishment are applied in such cases. The operators are offshore companies. For example, *Collide Ltd.* supervises the reloading in the Yuzhny port and enjoys a transit tariff for oil transportation from the Russia-Ukraine border up to the terminal. Simultaneously the similar tariff to Odessa, actually taking place on the same route, is half the price.

7.2.3 Product pipeline

In Ukraine, methodology on tariff definitions for oil products transportation by product pipelines does not exist. Tariffs for oil products transportation are determined by the product pipeline company and approved by NKRE. Tariffs are defined according to the need to cover the economically justified expenses and to obtain income, as well as also being based on the incentive of expense reduction and the increase of profitability of products pipeline company activity (point 3.6 of the NKRE Resolution No. 858 decision «On the Approval of License Condition for Performance of Economic Activities in Oil Products Transportation by Trunk Pipelines» dated 30.09.2005).

7.3 Belarus

In Belarus, according to clause 3 of the Law of Belarus No. 162-3 *On Natural Monopolies* dated 16 December 2002, activity of natural monopolies in the sphere of oil and products transportation by trunk pipelines is under state regulation. According to Paragraph 5.39 of the Resolution No. 1575 *Issues of the Ministry of Economics of Belarus* approved by the Council of Ministers of Belarus on 31 October 2001, state regulation and control over the activities of subjects of natural monopolies is under the responsibility of the Ministry of Economics of Belarus.

In relation to oil transportation tariffs, Decree No. 285 of the President of Belarus *On Some Measures for Stabilization of Prices (Tariffs) in Belarus* (19.05.1999) stated that they are controlled by the Ministry of Economics of Belarus. There are no methodologies for calculation of the cost of oil and products transportation by trunk pipelines on the territory of Belarus. Tariffs for rendering product transportation services are established in accordance with Chapter 7 of the Agreement between the Government of Belarus and the Government of the Russian Federation regarding interaction of operation of trunk products pipelines located on the territory of Belarus (signed on 8.6.2004 and entered into force on 29.11.2004).

The current tariff for products transportation in trunk products pipelines is 0.89 US dollars per 100 t km. Subsequent tariff changes for oil products transportation services produced in trunk oil-products pipelines located on the territory of the Republic of Belarus, should be carried out by the authorized Belarus body according to the methodology of definition of tariffs for products transportation services which is also coordinated with the authorized body of the Russian Federation (i.e. with the FCT of Russia). No methodological basis for definition of tariffs for products transportation services has been coordinated with the FCT of Russia.

7.4 Kazakhstan

In compliance with Article 4 of the Law #272 of the Republic of Kazakhstan dated 1998 *On the Natural Monopolies*, the government regulates and controls activities of the entities of the natural monopolies in trunk piping of oil and petroleum products.

In accordance with Resolution #1109 of the Government of the Republic of Kazakhstan dated 28.10.2004 *The Issues of the Company of the Republic of Kazakhstan on Regulation of Natural Monopolies*, preparation, approval and application of non-discriminating methods of tariff calculation or their ceiling levels for the regulated services should be carried out by the Company of the republic of Kazakhstan for Regulation of the Natural Monopolies.

The main methods and features of tariff calculation for the services of oil and petroleum products piping are established in the Methodology of Tariff Calculation for the Services for Oil and Petroleum Product Transportation via the Trunk Pipelines that is approved by Order #291-OD of the Chairman of the Agency dated 24.06.2004.

The method is based on conventional principles and ensures a flexible approach in pricing. It takes account of capacities and requirements of consumers in detail, as well as encouraging maximum possible utilization of the existent pipeline system. Its main advantages are: inalterability of the principal reimbursement of the necessary costs and gain of a just profit from the relevant capacities. There is the possibility to transfer from a simple specific rate to a two-tier tariff where the first rate is charged for a ton of oil regardless of the piping route, and the second takes into account the route distance (more details see below). In addition, a more advanced and correct method of calculation of the rate of profit on own capital is applied.

The fundamental principles of the methodology are as follows:

- reimbursement of the justified costs of production (they are accounted for in accordance with the Special Procedure of Costs Calculation that is used when approving the costs of services for the entities of those natural monopolies approved by Order #185-OD of the Chairman of the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies dated 30.07.2003);
- taxes and due payments;
- possibility to obtain a profit that ensures effective functioning of an oil transport pipeline company (that is a profit which provides normal work of an oil pipeline company, including work for rehabilitation, technical re-equipment and upgrading of the productive facilities).

In accordance with the Special Procedure, tariff is calculated on the basis of separate accounting of costs by a type of activity. When calculating tariffs for transport of oil within the established restrictions by the applicable law of the Republic of Kazakhstan, the following costs are accounted:

- material costs;
- salaries expenses;
- depreciation;
- costs of maintenance and other repair and rehabilitation work;
- maintenance and repairs by contract, other production costs generated by outside companies;
- costs related to regulatory technical losses
- costs related to compulsory insurance, taxes, duties and payments;
- costs related to environment protection, use of natural resources;
- costs related to audit, consulting, and marketing services;
- representative costs, business travelling expenses of the administrative personnel, expensive telecommunication cost, periodical press, office vehicle costs, information and consulting services;
- costs of salary increase for qualified administrative personnel;
- costs related to repayment of interests for credits extended for implementation of investment project of an entity of natural monopolies.

In addition, the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies, if it decides to approve tariffs, can include into the tariffs overhead expenses that were included in the former tariffs in line with the consumer index pricing for a period before a change in tariffs. The Agency can make a decision to change the overhead expenses that are included into the tariffs as a result of an audit of the actual structure of administrative expenses. An increase in overheads beyond the consumer price index as well as incorporating expenses for maintenance and improvement of the system and instruments of management, can only be allowed after the consent of the Agency of the Republic of Kazakhstan for the Regulation of Natural Monopolies. This is only possible after its consideration of the estimation of economic effectiveness of the investments into the targets above.

The Special Procedure establishes a list of expenses that are not included in tariff structure for the services of an oil transport company. (They can be referred to either unregulated types of activity or to expenses incurred from the profit of a company. In this case they must be agreed on with the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies). The expenses are as follows:

- expenses related to excessive regulatory, technical and commercial losses, damage and deficiency and loss of commodity, stock and supply;
- depreciation of the fixed assets that are not directly involved in the regulated services;
- expenses related to the compensation package for use of the fixed assets (except from the fixed assets of general running use), which are transferred to trust management, rent and leasing;
- payment for excessive emission of contaminating substances;
- expenses of court procedure;
- penalties, fines, cancellation penalty and other sanctions for contractual violation;
- losses from bad work;
- expenses of maintenance of auxiliary productions and entities;
- advertising costs
- payment for educational leave of employees;
- expenses of bonus payments and other incentive payments ;
- payment for vouchers granted to employees and their children except from the costs related to rehabilitation treatment of occupational diseases;

- insurance payments (fees the companies pay under contracts of personal and property insurance they conclude in favour of their employees);
- expenses incurred for additional holidays of the employees (holidays in excess of the period regulated by law), payment for travel of employees and their families to places of their holidays and back, as well as compensation for unused holidays;
- expenses for all types of sponsorship;
- expenses related to innovations and inventions: pilot work, production and test of samples invented and innovation proposals, and other actions of invention and rationalization, payment of honorariums, etc;
- other expenses that are not directly involved into production and rendering services and resulting in growth of tariffs.

The special order establishes the profit limits which are included in tariffs (the profit is calculated on the basis of a profit rate for a regulated base of the assets involved). It is determined in accordance with the Instructions for calculation of the Rate of Profit From regulated Base of the Assets Involved of the entities of the Natural Monopolies That Render Service of Trunk Oil and Product Piping approved by Order #304-OD of the Chairman of the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies and Protection of Competition dated 5/07/2004. The instruction allows for a mechanism of calculation of the acceptable level of profit that is incorporated into a tariff and taken into account when calculating the tariffs and their approval. The rate of profit for the regulated base of the assets of a pipeline company involved is determined as an average value of capital (a value that characterizes a rate of profitability for both the borrowed and own capital that reflects the investment risks related to oil transportation).

The tariffs for the services of oil transportation consist of the following tariff rates;

- a tariff rate for transportation of one ton of oil (the administration costs are accounted for except expenses related to payment of bonuses (%), profit for the involved long-term assets (fixed assets and non-material assets) of the management of the pipeline company);
- a tariff rate for transportation of one ton of oil per 1,000 km (the costs of a pipeline company that are not accounted for in the first tariff rate, including expenses incurred for payment of bonuses (%); profit for the rest involved long-term assets (fixed assets and non-material assets) that are not accounted in the first tariff rate and placed in the balance of the production units of the pipeline company and a profit for the net floating capital of a pipeline company).

Consumers of services provided by the pipeline company that transmits its oil volumes through more than one pipeline system when entering the second system only pay a tariff that relates to the length of the route of oil transportation. When transporting through the first pipeline system both tariff rates are paid.

A pipeline company can conclude a contract with a customer (consumers) for services for guaranteed volumes of oil delivery to be transported along a definite route and by a definite tariff. Such a contract has to be concluded in compliance with the active law of the Republic of Kazakhstan, the partners can agree on terms, conditions of access and changes in the tariff.

In accordance with the Rules for Setting and Cancelling Tariffs with Reduction Factor for the Services for Transportation of Oil through Trunk Pipelines in the Domestic Market that are approved by Order #166-OD of the Chairman of the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies, Protection of Competition and Support of Small

Business dated 15.08.2001 in the Republic of Kazakhstan, it is allowed to apply reduction factors to the tariffs for services in oil transportation through the pipelines in the domestic market. Setting of tariffs with use of the reduction factor is made by the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies on the initiative of the shipper, the Ministry of Energy and Mineral Resources of the Republic of Kazakhstan or a pipeline company.

The tariffs with a reduction factor can be established for a certain period of time but can not exceed more than half a year. The Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies has a right to broaden the effect of the tariffs with a reduction factor, if it considers that its application is expedient. Consideration of a request to establish a tariff with a reduction factor after introduction of new tariffs is carried out in accordance with usual procedures.

The size of the tariff with a reduction factor must compensate the costs of operation of a pipeline company related to an increase of the volumes of transportation, and provide for a level of profit with regard to the established rate of profit for the assets involved.

Herein are the criteria to set a tariff with a reduction factor;

- increase of oil delivery volumes to domestic companies for refining by domestic capacities;
- possibility to use idle or insufficiently used sections of the trunk pipelines;
- compensation for competitiveness of the pipeline company at sections where the company does not enjoy a monopolist position.

The tariffs with a reduction factor apply to all shippers who correspond to the above conditions when transporting cargo in a definite section of the trunk pipeline.

There is a trunk 187-km pipeline, a part TON-2 pipeline, initially belonging to *Transneft*, crossing the territory of Kazakhstan. This pipeline section was declared in 2005 to be a property of Kazakhstan and was leased by a decision of the *Akimat* of the *Severo-Kazakhstansky* Province to the company *Altayfrakht*. Due to lack of an applicable law on natural monopolies in the Republic of Kazakhstan, the activities of the *Altayfrakht* are not regulated by the government. This company does not render services on oil transportation to any natural or legal person of the Republic of Kazakhstan. Accordingly, there is no method to calculate tariffs for this section, i.e. in this case a purely voluntaristic approach of tariff setting was applied. As a result, the oil companies that use the routes of *Transneft* through this 187-km section of the pipeline have to pay three times more for oil transmission (the tariff of the *Transneft* for this section was US\$0.79 per ton, and that of the *Altayfrakht* US\$2.5 per ton of oil).

7.4.1 Kazakhstan-China pipeline

According to the Framework agreement between Kazakhstan and China for the development of cooperation in the oil and gas sector², Kazakhstan would ensure a non-discriminating access to oil transportation from the third countries by transit through the trunk pipelines in

² approved by Resolution #543 of the Government of the Republic of Kazakhstan dated 14.05.2004

the Republic of Kazakhstan and in tariff approval for the services in oil transportation by an authorized body that controls and regulates activity in the sphere of natural monopolies.

The tariffs for the services of a natural monopoly approved by the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies must not be lower than the costs required for rendering of such services and account for possibility to gain profit, which will ensure the effective functioning of an oil transport company.

In the pipeline project from Kazakhstan to China, there is not final data on how much oil transportation will cost through the pipeline. However, there are several preliminary estimates. For the Atasu-Alashankou section, an average tariff 9.78 USD per mt is proposed and for the Kenkiyak-Atasu section, US\$10.6 per mt. At this level of tariffs, the cost of construction for the section from Kenkiyak to Atasu is repaid in seven years.

However the Chinese came up with higher estimates. According to the Chinese institute CPPEI, for the section of Atasu-Alanshakou oil delivery costs US\$9.52 per mt, and for Kenkiyak-Atasu US\$13.17 per mt. Delivery of oil from Kenkiyak to Western China will total US\$22.69 per ton, according to the Chinese estimates.

7.4.2 CPC pipeline

The tariff policy of the CPC is beyond jurisdiction of Russian law. When the shareholders established the CPC and agreed that the oil pipeline would partially go through the Russian territory, there was not yet a law on the natural monopolies in the country. The Resolution #235 of the Government of the Russian Federation dated 26 March 1994 On Construction of Export Pipeline of the System of the Caspian Pipeline Consortium Tenghiz-Astrakhan-Novorossiysk stated that when transporting oil through the pipeline system of the Caspian Pipeline Consortium, a tariff that was calculated in accordance with provisions of the Protocol to Agreement for Pipeline Consortium would be applied. Later on Resolution #486 of the Government of the Russian Federation of 25.04.1997 *The Issues of the Caspian Pipeline Consortium* determined that in accordance with the Agreement for the Caspian Pipeline Consortium and the Contract between the share holders it is the *CPC-R* sets and collects tariffs for the services in transportation of the liquid hydrocarbons through the system of the Caspian Pipeline Consortium through the territory of the Russian Federation, as well as regulates and establishes the rules that define an access of the users to the system.

In accordance with the contract among shareholders of the CPC dated 6 December 1996, initial tariff for transportation of oil through the system of the CPC is determined to be US\$25 per ton. The same document stipulates an annual indexation of the established tariff to the changes in whole sale prices in the USA, which is published by the Bureau for Labour Statistics of the Department of Labour of the USA, before either the start of payment of the secondary loans or the tariff reaching US\$38 per ton. However, the above tariff system has never been applied.

At the present time some 0.60 mb/d or 30 MT/Y of oil are transported through the CPC system. The pipeline capacity is fully utilized and profitability of the pipeline operation under the current tariff (US\$28.3 per ton) is at zero level. In 2005 the CPC shareholders reached an agreement to expand the transmission capacity of the CPC pipeline up to 1.34 mb/d or 67 MT/Y and increase of tariffs by US\$2.5 per ton. This will bring the tariff for oil transportation through the CPC system to US\$30.83 per ton. At the same time, one issue that has not been solved is introduction of a methodology of tariff calculation for oil delivery. A decision about

tariff change has not been made yet. *Rosenergo* of Russia maintains that a methodology of setting a tariff must be changed and be based on the IRR approach.

7.5 Uzbekistan

In accordance with Article 4 of the Law #398-I of the Republic of Uzbekistan of April 24 1997 On Natural Monopolies in Uzbekistan, the government should regulate and control natural monopolies in piping oil and petroleum products. According to Paragraph 2 of Resolution #364 of the Cabinet of Ministers of the Republic of Uzbekistan of 21.09.2000 On the Measures to Implement the Law of the Republic of Uzbekistan on the Natural Monopolies, the Ministry of Finance of the Republic of Uzbekistan is authorized to regulate natural monopoly prices.

This Resolution of the cabinet of Ministers of the Republic of Uzbekistan also approved the Regulations for the Procedure of setting Tariffs for the Services of the natural Monopolies, which includes pipeline companies. There is not a separate methodology of setting tariffs for transportation of oil and petroleum products by pipeline. The regulating body can set both tariffs and their individual levels.

For setting tariffs or their ceiling levels, pipeline companies need to submit the following to the regulating body;

- costs of services extended;
- breakdown of salaries;
- breakdown of cost of raw material;
- breakdown of operational costs (overheads, including depreciation);
- breakdown of gross profit, period expenses (including taxes and other compulsory payments);
- need of investments required for economic sustainability;
- need in state allowances or other measures of the government support.

The pricing control body makes a decision within a week of the reception of all required documents for its consideration of tariffs or their ceiling levels. In case of non-submission of justifying materials or with economically un-justified estimations, the body of pricing regulation within a three-day period returns the documents for proper re-preparation, with a written notification on the shortcomings. Decision on approval of the tariffs in such a case is made within five days of the reception of a full package of the finalized documents.

When making a decision on a level of tariffs, the body of pricing regulation takes into account its influence on consumer product prices. The natural monopolies, which carry out delivery of goods outside Uzbekistan, make calculations of the tariffs on a free contractual basis (free prices).

7.6 Georgia

In compliance with the contractual arrangements for the Baku-Supsa pipeline, the Georgian party has a base tariff of US\$0.17 per barrel of transmitted oil. The base tariff can change with regard to inflation. The inflation indicator is taken from the Bulletin of the Department of Trade of the USA.

This tariff is applied to the oil of the participating companies in the pipeline consortium. In case of delivery of oil that belong to other producers, the tariff is set in accordance with agreements with the participating companies and SOCAR. In this case, the tariff must not be lower than that for the participating companies. The Georgian party, in principle, has a possibility to increase a tariff. To do this first it needs to compensate of all expenses of the investors for construction of the pipeline.

7.7 Azerbaijan

In accordance with Article 5 of the Law #590-IQ of the Azerbaijan Republic dated December 15 1998 *On the Natural Monopolies*, it is the state that regulates activities of the natural monopolies in oil and petroleum products trunk pipeline transportation.

According to the Order #446 of the President of the Azerbaijan Republic dated 02.03.2001 *On the Additional measures To Ensure for Application of the Law of the Azerbaijan Republic On the Natural Monopolies* and Order #495 dated 11.06.2001 *On Approval of the Regulations of the Ministry of Economic Development of the Azerbaijan Republic*, it is the Ministry of the Economic Development of the Azerbaijan Republic which implements the regulations that are applied in relation to any of the natural monopolies, and adopts a mandatory for all decisions on their application. The regulating function to control activity of the natural monopolies is carried out by the Department of Anti-Monopoly Policy in the Ministry of Economic Development. The tariffs for the services of the natural monopolies are established by the Tariff Council headed by the Minister of Economic Development of the Azerbaijan Republic.

The state owned company SOCAR (State Oil Company of Azerbaijan) plays an important role in oil and gas sector. SOCAR at present combines an operating role covering upstream oil and gas, refining, transportation and sales of crude oil and refined products, with a holding company role associated with its ownership interest in ACG, BTC, Shah Deniz, SCP, and other ventures, plus certain oil related regulatory functions including the role as a competent authority to deal with international investors in the oil and gas sector.

7.7.1 Baku – Supsa

In Azerbaijan operational costs of the shippers for transportation of oil initially were reimbursed according to the scheme of the signed PSA. The same situation was preserved when oil was transmitted through the Baku-Supsa oil pipeline from the Chirag field. Since production of the first oil in the central part of the Azeri field started, the principle of payment for transmission services through the Baku-Supsa pipeline has changed. This is because they started transmission of oil in the western direction through multiple routes. At this time the shippers themselves paid operational costs. Payment of operational costs is distributed on the basis of volumes of oil that are delivered by each shipper. The more volumes are delivered by a particular shipper per month, the more operational costs, naturally, the shipper pays. However, the change in the service payment scheme of the Baku-Supsa pipeline does not affect the volumes of the payments. The capacity of the pipeline Baku-Supsa is completely utilized.

At present the transit tariff for delivery of oil through the Baku-Supsa route is US\$3.62 per ton. The tariff changes from time to time modestly due to quarterly inflation amendment. Out of the amount of US\$3.62 per ton, US\$0.29 per barrel (US\$2.14 per ton) is paid by the Azerbaijan International Operational Company (AIOC), which is developing the offshore

fields of Azeri-Chirak-Gueneshli, to the government of Azerbaijan as a transit tariff and US\$0.17 per barrel (US\$1.48 per ton) to Georgia.

7.7.2 Baku –Tbilisi –Ceyhan

Here a number of figures have been quoted ranging for US\$2.58 to US\$3.30 per barrel. BP has confirmed that it lies within this range. The price may vary depending on the timeframe and whether or not the oil belongs to a member of the consortium. Some reports indicate that the tariff may be adjusted to protect returns to investors and meet revenue targets, and indeed this may be both possible and desirable to a degree. On the whole, tariff regulation in the FSU slowly but steadily is moving towards international standards. But, on the way there are setbacks and repetitions of the voluntaristic approaches.

8 Tariffs for Cross-Border and Transit Oil pipelines

8.1 Transit tariffs in the FSU countries

8.1.1 Russia

Russia has two transit flows through the Transneft pipeline system; one from Kazakhstan and the other from Azerbaijan.

The transit tariff for crude oil transportation from *Azerbaijan* to Novorossiysk has been fixed at US\$15.67 per mt. This tariff is set by the inter-governmental agreement between the two countries and has been valid since 01/01/1996.

Transit tariff for *Kazakhstan* crude oil is set at US\$0.73 per 100 tkm. The rate from Kazakhstan to Butinge is fixed at US\$11.58 per mt. Tariffs for handling are;

- Samara, oil reloading and storage: US\$0.12 per mt
- Tikhoretsk, tank farm: US\$0.10 per mt
- Grushovaya, tank farm: US\$0.61 per mt
- Sheskharis, tank farm: US\$0.61 per mt
- Nikolskoye, pumping station: US\$0.0610 per mt.

The same tariffs are applied to *Turkmen* crude oil.

8.1.2 Belarus

The transit tariffs of Belarus are as follows:

Origin	Destination	Tariff US\$ per mt
Russia (via Bodovichi)	Germany, Poland (via Mozyr)	2.60
Russia (via Bodovichi)	Ukraine (via Mozyr)	1.14
Russia (via Bodovichi)	Rechitsa (loading into tank cars)	0.50
Russia (via Bodovichi)	Mozyr refinery	0.45
Russia (via Nevel)	Latvia, Lithuania	1.26
Russia (via Kostukovich)	Latvia, Lithuania	2.00
Russia (via Nevel)	Novopolotsk refinery	0.30
Russia (via Kostukovich)	Novopolotsk refinery	0.80

8.1.3 Ukraine

The Odessa-Brody pipeline operator Skilton Limited (Cyprus registered, a TNK-BP affiliate) collects a tariff at the rate of US\$12.70 per mt. Collide Ltd. (Cyprus) has fixed tariff rates for

crude oil transportation from Russia (via Velikotsk) to the Yuzhny terminal at US\$12.00 per mt and for the route via Michurinsk at US\$10.70 per mt. The latter is nearly double comparable routes to Odessa provided by Ukrtransnafta (US\$6.30 per mt and US\$4.95 per mt). The transit tariffs of “Ukrtransnafta” are as follows.

Origin	Destination	Tariff US\$ per mt
Russia (via Belarus)	Czech Republic, Slovakia	5.60
Russia (via Belarus)	Hungary	5.60
Russia (via Velikotsk)	Odessa port	6.30
Russia (via Velikotsk)	Odessa refinery	6.30
Russia (via Velikotsk)	Kherson refinery	5.40
Russia (via Velikotsk)	Kremenchug refinery	3.65
Russia (via Velikotsk)	Lisichansk refinery	1.55
Russia (via Golovashevka)	Odessa port	4.95
Russia (via Golovashevka)	Odessa refinery	4.95
Russia (via Golovashevka)	Kremenchug refinery	2.30
Russia (via Golovashevka)	Kherson refinery	4.05

8.1.4 Kazakhstan

The CPC pipeline tariff is US\$30.83 per mt. The Russian pipeline tariff for transit through the 187-km section, in the territory of Kazakhstan, which is considered to be a Kazakhstan pipeline, is US\$2.50 per mt.

8.1.5 Georgia

In compliance with the construction contract of the Baku-Supsa pipeline the Georgian party has a base tariff of US\$ 0.17 per barrel of transmitted oil.

8.2 Cross-Country Comparison of Transit Tariffs

All data are summarized in the following table. It should be noted, however, that straight comparisons are not necessarily self explanatory, because of technical differences in the pipelines (diameter, transported volumes, etc., etc.). Therefore, diameters are given for reference next to the name of the pipeline. For comparative purposes US\$ per 100 tkm is used as the unit.

Country	Transit tariff, US\$/mt	Distance, km	US\$/100 tkm
Belarus (Russia – Ukraine) <i>Druzhba</i> , 520 / 720 mm	1.14	245	0.47
Belarus (Russia – Poland), <i>Druzhba</i> , 630 / 820 mm	2.60	521	0.50
Ukraine (Russia – Odessa), <i>Pridneprovskie company</i> , 720 mm	6.30	1,097	0.57
Ukraine (Belarus–Slovakia), <i>Druzhba</i> , 530 / 720 mm	5.60	634	0.88
Ukraine (Odessa – Brody), 1020 mm	12.70	674	1.88
Ukraine (Russia – Yuzhniy), <i>Collide ltd.</i> , 720 mm	12.00	1,112	1.07
Russia (Caspian sea- Black Sea), <i>Makhachkala – Novorossiysk</i> , 720 mm	7.06	774	0.91
Russia (Azerbaijan – Black Sea), <i>Baku – Novorossiysk</i> , 720 mm	15.67	1,411	1.11
Russia (Kazakhstan, Turkmenistan oil), <i>Transneft</i> , 720 - 1200 mm			0.73
Caspian Pipeline Consortium (Kazakhstan – Russia), 1016 mm	30.83	1,580	1.95
Georgia (Azerbaijan – Black Sea), Baku – Supsa, 530 mm	1.48	370	0.40³
Azerbaijan (Azerbaijan – Black Sea), Baku – Supsa, 530 mm	2.14	457	0.47
Kazakhstan (Russia - Russia), <i>Altayfrakht</i> , 700 mm	2.50	187	1.34
BTC	18.8-24.1	1773	1.06-1.36

8.3 Comparison of Transit Tariffs with Domestic Tariffs

8.3.1 Russia

The current domestic and cross-border tariffs were introduced on 13/12/2005 by the FST of Russia. The tariffs are calculated according to the current methodology in rubles per 100 tkm for each pipeline transportation enterprise.

In addition to the tariffs of each enterprise, the tariffs for services provided for order performance and dispatching are charged at the rate of 8.6288 rubles per 100 tkm. Summing up tariffs and dispatch rates and converting them into US\$ per 100 tkm, the cross-border and transit tariffs are outlined in the following table. The conversion rate of 28.20 rubles for US\$ 1 is applied. The dispatch rate is US\$ 0.31 per 100 tkm.

³ Government charge levied by the transit country as a compensation for taxes and services rendered (such as security of pipeline. This does not fully reflect the entirety of the actual transport cost.

Company	Ruble / 100 tkm	US\$ / 100 tkm	Dispatch rate US\$/100 tkm	Total tariff, US\$/100 tkm
Sibnefteprovod	6.0679	0.22	0.31	0.53
Centersibnefteprovod	5.9309	0.21	0.31	0.52
Transsibneft	7.6733	0.27	0.31	0.58
Uralsibnefteprovod	5.3966	0.19	0.31	0.50
Severo-Zapadnye	5.0752	0.18	0.31	0.49
Verkhnevolzhsknefteprovod	6.4792	0.23	0.31	0.54
Privolzhsknefteprovod	6.0733	0.22	0.31	0.53
Druzhba	4.5338	0.16	0.31	0.47
Tshernomortransneft	12.2709	0.44	0.31	0.75
Severnye	12.9696	0.46	0.31	0.77
Baltnefteprovod	6.4791	0.23	0.31	0.54

This result shows that on average the cross-border tariffs of Transneft's pipeline enterprises are lower than US\$ 1.11 per 100 tkm and US\$ 0.73 per 100 tkm of transit tariff rates. The only exception is Tshernomortransneft with the rate of US\$ 0.76 per 100 tkm. Its pipelines are widely used for both export and transit purposes. In this case transit tariffs for Kazakh crude oil are slightly lower.

The domestic tariffs differ from cross-border rates because of VAT (18%). However, an 18-% VAT does not significantly change the picture

Company	Export Tariff, US\$/100 tkm	VAT (18%)	Domestic tariff Equivalent US\$ / 100 tkm
Sibnefteprovod	0.53	0.09	0.62
Centersibnefteprovod	0.52	0.09	0.61
Transsibneft	0.58	0.10	0.69
Uralsibnefteprovod	0.50	0.09	0.59
Severo-Zapadnye	0.49	0.09	0.58
Verkhnevolzhsknefteprovod	0.54	0.10	0.64
Privolzhsknefteprovod	0.53	0.09	0.62
Druzhba	0.47	0.08	0.56
Tshernomortransneft	0.75	0.13	0.88
Severnye	0.77	0.14	0.91
Baltnefteprovod	0.54	0.10	0.64

8.3.2 Ukraine

The current tariffs for Ukrainian shippers were introduced by the NKRE on 22/01/2003, and came into effect on 01/03/2003. The tariffs are calculated in Hryvnia per 1 mt for each section.

These tariffs are set for residents of Ukraine. This means, that the shipper is a Ukrainian venture. In case of delivery to the refinery, a rate of 20% VAT 20% is added to the tariff. The non-residents of Ukraine do not have to pay VAT. However, crude oil is not in all cases of Ukrainian origin. The crude oil produced in the East of Ukraine comes from Gneditsy, Glinsko-Rozbyshevskaya and Malaya Pavlovka. The oil produced in the West Ukraine comes from Dolina. To compare tariffs, it is necessary to separate deliveries of imported crude oil

from domestic crude oil deliveries. To compare transit tariffs with domestic ones a conversion of Hryvnia into US\$ is necessary. The conversion rate of 5.04 Hryvnia for US\$1 is applied.

Route	Tariff, Hryvnia/mt	Tariff, US\$/mt
Velikotsk-Lisichansk refinery	7.9	1.57
Velikotsk-Kremenchug refinery	18.4	3.65
Velikotsk - Kherson refinery	27.3	5.42
Velikotsk - Odessa refinery	31.8	6.31
Golovashevka - Kremenchug refinery	11.5	2.28
Golovashevka - Kherson refinery	20.4	4.05
Golovashevka - Odessa refinery	24.9	4.94
Gneditsy - Kremenchug refinery	9.2	1.83
Gneditsy - Kherson refinery	18.1	3.59
Gneditsy - Odessa refinery	22.5	4.46
“Glinsko-Rozbyshevskaya” - Kremenchug refinery	7.6	1.51
“Glinsko-Rozbyshevskaya” - Kherson refinery	16.4	3.25
“Glinsko-Rozbyshevskaya” - Odessa refinery	20.9	4.15
M. Pavlovka - Kremenchug refinery	9.3	1.85
M. Pavlovka - Kherson refinery	18.2	3.61
M. Pavlovka - Odessa refinery	22.7	4.50
State border (32 km) – Drohobych refinery	17.9	3.55
State border (32 km) - Brody	12.9	2.56
Dolina - Drohobych refinery	5.3	1.05
State border (32 km) – Nadvyrnyansk refinery	22.4	4.44
Dolina – Nadvyrnyansk refinery	6.1	1.21

The comparison to the transit tariffs is misleading, because of the significant difference in diameter. The Gneditsy-Glinsko-Rozbyshevskaya pipeline has a diameter of 377 mm, the Glinsko-Rozbyshevskaya-Kremenchug (refinery) section 530 mm, Dolina-Drohobych (refinery) 273 mm, and Velikotsk–Kremenchug 1,020 mm.

In the table below tariffs are recalculated into US\$ per 100 tkm. As shown, the tariffs for transit/cross-border crude oil transportation are equal or lower than tariffs for crude oil of domestic origin (except Odessa-Brody). But there is significant difference in the diameter and turnover.

Route	Diameter, mm	Tariff, US\$/mt	Distance, km	US\$/100 tkm
Gneditsy - Kremenchug refinery	377/530	1.83	209	0.88
Glinsko-Rozbyshevskaya - Kremenchug refinery	530	1.51	145	1.04
Velikotsk-Kremenchug refinery	1,020	3.65	580	0.63
Dolina - Drohobych refinery	273	1.05	58	1.81
Velikotsk – Odessa port	1,020/720	6.30	1,097	0.57
Druzhba to Slovakia	530/720	5.60	634	0.88
Odessa – Brody	1,020	12.70	674	1.88
Velikotsk - Yuzhniy	1,020/720	12.00	1,112	1.07

8.3.3 Kazakhstan

The cross-border tariffs of Kazakhstan differ from domestic ones by the factor of 0.46. This factor is applied in case of delivery to refinery for further processing. Below are given some examples of tariffs of different branches of KazTransOil converted into USD/100 tkm. Exchange rate of US\$ 1 = 130 Tenge is applied.

Route	Diameter, mm	Tariff, Tenge/mt	Distance, km	Tariff, Tenge/100 km	Tariff, US\$/100 tkm
<i>West Kazakhstan Branch</i>					
Uzen - Atyrau	1,020	1690.26	677	249.66	1.92
Zhetybai-Uzen	530	164.22	68	241.50	1.86
<i>East Kazakhstan Branch</i>					
Kumkol - Karakoin	530/720	483	199	242.71	1.87
Karakoin - Atasu	820	338.1	427	79.18	0.61
Priirtyshsk - Pavlodar	1,020	539.35	212	254.41	1.96
<i>Aktobsky Branch</i>					
Kenkiyak - Orsk	400	869.4	745	116.70	0.90
Zhanazhol - Orsk	400	992.57	891	111.40	0.86

Compared to CPC's calculated tariff of US\$ 1.95 per 100 tkm and Altayfrakht's transit tariff of US\$ 1.34 per 100 tkm, the cross-border tariffs of Kazakhstan are somewhere around these figures. The domestic tariffs are significantly lower due to a reduction factor 0.46 (described in Chapter 5).

9 Main Findings and Recommendations

9.1 Transit Tariff Principles of ECT and Draft Transit Protocol

In this analysis, the following provisions of the ECT related to transit tariffs and pipeline access are taken into consideration:

- Facilitation of energy transit by transit states on a non-discriminatory basis, which is defined as: (i) no distinction as to the origin, destination or ownership of energy (ii) no discrimination as to pricing on the basis of such distinctions, and (iii) no unreasonable delays, restrictions or charges (ECT Article 7.1).
- Treatment of energy in transit by transit states in no less favourable a manner than that of energy originating in or destined for transit states' own area (Article 7.3).

The draft Transit Protocol⁴ aims at further detailing the transit-related provisions of the Treaty in order to make them more operational and to avoid potential legal disputes. The relevant provisions of the draft Transit Protocol for this analysis are:

- A detailed definition for available capacity for transit in national energy networks (Article 1.2).
- Negotiation in good faith on access to available capacity based on transparent procedures, on commercial terms, and non-discrimination as to the origin, destination or ownership of the energy (Article 8.1).
- Objective, reasonable, transparent, non-discriminatory and cost-reflective transit tariffs (Article 10.1 and 10.3).

9.2 Main Findings of the Survey

General findings:

- Transit tariffs across the Energy Charter constituency show a wide range of variations: while it is as low as USD 0.47/100tkm for a part of the Belarusian section of the Druzhba pipeline, it is up to USD 1.95/100tkm in the case of the CPC pipeline.
- Tariffs for the Druzhba pipeline also differ by country. The tariff for the Ukrainian section is higher than that for the Belarusian section (approximately 0.49 vs. 0.88 in USD/100 tkm). The tariff per 100 tkm exceeds 1.00 USD in the case of BTC pipeline (Azerbaijan, Georgia and Turkey), Collide and Odessa-Brody pipelines (Ukraine), Baku-Novorossiysk pipeline (Azerbaijan and Russia), Altayfrakht and CPC pipelines (Kazakhstan and Russia).
- Tariffs and government charges (or royalty) should not be confused. A tariff is a fee paid by the customers to a pipeline operator for the use of the pipelines. It covers the costs of investment and financing, operating and maintaining the pipe and includes an element of profit for the operator. These costs may include such items as local taxes on commercial entities. A government charge, as in the case of Baku-Supsa pipeline, is a tax by a transit country, essentially as a fee for the right of way through that country's territory and as compensation or lump sum to compensate for taxes and freezing of taxes by Host –

⁴ Based on the Energy Charter Document CC 251

Government – Agreements and for service rendered by the country (such as protection of pipeline). But it is not related to costs of transport itself.

- Cost-reflective tariffs and negotiated tariffs are the two methodologies used in tariff-setting in the countries examined in this study, including Russia. Domestic and export tariffs are determined based on costs incurred, which also takes into account social and economic factors besides physical, technical and geographical characteristics as well as certain external parameters such as inflation. Transit tariffs are typically subject to negotiations between pipeline owner and transit parties. Specific requirements of a pipeline project may require the setting of tariffs for short-term (up to a year) or a longer term (from one to 15 years), in accordance with applicable regulatory rules.

Analysis of existing tariffs (i.e. transit, export and domestic tariffs) and underlying methodologies involves detailed examination of various factors, including a number of technical, economic, financial, geographical and legal/regulatory parameters. This would include, among others:

- Technical factors:
 - Pipeline design parameters such as capacity, diameter, length, pressure;
 - Actual utilization rate (load factor);
 - Composition/density.
- Economic factors:
 - Costs, including financing cost (premium for political/country risks);
 - Valuation of assets by replacement costs vs. book value;
 - External factors such as fluctuations in world steel prices, labour cost, inflation, and currency rate.
- Legal and regulatory factors:
 - Negotiated systems vs. regulated systems;
 - Pipeline access rules;
 - Transparency rules;
 - Access to congested pipelines;
 - Cost allocation in case of establishment of additional capacity.
- Other factors:
 - Climatic and natural conditions, including terrain, of the pipeline route and the associated costs;
 - Existing systems vs. new investments, in particular asset valuation (including, different methodologies used in asset valuation of existing systems);
 - Types of transit system: Pure transit line with no supply to transit country; transit line with some supply to transit country;
 - Pipeline ownership: Ownership and operation by state/state companies, by private investors or joint ownership;
 - Transit volumes vs. import volumes;
 - Quality management (commingled stream vs. batch operations and related investment costs).

Among various cost elements included in the tariff calculation, the two essential factors that have a significant impact on transportation / transit tariffs are pipeline throughput capacity (which is a function of pipe diameter) and utilization rate.

Different tariffication methodologies may be chosen by governments at the national level, taking into account of the particularities of the country's transportation and transit system. In this respect, it is worth mentioning that no provisions in the ECT and the draft Transit Protocol require, or give preference to, any specific transit tariffication methodology.

With respect to comparison of transit and export/domestic tariffs, it is difficult to find comparable flows. Each case requires detailed assessment of particular transit and domestic transport under different approaches and circumstances.

Application of different methodologies and particularities of each case may lead to differences, sometimes by significant margins, at the tariff levels between two transit cases or between domestic transport and transit of comparable movements. Varying aspects of a particular movement can create a wide range of tariffs, even under a methodology which is compatible with efficient system operation and adequate profits. The principles of the ECT, in particular the principle of cost-reflectiveness, should not be interpreted as requiring uniform benchmarks for transit tariffs.

With respect to the FSU area:

- The major parts of the FSU crude oil pipeline system (in particular, the Druzhba system) is the most complex oil pipeline transportation system within the Energy Charter area. Its development dates back to the 1970-1985 period. Similar to the FSU gas transportation network, the oil integrated transportation network carries crude oil to destinations within the FSU with its principal flow in the east-west direction. The division of this system into various segments following the dissolution of the USSR required a coordinated approach among the respective governments to continue the operation of the system and the established cross border flows. It has to take into account varying legal, regulatory and operational requirements at the national level, in particular on tariffication and pipeline access.
- Most FSU countries adopted a model with respect to transportation via oil pipelines based on a perception of pipelines as a natural monopoly. Most legislation recognizes the fundamental principle of non-discrimination with respect to tariffs and pipeline access.
- There exist a few cases of oil transit via Russia (through the Transneft pipelines or otherwise); their terms are settled through intergovernmental agreements (and frequently complemented by industry level agreements). Other transits within the FSU have similar regulatory set-ups.
- Rosenergo is the key player in the arrangement of transit through Russian pipelines. The agency's mission is to ensure optimum use of the entire system, including the congested pipelines, in the light of capacity requests both for export and transit purposes. The quota system for exports aims at efficient and fair utilization of certain congested pipelines. This system is implemented taking into account of existing transit commitments for the overall Transneft pipeline system. There is no clear settlement procedure with respect to access disputes.
- The CPC pipeline system is operated on the basis of related intergovernmental, shareholder and other commercial agreements and is not subject to the Russian and Kazakhstan regulatory regimes for tariffs and access (including the export quota system).
- The Russian domestic transportation tariffs are determined on a company basis, rather than pipeline basis, mainly due to the difficulties in cost calculation for particular pipeline

sections. Domestic and cross-border (export) tariffs are calculated based on the same tariffication methodology. Domestic tariffs are slightly higher due to the addition of 18% VAT to domestic tariff rates. While the export tariffs vary between USD 0.47 and 0.77/100tkm, domestic tariffs are within the range of USD 0.56-0.91/100tkm. The highest tariffs are observed for Tshernomortransneft and Severnye companies (USD 0.75 and 0.77/100tkm, respectively), pipelines which are widely used for Russian exports as well as transit of Azeri and Kazakh oil (i.e. deliveries through the Baku-Novorossiysk and Atyrau-Samara-Novorossiysk pipelines).

- The Baku-Supsa, CPC and BTC pipelines are good examples of private-state partnership in the cross-border pipeline transport area.
 - While the title of the Georgian section of the Baku-Supsa pipeline belongs to the Georgian state, a group of sponsor companies has obtained the long-term capacity utilization right for the pipeline in compensation for investment for the rehabilitation / expansion of the pipeline as well as payment of a government charge (i.e. royalty payment) to the Georgian state. It was the first oil pipeline to be built in the region after the collapse of the Soviet Union, later followed by the BTC pipeline. The Baku-Supsa pipeline has been developed, based on a project-specific legal/regulatory regime elaborated through the intergovernmental and host-government agreements, including pipeline access rules as well as tariffication. It is the investor companies who set up the access rules and tariffication of such access, based on the agreed criteria among the sponsor companies (i.e. negotiated access and tariffs).
 - In the case of CPC, the ownership and operation rights belong to the pipeline shareholders (which are three states and private companies). Pipeline access rules and transit tariffs are set through the shareholder and other relevant agreements among the project participants.
 - The BTC pipeline is also owned and operated by the pipeline shareholders. Although there is no direct stake holding by states in this project, state-owned companies take part as shareholders. Access to pipeline and tariff-setting is regulated by pipeline shareholders independent of national regulatory regimes. While government charges are determined in the host-government agreements, the overall transport tariff is set through negotiations between the shareholders and companies requesting access.

In Western Europe:

- The EU does not consider oil pipelines as natural monopolies given the existence of other transport means in competition (such as sea and road transport). The issues of pipeline access and tariffication are subject to general competition rules at the EU and national levels.
- Crude oil transit in the Western Europe is rare. Presently the only cases are: TAL, SPSE and the offshore Norpipe oil pipeline from Ekofisk to Teesside.
 - The entire capacity of the TAL and SPSE pipelines is dedicated to exclusive use of its shareholders, which are owners of oil refineries supplied by the pipelines.
 - Norpipe, however, belongs to oil producers of the Ekofisk area. As required by the Norwegian laws, Norpipe allows other pipelines from adjacent fields to tie in the system and access to available capacity in Norpipe.
 - Tariffs are based on sharing of costs actually incurred by the pipeline joint venture.

9.3 Conclusions

- Lack of *transparency* of transit tariffs is an important challenge within the ECT area. In most of the countries, such tariffs are negotiated at the state level and set through intergovernmental agreements. Such negotiations are often conducted under strict confidentiality and the outcomes are very rarely (or only partially) revealed to the public. Similarly, for project-driven transit pipelines which are built by private companies, a system of negotiated access and tariff-setting (between pipeline shareholders and companies requesting access) is predominant.

In case of negotiated access, more transparency would be required on the outcome of negotiations involving state parties, including those at inter-state and state-investor levels (i.e. treaties and other agreements involving governments).

- In the countries where pipeline transport of oil is regarded as natural monopoly, access and tariffs for *domestic transport* are regulated by the state and they are often published. In Western Europe, oil transport activities are commercially driven among private actors without state interference and only subject to general competition rules of the EU and the country itself.
- The system of negotiated access to pipelines for transit, which is widely used across the ECT constituency, can be in conformity with the Energy Charter Treaty so long as its requirements are fully met, in particular as in Article 7 and including the need for non-discrimination and transparency in the associated procedures.
- The lack of transparency makes a thorough assessment of the degree of *cost-reflectiveness* of transit tariffs difficult. The peculiarities of each transit case associated with its technical, economic, geographical, legal/regulatory and other characteristics would result in a range of possible cost-reflective tariffs. Therefore, a reliable assessment of cost-reflectiveness with respect to a specific case would require a more elaborated analysis of all variables.
- There are few cases where national and transit flows are comparable and where tariffs are publicly available. Moreover, in the absence of sufficient transit tariff data in most cases, such an analysis cannot be based solely on a comparison of tariffs charged, but requires a detailed review and analysis of relevant legal and regulatory regime and practical implementation.