Bringing Gas to the Market

Gas Transit and Transmission Tariffs in Energy Charter Treaty Countries:

Regulatory Aspects and Tariff Methodologies

Energy Charter Secretariat 2012

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Preface

Demand for natural gas is expected to increase significantly in the decades to come. International gas markets will continue to change due to the shale gas revolution, a growing role of LNG and changing energy policies of the consuming countries. International trade in natural gas will grow in any event. Major suppliers will play an even stronger role and will use both pipelines and LNG to sell natural gas on their traditional and new emerging consumers' markets. At the same time, efforts by the consuming countries to diversify their sources and routes of supply will be stepped up. In parallel, new suppliers will strive to sell natural gas under more favourable conditions on the global market. Such new suppliers are often located in land-locked countries, thus making it necessary to have the appropriate cross-border and transit transportation infrastructure in place.

The Energy Charter Treaty of 1994, which is today in force in 46 countries in Eurasia as well the European Union as a whole, has strong provisions aiming at the facilitation of transit and cross-border energy transport infrastructure. The Energy Charter's policy forum has been used to discuss common principles for transit and cross-border energy transport, including access rules, tariffs, congestion management mechanisms and emergency response mechanisms. Laying down such principles in a binding Protocol remains an attractive option for the members of the Energy Charter Treaty.

This study focuses on natural gas transit and transmission tariffs as one critical aspect in view of the development of mutual beneficial cooperation and open markets. It analyses the underlying methodologies and tariff principles used in member countries of the Energy Charter Treaty, paying particular attention to developments in the Europe, the Black Sea region and Central Asia.

For this study, the 2006 report "Gas Transit Tariffs in selected Energy Charter Treaty Countries" has been substantially revised, using information provided from governments and available from open sources. The study was written by Florian Encke under the responsibility of the Directorate for Trade and Transit of the Energy Charter Secretariat, headed by Steivan Defilla.

This study is published under my responsibility as Secretary General and is without prejudice to the positions of Contracting Parties or their rights or obligations under the Energy Charter Treaty or the WTO Agreements. References to EU and national legislation have been made for illustrative purposes only and may not have any legal relevance.

Urban Rusnák
Secretary General
Brussels, 5 October 2012

Table of Contents

CHAPTER 1: Executive Summary

Under the Energy Charter Treaty of 1994, which is today in force for 46 countries in Europe and Asia as well as for the European Union as a whole, contracting parties shall work to promote access to international markets on commercial terms, and generally to develop an open and competitive market, for energy materials and products. Access conditions for the utilisation of the transport infrastructure are of paramount Importance for energy trade, in particular for electricity and gas, but also for oil. Tariffs play an important role in determining such access conditions and are the main subject of this study.

As a multilateral agreement the Energy Charter Treaty does not provide a detailed regulatory framework for the management of the energy transport infrastructure. Instead it focuses on energy transit as an important factor for international trade in energy. Reliable transit of energy is a critical issue for regional and global energy security, as energy is increasingly transported across multiple borders on their way from producer to consumer. Common rules and close cooperation among states and private companies are required to secure energy flows in transit, to develop and operate energy transport facilities and to make transit of energy commercially viable. Such rules may serve the interest of all stakeholders in the energy supply chain: energy producers and consumers in securing and diversifying sales and purchases, and transit countries in increasing the attractiveness of energy supply routes through their territory.

In 2006, the Energy Charter Secretariat published a study on gas transit tariffs in selected ECT countries. The Charter members have requested an update of the study to reflect recent changes, for presentation to the general public.

Since the first edition was published, major reforms of European gas markets have taken place and still continue. In result, it has become even more difficult to analyse gas transit tariffs separately from domestic transmission. This report will therefore discuss the methodologies for transmission tariffs in general, but with special emphasis on how gas transit may be effectuated under the rules applicable, whether these are transit-specific or not.

Like the previous edition, this study focuses on tariffs as a key factor determining the openness of infrastructure and energy markets in general. Access conditions to gas pipelines, which sometimes represent an even more important hurdle for gas flows than the levels of tariffs, are addressed only as necessary.

For the purpose of updating the 2006 study, the Energy Charter Secretariat has asked the members of the Charter to provide answers to a tailor-made questionnaire that has been drafted specifically for that purpose. Twenty-three countries from the Charter constituency have provided answers, representing EU member states, South-East European states, states from the former Soviet Union (FSU) as well as Japan. Most of the information used in this report is based on official information thus provided,

while open sources have been used to complement this information and to reflect the ongoing discussion where appropriate.

On the basis of this pool of information, but also in view of the developments with regard to tariff methodologies, notably the application of entry-exit tariffs in the majority of countries analysed, a comparison of actual tariffs was not considered to be the objective of this study. Rather has the focus been put on approaches with regard to tariff methodologies which could be identified as common standards.

The study shows that core principles like the regulation of tariffs on the basis of published laws, the establishment of regulatory authorities, and tariff principles like transparency, non-discrimination and cost-reflectiveness are broadly shared among the countries analysed, while concrete methodologies to determine tariffs on the basis of a regulated asset value and rate of return as well as the unit tariff methodologies vary significantly. With regard to the market structure and in particular mandatory third party access and unbundling differences are more obvious, in particular between the EU and FSU countries. Furthermore, separate transit regimes are rare and mainly exist on the basis of exemptions from normal regulation or intergovernmental agreements. The possibilities of providing a particular treatment to transit, e.g. in the sense of an active facilitation by governments as foreseen in the Energy Charter Treaty, have become slim. Such findings will be relevant in view of the consultations within the Energy Charter on a possible reset of the negotiations on Protocol on Transit and cross-border cooperation.

CHAPTER 2: Outline

This study will first look at the phenomenon of transit and the different transit systems that exist in Chapter 3.

In Chapter 4 the regulatory regime will be discussed, with the role of the regulator looked at together with common legal requirements such as third-party access to the high pressure gas pipelines and unbundling in view of the separation of transmission activities from production and supply. A separate section will discuss the absence of separate regulatory regimes for transit and the possibilities of separate treatment of transit within the overall applicable regulation. The role of intergovernmental agreements will then be discussed, which often provide a basis for an exemption of transit from regulation and thus for a separate treatment.

Chapter 5 addresses tariffs as opposed to other charges and fees as well as main tariff principles.

The methodology of gas transmission tariffs will be discussed in Chapter 6. Countries normally choose between rate-of-return (cost-plus) regulation and incentive (cap) regulation. The number of possible combinations of various elements characteristic of one or the other approach is unlimited. Basic aspects such as the revenue requirement, the regulated asset value, operative costs and return on invested capital will be covered.

A network tariff is calculated with the help of a methodology to break down allowed costs to individual network users. Developments with regard to unit tariffs methodologies are shown in section 6.6, with special emphasis on the increasing use of entry-exit tariffs. A conclusion follows summarising the findings on the common principles applied to transmission in general as well as on the treatment of transit.

Though the negotiations on the Transit Protocol have not been concluded, the draft text provides important points of reference for an analysis of conditions for transit, including the different methodologies for setting tariffs, in the member states of the Energy Charter Treaty. This study will make references to the text of the draft Transit Protocol as presented to the Charter Conference in 2003.[1] However, the Energy Charter Secretariat wishes to underline that the information provided in this report shall not be interpreted as an assessment of member states' compliance with the Energy Charter Treaty.

Due to the fact that in the EU differences between transit flows and national transports have been abolished, this report borrows the term "transmission" from EU terminology as a unique category covering both services.[2] In other parts of the Energy Charter's constituency this term is not applied however. For this reasion, the term "transport" will also be used occasionally, which is to be understood as a synonym for "transmission".

1 See http://www.encharter.org/fileadmin/user_upload/document/CC251.pdf.

2 According to the definition in the EU Gas Directive 73 "'transmission' means the transport of natural gas through a network, which mainly contains high-pressure pipelines, other than an upstream pipeline network and other than the part of high-pressure pipelines primarily used in the context of local distribution of natural gas, with a view to its delivery to customers, but not including supply".

CHAPTER 3: Trade and Transit Flows and Infrastructure

3.1 Transit Volumes

The Energy Charter Treaty (ECT)'s main added value with regard to transit is its rules related to transit of energy by fixed infrastructure. In order to assess their added value for facilitating international trade in gas it is necessary to have a clear view of the scope of gas transported by pipeline across borders and in particular those transiting third countries. Table 1 (next page) shows trade in natural gas by pipeline between member states of the ECT as well as some observer countries. Cases involving transit, where two trade partners do not have a common border, have been marked yellow. To facilitate comparison, total imports and exports by LNG have been listed as well. The data in the table come from BP's statistical review of world energy and reflect trade movements in 2010.

Table 1 shows that in spite of the growing importance of LNG trade, about 70% of global natural gas exports are still transported by pipeline. In the region of Europe and the former Soviet Union, which represents the geographical focus of this study, the share is even as high as 84%. While in the Far East LNG trade dominates and new LNG degasification plants are being constructed, there are also a significant number of important pipeline projects under way. One example is the Central-Asia-China Pipeline, from which China imported for the first time in 2010 3.55 bcm of natural gas from Turkmenistan.

The importance of gas transit for a number of ECT member states is illustrated in Table 2, which lists transit volumes and puts those into context with domestic energy supplies in 2010. The table shows that Ukraine remains the most important gas transit country.

Another observation is that the transit volumes have a varying degree of importance in relation to overall gas flows in the country. Whether a transit country is also a large consumer of natural gas and or whether transit volumes are significantly higher than domestic supplies or vice versa will be a matter of consideration for the country in designing its regulatory approach to the operation of high pressure gas pipelines. This issue will be addressed below.

Comprehensive data on transit volumes for all countries could not be obtained, as many countries in the EU do not distinguish domestic flows from transit flows any more.

3.2 Types of Transit Systems

In general, four kinds of transit system can be distinguished:

a) a pipeline crossing sovereign territory and carrying transit gas without any connection to the gas supply system of the transit country. This provides the clearest definition of a transit line, but is rare in practice;

Table 1: Natural Gas Volumes Supplied by Pipeline in 2010 (bcm)

Gas pipeline trade 2010, bcm From / To	Algeria	Azerbaijan	Belgium	Denmark	France	Germany	Kazakhstan	Libya	The Netherlands	Norway	Russia	Turkmenistan	UK	Uzbekistan	Total pipeline import	For reference: Total LNG import
Austria						0.44				1.08	5.25				6.77	0
Armenia											1.29				1.69	0
Belarus											19.52				19.52	0
Belgium						0.81			5.5	6.91*			4.95		18.13	6.43
Bulgaria											2.16				2.16	0
Croatia											1.03				1.17	0
Czech R.										3.1	8.44				11.54	0
Finland											4.5				4.5	0
France			1.2			3.98			6.85	14.15*	8.05		0.6		34.95	13.94
Georgia		1.03									0.21				1.24	0
Germany				1.14					24.2	30.2	34.43		2.85		92.82	0
Greece											2.05				2.71	1.17
Hungary					0.7	0.3					6.47				7.47	0
Ireland													5.29		5.29	0
Italy						2.5		9.41	8.11	5.75*	14.2		0.5		66.26	9.08
Kazakhstan											0.74			2.9	3.64	
Lithuania											2.63				2.63	0
The Netherlands				0.76		2.61				8.11	4.03		1.46		16.97	0
Poland						1.07					9.08				10.15	0

Continued: Natural Gas Volumes Supplied by Pipeline in 2010 (bcm)

Gas pipeline trade 2010, bcm From / To	Algeria	Azerbaijan	Belgium	Denmark	France	Germany	Kazakhstan	Libya	The Netherlands	Norway	Russia	Turkmenistan	UK	Uzbekistan	Total pipeline import	For reference: Total LNG import
Portugal	1.43														1.95	3.01
Romania											2.15				2.15	0
Russia		0.72					11.95					9.68		10.32	32.67	
Serbia											1.91				1.91	
Slovakia											5.47				5.47	0
Spain	12.05*		0.08		0.23					3.3*					8.86	27.54
Sweden				1.64											1.64	0
Switzerland					0.6	2.15			0.55	0.05	0.28				3.63	0
Turkey		4.35									16.64				28.76	7.92
Ukraine											33.03				33.03	0
UK			1.26						8.07	26.57					34.06	18.67
Japan															0	93.48
China												3.55			3.55	12.8
South Korea															0	44.44
Pipeline exports	33.48	6.45	3.08	3.54	1.53	14.76	11.95	9.41	53.33	95.88	186.45	19.73	15.65	13.56	677.59†	
For reference: LNG exports	19.31	0	0.57	0	0	0	0	0.34	0	4.71	13.4	0	0	0		297.63†

* partly LNG † for reference: world total cases involving transit

Table 2: Relationship between Domestic Supplies and Transit Volumes in Selected Countries (bcm, 2010)

	Domestic supply	Transit
Ukraine	57.1	98.6
Slovakia	4.6	61.54
Czech R.	8.98	29.5
Belarus	21.9	43.2
Switzerland*	3.5	7.5
France	49.5	4.15

* *Transit volumes have been significantly lower in Switzerland in 2010 because of a temporary interruption of the transit line. From 2004 to 2008 twice as much gas used to transit to Italy through Switzerland.*

b) a transit pipeline which is owned by a separate entity and which is predominantly used for gas transit, but also used to supply gas of the same origin to the transit country;

c) a transit pipeline system which is integrated into the domestic supply system and which is owned and operated by the main national transmission operator, but where the transit gas flow can still be traced;

d) Systems where transit volumes commingle with a highly meshed national grid which are working like a tub, where additional inflow just raises the overall level and will be compensated by corresponding output volumes.

In this section, the adherence of countries to one of the four models is determined from the viewpoint of physical transit flows through the given country, and not based on the definition and treatment of transit gas in applicable regulation. Notably, EU legislation does not distinguish between transmission and transit. It is obvious that a number of countries do not have any transit flows due to their geographical situation as an island or at the end of the supply chain (e.g., Armenia, Cyprus, FYROM, Portugal) or at its beginning (Norway). But even if the majority of countries analysed does have gas flows in transit, the pipeline systems are almost always integrated with the domestic supply system.

Examples for type a) of a separate system are the transit lines across Kazakhstan and Uzbekistan from Turkmenistan, and the lines from Algeria across Morocco, as no or only small amounts of transit gas are delivered to these transit countries.

Type b) was common in the past for the transit lines for Russian gas in the former Comecon states. It can still be seen within the EU in the cases of the TAG and WAG lines taking Russian gas across Austria to Italy and Germany respectively and MEGAL taking Russian gas further across Germany or the TENP taking Dutch gas to Switzerland and Italy. Another example is the Polish section of the Yamal pipeline, which has two entry points into the Polish transmission system. The pipeline is owned by EuRoPol Gaz S.A., but following an agreement signed on 25 October 2010, Gaz-System S.A.,

the Polish Transmission System Operator (TSO), has been installed as its operator. This exemplifies the changes in the European gas transmission networks caused by the Third Energy Package, which will be addressed below.

Examples for type c) are the Ukrainian, Belgian or Slovakian systems. Type d) can be found in the UK, Germany and France, and to a lesser extent Italy.

These four transit systems may imply different methods and approaches with regard to the regulatory regime and to the transit tariffs in particular. They eventually may require that gas transit is treated differently from domestic flows. As will be shown, the evolution of regulation leaves less flexibility for such different treatment.

3.3 Ownership

Gas transmission infrastructure may be privately or state owned. Private sector entities may receive concessions from the public administration to finance, design, construct and operate a facility. Under the Build-Operate-Transfer (BOT) regime the public administration delegates to a private undertaking to design and build infrastructure and to operate and maintain these facilities for a certain period. The private party has the responsibly to raise the finance for the project, is entitled to retain the revenues generated by the project and is the owner of the regarded facility. The facility will be transferred to the public administration at the end of the concession agreement. In the case of a Build-Own-Operate-Transfer (BOOT) regime the private entity is the owner of the facility during the concession period. Build-Own-Operate is the regime where ownership remains with the private entity and no transfer to the public administration is foreseen.

The typical ownership regime in the EU is BOO. In Georgia, both BOO and BOT regimes exist for gas pipelines. Contractually, at the end of pipeline transportation projects, either decommissioning or handover of pipelines can be envisaged. Principal gas transmission pipelines are state property.

In a number of countries analysed the gas transmission or transit infrastructure is state owned. This is the case in Ukraine, where "UkrTransGaz" has been licensed to operate the gas network. The transmission system is considered a national asset and its privatisation forbidden by law.[3] In Kazakhstan, the main high pressure gas pipelines are owned by the Committee of state ownership and privatisation of the Ministry of Finance, and operated by the JSC "Intergaz Central Asia".

In most cases ownership of the gas infrastructure is with private companies, yet often with the state as a major stakeholder. Examples for 100% state ownership in the gas network owners and operators are Energinet.dk in Denmark, Bulgartransgaz in Bulgaria, GasTransportServices in the Netherlands, as a subsidiary of Gasunie, GazSystem in Poland and Botaş in Turkey, the latter being a vertically integrated company; the respective states hold 75.5% of the shares in Romanian Transgaz, 65% in Greek Desfa, 51% of SPP, the mother company of Slovakian Eustream, 51% of REN in Portugal, 45.8

3 Law of Ukraine "On Pipeline Transport".

in Norway's Gassled through Petoro (and more through the Norwegian state's shares in Statoil, which owns 28.48% of Gassled), and 20% of Armenian ArmRosGazprom. In Belarus, the state sold its remaining 50% share of Beltransgaz in November 2011, making Russian Gazprom the single owner of the pipeline company.

There is an equally significant number of transmission system owners dominated by private investors. This overview shows that regulatory regime and ownership are not directly linked.

There may be good reasons for maintaining transmission systems either under public or under private ownership. From the Danish point of view, as voiced for this study, a cost-based regulation (without profits) combined with public ownership of the transmission system reduces risk and allows the TSO to undertake non-commercial investments to be undertaken with a view to maximising overall consumer benefits (e.g., investments aiming at increasing competition, security of supply, environment or new technologies). Others might see a risk that in such an environment, investment decisions could be made independent from market requirements and might thus be inefficient. There cannot be any generalised answers as to which model is more suitable in the concrete market environment.

3.4 Pipeline Economics

Before discussing the regulatory regimes in place it is useful to recall some fundamentals of pipeline economics. Regulatory regimes need to take them into account in order to make pipeline projects financially feasible and creditworthy.

Pipeline construction requires large up-front investment. Gas projects have long lead times between the planning of a project and the first revenues, increasing financial risks associated with it.

Given the high capital investments required for large long-distance pipelines, corresponding high-value consumer markets and substantial proven reserves need to be in place. The investment decision regarding the construction of a new import pipeline should ideally be underpinned by corresponding sales and purchase agreements.

Capital charges are the predominant factor determining the cost of transmission.[4] The main factors determining construction costs are diameter, operating pressure, distance and terrain. At a given pressure, the volume of gas which can be carried through a pipe rises approximately with the square of the diameter. Increasing the operating pressure has two positive effects – first, the transport capacity increases, and second, the friction losses referred to the gas transported, decrease. High-pressure pipelines are thus able to reconcile transport requirements with the reduction of transportation costs. The steel price has an obvious impact on the construction costs,

4 Typically at least 90% of the cost, see Cornot-Gandolphe/Appert/Dickel/Chabrelie/Rojey: The challenges of further cost reductions for new supply options (Pipeline, LNG, GTL), presented at the 22nd World Gas Conference, 1-5 June 2003, Tokyo, Japan.

which is subject to fluctuations and dependent on currency exchange rates. Material costs rise with the distance of the pipeline, which is why this factor is also crucial with regard to the competitiveness of a pipeline, e.g. in comparison to an LNG option. From this perspective, it will be shown below that distance-based tariffs correspond to the requirement of cost-reflectiveness, even if they may have disadvantages with regard to other important aspects.

CHAPTER 4: Regulatory Regime

In most countries, gas pipelines are treated as natural monopolies, requiring some form of external control to regulate tariffs and access conditions. In principle, it is possible for competing pipelines to be built and for tariffs to be set by market forces or by negotiations, but in practice throughout ECT countries some form of external control exists which regulates, or at least oversees, the formation of gas pipeline tariffs and access conditions.

Regulatory regimes in the countries analysed differ and so does the treatment of energy In transit. While regulated access to pipelines with tariffs set by regulatory authorities is becoming the norm in most of the countries analysed, negotiated access including negotiated tariffs are still practiced, for transit and for some specific pipelines.

4.1 The Role of Regulators

Most countries analysed in this study have established specialised agencies in charge of the regulation of gas transmission tariffs. In the EU and the Energy Community,[5] the designation of a single national regulatory authority at national level is an obligation from Art. 39 of Directive 2009/73/EC. Regulatory authorities shall be independent from any other public or private entity and be able to take autonomous decisions. According to Art. 6 of Directive 2009/73 EC, the regulatory authorities in the EU member states shall be responsible for fixing or approving at least the methodologies for connection and access to national networks, including transmission and distribution tariffs. The portfolios of regulatory authorities may differ. In Ukraine, the regulation of the natural gas market is entrusted to the National Commission for state regulation in the energy sector (NERC [NKRE]). In Georgia, the National Energy and Water Supply Regulatory Commission has been established as an independent regulatory body. In Kazakhstan, the Agency of the Republic of Kazakhstan for the Regulation of Natural Monopolies (ARNM RK) is in charge of the regulation and control of tariffs, in Armenia the Commission for the Regulation of Public Services. In Turkey, EMRA, the Energy Market Regulatory Authority, is the key institution in natural gas market reform, acting as the independent regulator for electricity, natural gas, petroleum and LPG markets. Ministries or their branches are acting as regulatory authorities in Belarus (Ministry of Economy) or Norway (Oil and Gas Department). A list of regulatory authorities in provided in the Annex.

Even if regulatory authorities exist in almost all countries analysed, their competences differ as much as the procedures they apply with regard to transmission tariffs. In particular transit tariffs are negotiated in a number of major transit countries like Belarus, Georgia, Kazakhstan or Ukraine, which however apply regulated tariffs for domestic transportation. With regard to transit the regulator does not have any competences. Negotiated tariffs are also applied in Turkmenistan, where the main body

5 Following the decision of the Ministerial Council of the Energy Community of 6 October 2011, the Energy Community need to make their legislation in the energy sector compliant with the rules provided for in the Third Internal Market Package, taking into account its own institutional framework and the specific situation of each of its Contracting Parties.

for the gas industry is the national gas company Turkmengas. In the case of regulated tariffs regulatory authorities may either set or approve tariffs or the methodology for setting them to be applied by the TSO. In the EU, regulatory authorities have the duty of fixing or approving, in accordance with transparent criteria, transmission or distribution tariffs or their methodologies (Art. 41 of Directive 2009/73/EC). This allows for various different approaches. In Belgium, tariffs are proposed by Fluxys, the Belgian TSO, for four years to come and then approved by the national regulator. In France, the previous requirement of an approval of tariffs by the Ministers in charge of Energy and Economy has been removed in the context of the transposition of the Third Internal Market Package, leaving this function to the regulator alone. In Spain, a regulatory agency has been set up (CNE), but tariffs continue to be approved by the Ministry of Industry, Tourism and Trade. In Denmark and the UK methodologies rather than tariffs are approved. Regulators may also set price or revenue caps depending on the methodology used (see below).

It should be noted that while regulatory authorities exist in most countries, their level of independence varies. Independence may be understood as the authority to take autonomous decisions without interference neither from the political side of the government nor from industry. In the European Union, this high level of independence is now a requirement under the Third Internal Market Package. The level of independence is obviously lower were regulatory tasks are executed by a government branch or a national company.

4.2 Third-Party Access

The role of the regulator is of particular importance in countries with a regime of third party access to the pipeline system. The purpose of third party access to energy infrastructure built as natural monopolies is to increase competitiveness and thereby to lower prices for the final consumer by enabling him to choose among different suppliers. The regime will be most effective when alternative suppliers are available in the market. Access regimes are not the primary focus of this study. However some information in this regard may be helpful for understanding the role of regulatory authorities and the tariff methodologies applied. In particular, in the case of the EU, there is a preference for market-based capacity allocation mechanisms, establishing a direct link between the access regime and the transmission tariffs.

In the EU, Art. 32 of Directive 2009/73/EC requires that a system of third party access (TPA) to the transmission and distribution system, as well as LNG facilities, is established, based on published tariffs, applicable to all eligible customers, including supply undertakings, and applied objectively and without discrimination between system users. Like most of the rules from the EU's Third Internal Market Package, TPA will also be an obligation in the parties to the Energy Community Treaty as of 1 January 2015. It is worth noting that while the ECT has strong provisions aiming at an open and competitive market and in particular with regard to transit Understanding 1 with respect to the Treaty as a whole states that "the provisions of the Treaty do not oblige any Contracting Party to introduce mandatory third party access". Outside the EU, mandatory TPA has been notified by Georgia, FYROM, Norway and Switzerland.

The Swiss pipeline law (Rohrleitungsgesetz) obliges the operators of high pressure pipelines to provide transport services for third parties, if those are technically possible, economically feasible and if the third party provides an appropriate return. In addition, the sector has entered into a voluntary self-commitment which provides for the conditions of network access for third parties.

In Kazakhstan, the TSO Intergaz Central Asia (ICA) is obliged to provide free access for suppliers to the gas transmission system at any time and to conclude a corresponding contract provided capacity is available and the quality of the gas corresponds to national standards and norms. Regulated and non-discriminatory TPA to the transmission and distribution is foreseen in Turkish legislation. Rules for TPA and related tariffs are set in the network code, which entered into force on 1 September 2004. In case of rejection of TPA, the rejected party can complain to EMRA, the regulator, whose decision is final and binding. In Turkmenistan, TPA is possible, but not an obligation; and exceptions are possible. TPA is not provided in Belarus.

It should be noted that a special access regime has been established between Belarus, Kazakhstan and Russia by their Agreement of 9 December 2010.[6] According to this agreement the parties will, following the successful implementation of a number of measures and in the margins of technical feasibility and available capacity, provide companies of the other parties access to their gas transmission system for the purposes of domestic supplies on equal conditions with other suppliers, except for those which are the owners of the transmission system.

Exceptions from TPA may be made for various reasons, with the most important one motivated by the fact that it is often the only way to achieve economies of scale as necessary to get proper financing for new major projects. In the EU exemptions for new gas infrastructure, i.e. interconnectors, LNG and storage facilities may be granted on the basis of Art. 36 of Directive 2009/73/EC. A special procedure is foreseen for such exemptions which also involves the European Commission. Exemptions are listed on the website of the European Commission. Under current decisions the BBL, Poseidon, Nabucco, OPAL and Gazelle pipelines are exempt from the Directive. The Directive further allows a derogation from the TPA regime in the cases of Cyprus, Estonia, Finland, and Latvia by this Directive on the basis of isolated and emergent markets.

In Lithuania, exemptions are possible in view of a lack of capacity or a conflict with public service obligations or on the basis of serious economic and financial difficulties with take-or-pay contracts. In Germany, operators can reject access to the extent they demonstrate that it is not possible or is not reasonable due to the operational or other reasons. The refusal shall be substantiated in writing and promptly notified to the regulatory authority. In France, exceptions are possible for new interconnections and new LNG terminals. In Spain, an ancient transit contract from Morocco to Portugal is in place which remains outside the general requirement of third party access. In Poland, existing contracts may be reasons for refusal. A mechanism is in place to ensure

6 Agreement on Rules of Access to Services of Natural Monopolies in the Area of Gas Transportation through Gas Transportation Systems, Including Pricing and Tariff Policy (Moscow, 9 December 2010).

reciprocal access in case of non-eligibility of a consumer for a supplier from another EU member state or the European Economic Area.

Outside the EU, exemptions are possible as well, as in the case of Armenia for the purpose of the reliability and safety of the system and technical requirements.

4.3 Unbundling

When developing its legislation on the gas market, the EU has made it clear that "without effective separation of networks from activities of production and supply (effective unbundling), there is a risk of discrimination in the operation of the network but also in the incentives for vertically integrated undertakings to invest adequately in their networks".[7] Whereas the First Internal Market Package provided for separate accounts (Directive 98/30 EC) and the second package for independent transmission operators at least in terms of legal form, organisation and decision making when part of an integrated undertaking (Directive 2003/55 EC), the most recent third package provides for ownership unbundling, while also allowing for the establishment of "independent system operators" and "independent transmission operators".[8] Effectively, companies may choose between these options. Estonia, Latvia, Finland and Cyprus are at this stage exempt from the obligation of unbundling and market opening due to their status as emergent and isolated markets. TSOs in the EU are either legally unbundled or independent in terms of ownership. In Lithuania, JSC Lietuvos Dujos, which supplies more than 99% of the total natural gas volume demanded by Lithuanian customers, has not been subject to legal unbundling, but individual book-keeping and financial statements exist for each activity. However, on 30 June 2011, amendments to the Law on Natural Gas have been introduced, provided for the splitting of Lietuvos Dujos into three separate entities.

For the Energy Community, the obligation of unbundling will be applicable as of 1 June 2016. At this stage the gas transmission system of Ukraine is not separated from production. Distribution (not transmission) and supply will be separated and the category of eligible consumers as well as guaranteed suppliers be introduced as of 1 January 2012. The gas law of 2010[9] requires legal and organisational unbundling of vertically integrated enterprises. Unbundling has been carried out in Georgia. In Kazakhstan, the gas pipeline operator ICO is only mandated to provide transmission services and is not engaged in production or supply. Still, ICO is, through KazTransGaz, a subsidiary of the national oil and gas company KazMunaiGaz. Studies are ongoing in Turkey to ensure unbundling in the natural gas sector. There is no unbundling in Belarus.

7 Recital (6) of Directive 2009/73/EC.

8 For more information see the EU Commission Staff Working Paper on the Unbundling Regime, 22 January 2010.

9 Law of Ukraine of 17 June 2010 "On Principles of Natural Gas Market Functioning" No. 2467-IV.

4.4 Treatment of Transit in Regulation

Given the focus of this study on transit and cross-border pipelines, it is worth analysing the possibilities countries provide to apply different treatment to such pipelines in comparison to domestic ones. The Energy Charter Treaty provides in Article 7(3) that applicable national provisions shall treat energy materials and products in transit no less favourable a manner than energy materials and products originating in or destined for the area of the given state. The draft Transit Protocol of the Energy Charter provides for the principle of non-discrimination on the basis of origin, destination or ownership of energy materials and products in transit both for the access regime and for transit tariffs (most-favoured nation principle). National treatment, i.e. the treatment of energy in transit in the same manner as domestic transportation, does not seem to be required by the ECT. Still, in the negotiations on the draft Transit Protocol some parties felt a need to propose an understanding to clarify this point in Art. 7(3) ECT. It stated that "it is understood that the application by a Contracting Party of the provisions of Article 10 of the Transit Protocol and of Article 7(3) of the Energy Charter Treaty may, due to the nature of the transportation of Energy Materials and Products, not necessarily result in tariffs for Transit (as defined in the Transit Protocol) of Energy Materials and Products which are identical in monetary terms to the tariffs for transportation of such Energy Materials and Products within the Area of that Contracting Party".

Different forms of transit systems have been described above (3.2). A distinction of transit and domestic transmission in terms of regulation would ideally require the possibility to distinguish the physical flow of gas in transit from domestic flows. This would be almost impossible in the case of a transit system of type d) above, where transit volumes commingle with a highly meshed national grid working like a tub. In such cases transit flows might only be established by a full accumulation of data from metering stations at all entry points against the corresponding data at all exit points, taking into account imports and exports.

Only a few countries define transit in their legislation. Belarus, Kazakhstan and Ukraine define transit as flows from a border receiving point to a border delivery point. The Lithuanian Law on Natural Gas defines transit as transportation through the territory of the Republic of Lithuania, which comes from outside the EU and is destined for that country outside the EU and/ or other a third country. The Lithuanian case is a case of real transit, as Russian gas enters the EU at the border between Belarus and Lithuania and exits the EU at the border between Lithuania and the Kaliningrad region of the Russian Federation.

In Turkey, there is the law No. 4586 on transit of petroleum (oil and gas). The law defines the transit passage as "the transit transportation of petroleum through pipeline within Turkey, coming, from or via another country and destined to another country. (Entrance of Petroleum to the Turkish market by any connection to be made to the system shall not remove the transit characteristics of the system)".

The definition of transit in the Energy Charter Treaty is applicable in the contracting parties of the Treaty. Some countries referred to this in their response to the

questionnaire. Cyprus pointed out that the definition of transit from the ECT is applicable in Cyprus as a contracting party to the Treaty. Poland pointed out that the definition of transit in the sense of the ECT is not applied in Polish legislation.

No country analysed in this study had a separate transit regime in place within its regulation. Distinct treatment of transit can however be based on intergovernmental agreements, exemptions from regulation or result from the different market environment for transit and domestic transmission (see below). Where such differences exist they are mostly designed to balance interests between transit and domestic transmission by imposing or by waiving specific obligations for either transit or domestic transmission. An example for the latter is Denmark, where the extra "emergency supply tariff" needs to be paid by shippers delivering gas to the end consumers only.

In the European Union, the category of transit has disappeared from regulation, providing for the same treatment with relevant domestic shipments under the category of "transmission". Earlier, the facilitation of transit of natural gas between high-pressure transmission grids had been the subject of a directive adopted in the early 1990s.[10] Since this Directive was repealed by Directive 2003/55/EC, a separate treatment of transit is not foreseen any longer. The later Directive allowed a limited number of contracts to persist under the terms of the older one, but under Regulation 1775/2005 as from 1 July 2006 access based on non-discriminatory, transparent and cost reflective tariffs is fully applicable to the so-called historical transit contracts. Under Regulation 715/2009, as of 3 March 2011 tariffs shall be set separately for every entry and exit point; by 3 September 2011, network charges shall not be calculated on the basis of contract paths.

The question whether equal treatment of transit and domestic transmission is appropriate has been a subject of intensive discussion. Gas Transmission Europe (GTE) presented a report to the Madrid regulatory forum in 2005, arguing in favour of an appropriate regime taking into account the specifics of transit.[11] Arguments in support included the fact that in most cases, transit routes of natural gas are competing with alternative routes and LNG supply sources in other countries, the role of long-term contracts for transit and thus for security of supply, the investment risks to be addressed in order to obtain proper financing for new major infrastructure projects, the concern that the uniform application of the entry-exit model[12] could lead to cross-subsidisation between transit and domestic flows, and concerns about possible distortions of the market by uniform application of public service obligations both to transit and to domestic transmission. GTE listed criteria to be considered by member states in deciding on the handling of transit:

- percentage of transit volume;
- size of the country;
- dedicated infrastructure;

10 Directive 91/296/EEC of 31 May 1991 on the transit of natural gas through grids.
11 GTE Transit Report, Ref. 05TR033 of 27 June 2005.
12 See below for more information on the entry-exit model.

- simplicity of use by shippers and TSOs;
- tradability of capacity rights;
- balancing requirements/balancing possibilities.

Four years later, similar arguments can still be heard in the discussion. In a recent survey, stakeholders from the EU expressed heterogeneous views with regard to the use of separate transit tariff regimes.[13] Whereas some parties defended the existence of separate systems, especially in countries with a high cross-border volume compared to the domestic transport volume, others stated that there was no claim for separate treatment. Some parties had raised the argument that cross-border transport tariffs should be higher than domestic tariffs, as transit flows were less predictable in the long-term and therefore the volume risk should be reflected. Making no distinction between domestic and cross-border investments would in fact mean socialising of costs. Contrary to that, some parties have been concerned about the competitiveness of cross-border and transit pipelines, as has been noted above.

A national law of an EU member state or a member state of the Energy Community Treaty providing for a general and systematic distinction between transit and domestic transmission would be considered as non compliant with the requirement of non-discrimination in EU law. According to the opinion of the Advocate General of the European Court of Justice in relation to the "Fluxys case", such a distinction could only be justified if the differences invoked existed for the whole of activities related to transit.[14] It is noteworthy that, in the reading of the Energy Charter Secretariat, the Advocate General did not exclude that the treatment of transit could be specific with regard to concrete aspects. In particular, Fluxys and the Belgian government had argued that such differences existed in view of the fact that transit pipelines are subject to international competition, whereas for domestic transmission a monopoly existed; in view of the fact that demand for transit services was less stabile; that investment into transit services was subject to a higher risk and that domestic transmission was subject to strong short-term fluctuations as well as to public services obligations.[15] The principle of non-discrimination would however require that the TSO proves for each criterion of the activity a difference requiring different treatment.

As has been stated in this context, EU law does not prohibit tariffs to reflect the costs and risks of the respective transmission activity and thus may be different.[16]

A general thrust can be observed in the EU aiming at the elimination of a separate treatment of transit. An enquiry of TSOs has been conducted by the European Regulators Group for Electricity and Gas (ERGEG) in 2010 as to the transit contracts held by them. In result of the enquiry, in which TSOs seem to have participated with little enthusiasm, the Commission shared the view that the "elimination of transit contracts

13 KEMA/REKK Study on Methodologies for Gas Transmission Network Tariffs and Gas Balancing Fees in Europe, Arnhem, December 2009, p. 92.

14 Conclusions de l'avocat général Mme Verica Trstenjak présentées le 28 septembre 2010; Affaire C 241/09 Fluxys SA contre Commission de régulation de l'électricité et du gaz (CREG), paragraphe 96.

15 Ibid., para. 93.

16 Conclusions de l'avocat général, para. 51.

not compliant with EU law is needed for achieving [the] internal market".[17] One year later, the Agency for the Cooperation of Energy Regulators (ACER) established under the Third Internal Market Package conducted an enquiry among National Regulatory Authorities on existing transit contracts in the EU and the barriers they may create in view of the implementation of the Third Package.[18] It was noted that changes to the regulatory environment have not been introduced for certain transit lines; that capacity allocation is restricted or subject to special agreements between TSOs; different tariffs or tariff methodologies are applied. ACER recommended the EU member states to support the renegotiation of the transit contracts and to eliminate the discriminatory arrangements they contain. National regulatory authorities were invited to ensure that transit contracts follow or will follow the regulatory changes.

In summary, it may be stated that separate regulatory regimes for transit are uncommon. If transit falls under the same regulatory regime as domestic transmission, possibilities for a distinct treatment within this common regime may exist but need to be duly justified. However, this does not mean that separate regimes for transit do not exist at all. They can be based on exemption from regulation or on intergovernmental agreements, as described in the following section.

4.5 Intergovernmental Agreements

While the previous section has shown that no country has a separate regulatory regime for transit in place, a separate treatment may be based on intergovernmental agreements. Normally such agreements are not subject to the authority of national regulators but subject to dispute resolution defined in those agreements. These agreements are then complemented by private agreements which are not subject to regulation and where a consortium needing a transit capacity builds it and allows third-party access only on a negotiated basis. The Energy Charter Treaty's rules and dispute resolution mechanism apply to such transit as well, provided the transit country and either the country of origin or the country of destination is a party to the Treaty.

A number of agreements are in place within the Commonwealth of Independent States (CIS) or the Custom Union between Belarus, Russia and Kazakhstan.[19] Recently, these three countries concluded an Agreement on the rules of access to the services of natural monopolies in the sphere of gas transport.[20] This Agreement establishes a

17 ERGEG presentation on Transit Contracts at the 19th Madrid Forum on 21 March 2011.

18 ACER Report at the 20th Madrid Forum on 27 September 2011.

19 Members of the CIS: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tadzhikistan, Turkmenistan, Ukraine, Uzbekistan. Agreements on transit:
- Agreement on Conducting an Agreed Policy by Member-States of the Commonwealth of the Independent States in the Domain of Transit of Natural Gas of 3 November 1995;
- Agreement on the Procedure of Transit through the Territories of Member-states of the Commonwealth of the Independent States of 4 June 1999;
- Agreement on the Creation of a Free-Trade Area of 15 April 1994.

Members of the Customs Union: Belarus, Kazakhstan, Russian Federation. Agreements on or relevant for transit:
- Agreement on Uniform Conditions of Transit through the Territory of Member-states of the Customs Union of 22 January 1998.

20 Agreement on Rules of Access to Services of Natural Monopolies in the Area of Gas Transportation

domestic market for gas within the margins of the Customs Union by providing access to the transport infrastructure. However, flows originating from or destined for third countries are excluded. This means that theoretically transit services could only be provided by the Russian Federation in view of its geographical situation.

In Ukraine, transit arrangements are the subject of international agreements and bilateral contracts. A number of inter-governmental agreements have been concluded between Ukraine and the Russian Federation to regulate transit.[21] However, corresponding yearly Protocols to determine the volumes of transit and the tariffs have not been concluded since 2006 in view of the attempt to separate the issue of transit tariffs from the supply contracts of Russian gas to Ukraine. In Georgia, in some cases transit arrangements are subject to intergovernmental agreements.

Turkey and Azerbaijan signed an agreement on transit of Azeri natural gas to Europe on 25 October 2011. The details of the agreement have not been disclosed yet. The content of Intergovernmental agreements on transit in Turkey are generally in line with the Energy Charter's Model Agreements with durations and other issues being rather project-specific. Reference is made and, therefore, a link is established for subsequent commercial contracts with respect to supply/offtake/outlet, as the case may be.

In most cases intergovernmental agreements are the basis for long term contracts and are as a rule linked to supply/off take/outlet contracts. The link between supply and transit contracts also exists in Lithuania, where terms and conditions of transit through the country are foreseen in a natural gas import contract concluded between JSC Lietuvos Dujos and OAO Gazprom, but not in an international agreement. In Poland, transit agreements are in principle concluded between the operators or between operator and owner of the gas pipeline. These contracts are not subject to intergovernmental agreements, however negotiations concerning the general assumptions of the future agreement can be held on the intergovernmental level. The governments of the involved countries can also sign the Protocols or arrangements which precede signing of the transit agreements between the respective companies. Transit agreements can also cover other issues such as drafting the guidelines of the Transmission Network Code and operational issues. In 2010 the European Commission assisted in the bilateral negotiations between Poland and the Russian Federation on gas supplies to Poland and the transit through Poland by the Yamal-Pipeline.

Historic agreements between Denmark and Sweden provide for special conditions for part of transit through Denmark for the Swedish market. They were linked to direct investment contribution from the Swedish TSO and will be phased-out in 2012.

through Gas Transportation Systems, Including Pricing and Tariff Policy (Moscow, 9 December 2010).

21 Agreement between the Government of Ukraine and the Government of the Russian Federation on Export of Russian natural Gas to Ukraine and its Transit across the Territory of Ukraine to European Countries of 18 February 1994; Agreement between the Cabinet of Ministers of Ukraine and the Russian Government on Guarantees of Transit of Russian gas through the territory of Ukraine of 22 December 2000; Agreement between the Cabinet of Ministers of Ukraine and the Russian Government on additional measures to ensure the transit of Russian gas through the territory of Ukraine of 4 October 2001.

Major new cross-border infrastructure projects may not be viable without a solid legal base in terms of an intergovernmental agreement providing for non-discriminatory treatment, provisions regarding the right of way, taxes, access rules and other issues. Such an Agreement has been concluded by the governments of Austria, Bulgaria, Hungary, Romania and Turkey in Ankara on 13 July 2009 regarding the Nabucco project.[22] The Agreement foresees that 50% of the capacity of the project will be reserved for the shareholders and includes special provisions in favour of long-term capacity arrangements. Its conclusion by the four parties which are EU members required an exemption from Directive 2009/73 EC (see above).

In result of the arrangements in place, major differences do exist with regard to the treatment of transit and domestic transmission in a number of countries. Domestic transmission tariffs are regulated almost everywhere, whereas transit tariffs are still negotiated in a number of important cases, in particular in Belarus, Kazakhstan, Lithuania and Ukraine.

The principles for transit tariffs under the Energy Charter's draft Transit Protocol would apply to negotiated as well as to regulated tariffs. They need to be objective, reasonable, transparent, non-discriminatory and cost-based, including a reasonable rate of return. The requirement of transparency is however rarely met in the case of negotiated tariffs, which is why an assessment of whether they are non-discriminatory and cost-based is often impossible. This is even more difficult when negotiated transit tariffs are linked to gas sales and purchase agreements.

22 See http://www.parlament.gv.at/PAKT/VHG/XXIV/I/I_00385/imfname_169274.pdf.

CHAPTER 5: Tariffs, Charges and Other Fees

Before describing tariff methodologies in more detail, it is necessary to bear in mind that tariffs are often not the only payments network users have to make. First of all, users might have to pay government charges in addition or together with transmission tariffs. While a tariff is a fee paid by the customers to cover the costs of investment and financing, operating and maintaining the pipeline as well as an element of profit for the operator, a government charge is a tax levied by some transit countries essentially as a fee for the right of way through that country's territory and as compensation for taxes not levied and for service rendered by the country (e.g. protection of pipeline). It is not always directly related to costs of transport. Such government charges are uncommon; the state normally benefits from business taxes paid by the pipeline operator on the service provided. Moreover, as it has been provided in the draft Transit Protocol of the Energy Charter, government charges would need to be in line with Art. 5 GATT and be commensurate with administrative expenses entailed by transit or with the cost of services rendered.

Most countries which notified the existence of government charges referred to taxes such as VAT, state or local level taxes or fees. Georgia stated that a distinction may exist in the case of transit. This refers in particular to the east-west-transit through the South Caucasus Pipeline (SCP) delivering gas from the Azeri Shah Deniz field to Turkey. According to the Host Government Agreement in place, Georgia receives a minimum payment from the pipeline consortium set at 5% of the gas transported either in the form of a fee or in kind, at the annual choice of Georgia as a minimum income from taxation which is fixed and as compensation for the obligation to secure the pipeline. In case of damage to the pipeline (e.g. due to a sabotage) Georgia is liable for damages up to the total of its revenues from the government charges. In addition, Georgia will be entitled to buy a further volume of gas at a concessionary price during a 20-year period. Transit is free of VAT in Georgia.

In Ukraine, the tax code lays down specific fees for the transit of natural gas, oil, oil products and ammoniac (see Annex).

Other fees which are levied in liberalised markets and that can have similar significance as tariffs include balancing fees for services by the transmission system operator (TSO) to ensure that deviations between input and offtake of network users do not cause problems for the operation of the system. Balancing fees can have significance for network users similar to that of tariffs.

Finally, it should be noted that in view of the openness and competitiveness of gas markets, the absolute levels of tariffs or other fees are often considered less of a problem than other barriers like the unavailability of capacity. Ultimately, the value of the gas transported is usually much higher than the transportation costs.

5.1 Tariff Principles

Among the countries analysed, the European Union member states have gone further than others in developing an open market for gas. The EU member states shall ensure third-party access to the transmission and distribution system and LNG facilities based on published tariffs, applicable to all eligible customers, including supply undertakings, and applied objectively and without discrimination between system users.[23] Tariffs shall be transparent, take into account the need for system integrity and its improvement and reflect the actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, whilst including an appropriate return on investments. Tariffs for network access shall neither restrict market liquidity nor distort trade across borders of different transmission systems.[24] They shall facilitate efficient gas trade and competition and provide incentives for investment and maintaining or creating interoperability for transmission networks. Most EU member states have provisions in their legislation spelling out principles for tariff setting along these lines. Transparency, non-discrimination and cost-reflectiveness are the most important elements.

In Norway, tariffs shall cover operating costs and give investors a reasonable return on investments. In Georgia also, tariffs must be non-discriminatory, transparent and cost-based and shall encourage effective use of operating assets. According to legislation in force in Kazakhstan, tariffs shall not be lower than the necessary cost of regulated services and should consider the possibility of providing a profit to ensure the effective functioning of the natural monopoly undertaking. Security of supply and secure operation of the network or incentives for an efficient use of existing capacities may be additional criteria, like in the German gas law. In Poland, other principles for tariffs include the protection of customers' interest against unreasonable prices and the elimination of cross-subsidising. Cost-based pricing and non-discriminatory third-party access to the infrastructure are the main elements of the natural gas market in Turkey. In Ukraine, the main principle for tariffs for products and services of natural monopolies is the balance between the economic interests of the producers and the consumers, which means tariffs for the recovery of costs and capital investments in the modernisation of the gas transport system on the one hand and the consideration of the consumers' ability to pay on the other. In Switzerland, tariffs are not regulated.

The tariff principles to some extent determine the choice of the regulatory system in the given country. Most of the countries apply either cost-plus/ rate-of-return regulation or incentive/cap regulation. These approaches will be described below in more detail. In general they seem to correspond to the requirement from the Energy Charter's draft Transit Protocol. Its Article 10 provided:

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;

23 Directive 2009/73/EC, Article 32(1).
24 Regulation (EC) 715/2009, Art. 13.

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.

5.2 Transparency, Publicity, Access Rules

Transparency is a crucial requirement to allow transmission tariffs to play their role as an efficient interface between network users and transmission system operators, enabling trade in gas and providing the incentives for new investments for capacity extensions or efficiency gains. The principle of transparency has also been provided in the draft Transit Protocol of the Energy Charter with regard to transit tariffs. Transparency of the whole regulatory regime as enshrined in state laws and regulations is required under international law: under the GATT and the ECT, laws, regulations, judicial decisions and administrative rulings of general application affecting the distribution and transportation of goods and other matters shall be published promptly in such a manner as to enable governments and the private sector to get acquainted with them. A list of important laws and other legal acts regulating the gas market and transmission tariffs is provided in the Annex. In most cases they are accessible through the internet.

The publication of regulated tariffs is obligatory in almost all countries, with Turkmenistan and Switzerland being exceptions; nevertheless in Switzerland the publication of indicative tariffs is practiced even in the absence of such an obligation. EU legislation requires that tariffs are published.[25] Furthermore, TSOs need to publish non-discriminatory and transparent capacity allocation and congestion management mechanisms.[26] Such information is provided on the websites of the TSOs, which often provide a tariff calculator. Tariffs may also be published in the official gazette of the country used for the publication of state legislation, like in Spain, or a specialised bulletin, like the Energy Regulatory Office Bulletin in Poland. The deadlines for making information available to the public may differ. In the UK, the TSO National Grid Gas has to provide indicative notice 150 days before implementation and firm prices two months in advance of annual/long-term capacity auctions. In Lithuania, state regulated prices should be made public no later than one month prior to their application. In Ukraine, TSOs have to publish detailed information about the transportation tariff fixed by the NERC in the press at least five days before their application. In Kazakhstan, a change of the tariff needs to be published 30 days before its application. Transparency requirements may include other issues, such as regulated activity costs, operation, modernisation, development of the systems, investments and services provided,

25 Art. 32(1) Directive 2009/73/EC.
26 Art. 16 and 17, Regulation 715/2009.

business conditions, technical conditions, dates of auctions, information on the proceeds from capacity allocated and their use.

Some countries organise public consultations during the elaboration of transmission tariffs. This is the case in Armenia, France and Kazakhstan.

Negotiated tariffs normally remain confidential. Consequently, in Belarus and Ukraine the obligation to publish tariffs relates to regulated tariffs for domestic transportation and not to transit, where tariffs are negotiated.

CHAPTER 6: Gas Transmission and Transit Tariff Methodologies

This chapter will focus on cost-based tariff methodologies as they are used both for transmission and transit, discussing also distinct treatment of transit within this common methodology wherever such treatment can be identified. Negotiated transit tariffs do not necessarily follow the cost-based approach described below.

The methodology for setting transmission and transit tariffs comprises two stages; (a) the calculation of total allowable costs for the operation of the system in order to determine the revenue requirement; and (b) the allocation of these costs to individual shippers.

The two basic approaches used for the regulation of transmission tariffs are rate-of-return regulation and incentive regulation. Under rate-of-return or 'cost plus' regulation, the regulator sets the allowed revenue to cover the reasonable costs of the service, based on the costs of the fixed investment in pipeline networks, financing and operational costs as well as a reasonable return on the assets necessary to provide the service. The total cost base is usually set by a regulator or negotiated with the transmission system operator (TSO). In the case of incentive, or 'cap regulation', prices or revenues are set in advance (in most cases for a regulatory period of 3-5 years), inducing the TSO to cut costs by allowing it to retain additional profits gained through efficiency savings. At the end of the regulatory period, prices and revenues are then recalculated for the next period. Revenues exceeding the allowed revenues will be corrected, and so will normally be revenues less than the allowed revenues, e.g. in the case of under-utilisation of the pipeline. Cap regulation is today quite common. Most countries which chose this approach apply revenue caps, while only a few apply price caps (e.g., Slovakia, Lithuania).

In some cases a combination of such approaches is in place. In the Czech Republic, a revenue cap is applied for domestic transport, taking into consideration the monopolistic situation on the home market, whereas for transit, i.e. cross-border transmission, a price cap is applied in order to take into account the competitive situation between several transit routes. Benchmarking with systems in other countries is another possibility to ensure the competitiveness of pipelines, which is allowed in the EU under Art. 13 of Gas Regulation 715.

Elements from rate-of-return regulation and incentive regulation may also be combined, for example when incentives are provided specifically to decrease operative costs, while capital expenditures remain subject to rate-of-return regulation. The inclusion of capital costs of the network operator (depreciation and return on assets) into the cost reduction requirements under incentive regulation may bear the risk of the TSO to recover investment costs in the future, thereby undermining its motivation to invest. In this case, special provisions for new investments are sometimes put in place.

Tariffs may be determined or approved by the regulator beforehand or ex post, if the TSO sets tariffs itself following the established methodology. Ex-post approval

is practiced, e.g., in Denmark, Germany, Great Britain and Lithuania. There is a great variety of different approaches often deviating from theory, which cannot be reflected in a comprehensive way in this study.

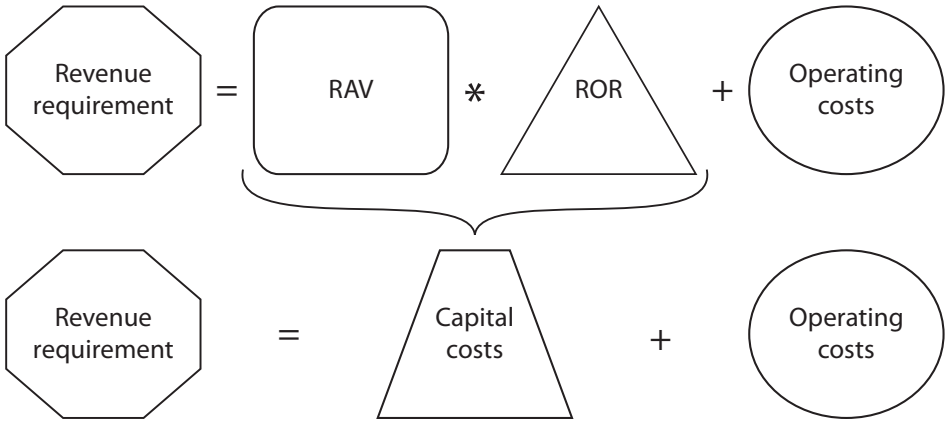
6.1 Revenue Requirement

The total revenue requirement is the fundamental element in any rate-setting exercise. It covers all costs of operation, plus an element of profit calculated as an allowed rate of return on the asset value of the operation.

Figure 1 below shows the basic elements for the calculation of revenue requirement:

- A financing and profit element calculated as a return on the Regulated Asset Value (RAV) of the investment, determined by multiplying the RAV with the allowed Rate of Return (RoR);
- The cost of amortising the investment as represented by a depreciation allowance on the original capital asset;
- Operating costs.

Figure 1: Basic Elements for the Calculation of Revenue Requirement



6.2 Regulated Asset Value (RAV)

The regulatory decision regarding the Regulated Asset Value (RAV) of the fixed assets necessary to provide the regulated service is crucial in determining the return on the investment of the TSO.

This value derives from the asset base originally set when the tariff-setting process was initiated to which may be added subsequently approved investments in the system. Such new investment is normally added to the asset base at its full cost. Like this, the initial RAV evolves over time as new investment is made and the existing plant is depreciated. There is likely to be a continual process of negotiation between

regulatory agency and operator on the extent to which new plants can be included in the asset base. On the one hand, there is a tendency of operators to include as much new equipment as possible in the rate-base; on the other hand there must be an incentive for investment to eliminate bottlenecks. As the justification for much new investment will be a perceived need to meet future demand, it will be necessary for the regulatory agency to become involved in what are, in effect, decisions about planning a future system as much as regulating an existing one.

Difficulties may arise with the valuation of the original assets. A number of alternative methods exist for setting the asset base, including:

a. Historic costs of the investment;

b. Indexed historic costs;

c. the book value of the system as it appears in the accounts of the TSO;

d. the replacement value of the system;

e. the replacement value depreciated for a notional period; and

f. the value placed on the system when privatised or otherwise sold.

Under method (a), historic investment costs are depreciated over the regulated economic lifetime of the system. After the depreciation period there would be no depreciation element and the basis for applying the cost of capital would be zero, so that the capital cost component of the tariff would practically be zero. This dichotomy is due to a discrepancy between the economic lifetime of a pipeline – its depreciation period – and its technical lifetime which is often much longer.

Method (b) is used to adjust historic costs to account for relevant changes in price levels and/or inflation. Corresponding to the adjustments in the valuation of the asset base, tariffs increase with inflation and provide the network owner with additional revenues. At the same time, the cost of debt decreases with inflation. Inflation and price level adjustments are in the interest of the network owners, and less so of the network users.

Under the book value (c) the sum of depreciation and interest is less regulated than under the historic cost method, which normally involves straight-line depreciation. Over the whole depreciation period the book value may in practice often provide for more rapid depreciation, implying total lower cost of debt and also a lower depreciation component in transit tariffs. Method (c) requires unbundling of integrated undertakings at least in terms of separate accounts for the transmission system against other activities such as production and storage. If past inflation is not registered in accounting practice book values may be distorted.[27] It is also possible that either the system was subsidised or that non-market prices were used in initial valuation. The consequence could be that the book value of the assets is too low to provide an adequate revenue return for system renewal or expansion. Book values

27 For instance, in Russia the Rouble was devalued by a factor of 600% in the aftermath of the 1998 economic crisis.

based on historic real costs may be useful in the case of systems which are relatively new, like it was the case with the Irish system.

The remaining three approaches are based on using a form of objective market-based, external valuation of the system in question.

Approaches (d) and (e) are seen as essentially versions of the same fundamental approach, where the cost of a new system with the same characteristics is used to determine the replacement value of the system. While all elements of that calculation can be market-based, some crucial elements of pipeline costs, such as the exchange rates and steel prices may be subject to strong variations, resulting in a volatile replacement value. Price increases, in particular those caused by inflation, will be borne by the network users. At the same time, as they result in an increase in value of the asset base, they may be realised by the network owner as income in case the system is sold. This makes these methods attractive for the network owner and results in higher tariffs. The replacement value method would normally involve at least a consideration of the depreciation, which is the case under (e).

The value placed on the system by a privatisation process (option (f)) is an appealing methodology in those situations where such valuation is possible.[28] This approach requires as well separate accounts for the TSO, if the latter is part of an integrated operation. In many cases the privatisation process will reflect the knowledge of the regulatory regime under which the company will be required to operate. If there is a commitment to equate the initial RAV with the price paid for the pipeline system, then there is a clear incentive to bid high for the system knowing that excessive bids will be rewarded with automatic pass-through of the successful bid to the RAV.

The valuation of assets is carried out in view of the assets necessary for the regulated activity. Most of the countries analysed use real historic investment costs as the basis for the RAV. This is the case in Armenia, the Czech Republic, Denmark, France, FYROM, Lithuania, Poland, Portugal and the United Kingdom.

Historic investment costs (historic book value) may be indexed against inflation (Denmark, France, UK) or other criteria (Lithuania). Exchange rates may also be a significant factor in the valuation of assets, especially if a company has credit liabilities in foreign currencies, as it is the case for EuRoPol Gaz in Poland, the owner of the Polish section of the Yamal transit pipeline.

In Belgium and Georgia, the calculation is mainly based on replacement value. When liberalisation of the gas transport took place in Belgium in 2002, the assets were valued at replacement cost, whereby the age of the assets (depreciation) was taken into account. After that date the RAV has evolved with actual investment/divestment costs and depreciation costs.

In Germany, a fraction of old assets is valued at historical costs and another one at replacement costs. New assets are valued at real (historic) costs.

28 It formed, for example, the original basis for asset valuation of the British Gas network in the UK.

The Czech Republic and Lithuania are among the countries that distinguish assets used for transit from those used for domestic transportation. In the Czech Republic, for tariffication purposes – in order to avoid cross-subsidies – the two categories of assets are kept on separate accounts. In Lithuania, the value of asset used in regulated transmission activity is reduced by the value of asset used in transit. This shall ensure that Lithuanian domestic customers do not bear the cost of transit through Lithuania of Russian gas destined for the Kaliningrad region of Russia. As mentioned above, transit tariffs are negotiated between the Lithuanian TSO and the transit shipper, Russian Gazprom. The asset value between transit and transmission is distinguished regarding firm capacity. This principle is also applied for new infrastructure investments.

In Kazakhstan, relevant assets are assessed according to their book value or replacement value at the end of the previous reporting period. For a long-term transit contract anticipated capital investments for the development and modernisation of the pipeline system are taken into account, so that the book value does not need to be revalued regularly.

Subsidies and EU Structural Funds received may have to be deducted from the RAV.

Belarus does not use RAV methodology, but for book keeping purposes real investment costs are taken into account; a revaluation of the basic assets is mandatory in case of inflation higher than 3%. The replacement value and the amortisation are assessed according to coefficients published by the national statistical committee; alternatively a direct assessment is carried out according to market value. The selling of the remaining 50% shares in Beltransgaz to Gazprom in 2011 shows how difficult it is to assess the value of the asset base and thus the rate of return, as the deal was primarily based on special concessions with regard to the price of natural gas supplies to Belarus.

Specific rules are in place to determine the depreciation of assets. Straight-line depreciation is the most common method. In the Czech Republic, regulated depreciation rates are equal to book depreciation to ensure proper finance resources for investment activities. Depreciation rates in France are calculated according to the economic life time of the investment, which is set at 50 years for pipelines. The same period was set in Belgium. 45 years is the normal period for depreciation in the UK.

In Lithuania, depreciation rates are set after an analysis of rates applied by other European gas companies. The life time of the asset can be extended or shortened due to reconstruction carried out or bad state of the asset. In Georgia, the regulatory commission can use depreciation norms for depreciated assets as well as for newly built assets.

Depreciation rules may be used as incentives for new investments. In Turkmenistan, the Ministry of Economy and Development has the right to set depreciation norms for entirely new forms of permanent assets. Enterprises and organisations independently of their form of ownership have the right upon approval by the Ministry to apply a method of accelerated depreciation in relation to permanent

assets utilised for the production of new advanced types of products and for the expansion of export. The application of this method should however not be used as a reason to increase prices or tariffs.

The RAV for a fixed investment declines over time as its depreciated value falls and, therefore, the annual allowable revenue declines over time as the capital charge falls. A mature pipeline will therefore appear to have lower charges than a new one. The choice of methodologies of combining depreciation and capital charge flows may to some extent determine whether a new pipeline is competitive relative to established ones.

6.3 Operative Costs

Operative costs can include both fixed and variable elements. The former would normally include human resources and administrative operations. The main element of the variable costs is the cost of the fuel gas required to operate the compressors. The following list from the Polish TSO Gaz-System can serve as an example for operative costs. The justified costs include the costs of the transmission activity, including in particular:

- materials and energy (including gas purchased to meet the operator's own consumption and imbalance deviations);
- external services (including: repairs and maintenance, lease of storage capacities for the Operator's needs);
- taxes and charges;
- payroll;
- employee benefits;
- depreciation;
- other.

Insurance may be another justified item. Operative costs (OPEX) normally have to be approved by the regulator. In most countries this is done on the basis of the assessment of historical OPEX as reflected in accounting documentation on the past regulatory period and/or on forecasts, which may be subject to audits and benchmarking, technological norms as well as efficiency targets for the next regulatory period. Under incentive regulation, like in the UK, the system operator is given a target operative cost allowance as part of its allowed revenue; actual incurred costs are assessed ex-post as part of the process to set the next period's allowance.

6.4 Return on Capital

The RAV is linked to the level of required annual revenue in two ways; the depreciation allowances granted to the TSO and the return on capital which the TSO is granted. Although, strictly speaking, this return on capital is not the same as the profits of the

TSO, in the public eye there is likely to be little difference. Given the status of a TSO as a utility monopoly, the level of the regulated return on capital has an important political as well as economic importance. Calculation of the allowed return on capital (often called the weighted average cost of capital or WACC) varies under different methodologies, but essentially involves setting a debt/equity ratio for the TSO, setting a cost of debt finance, estimating a normal equity return, adjusting this by a factor for the risk category of the enterprise and, finally putting together a weighted average of these two rates of return.

For comparison of the WACC or similar formulas it is important to distinguish a post-tax WACC (assumes that the company's tax obligations have been paid as part of the revenue requirements) and the pre-tax WACC (average rate of return to provide return on the investment and to pay the company's business tax). Furthermore, inflation may be taken into account (nominal WACC) or not (real WACC). As a rule, inflation is taken into account either for the calculation of the RAV or for the rate of return, but not for both. As an example, Belgium applies nominal WACC, whereas inflation is not taken into account for asset valuation. In general, real and pre-tax WACC are more common.

The debt to equity ratio applied in the WACC is an important factor in determining the cost of capital, as debt capital is normally less expensive because of financial leverage. Most European regulators consider the use of 60% of debt to be the optimum approach. The Czech regulator applies a lower debt ratio (30%) in view of risks of financial instability implied by a too high debt ratio.[29] The determination of the optimum capital structure remains the company's prerogative, but the return will depend on the regulator's decision on the WACC.

German regulations do not prescribe a WACC but require the regulator to take the individual capital structure of the network operator into account. Equity is capped at 40%. The regulator must consider the actual cost of debt and calculate the equity rate for each regulatory period taking into account the entrepreneurial risk and the conditions in the national and international capital markets. The specific country risk as expressed in the credit rating of the country is one of the factors to be considered in this regard.

The following information on the rates of return was provided for this study:

Belarus: No regulated rate of return. The profit of "Beltransgaz" from transit is calculated yearly according to the amounts necessary to pay dividends to the shareholders and for the technical and social development of the company.

Belgium: 5.7% nominal, after tax.

Denmark: Transmission tariffs are cost-based and do not include ROIC, WACC and other return elements. Cost of capital is based on commercial lending and transferred to customers on one-to-one basis.

29 Final Report of the Energy Regulatory Office on the regulatory methodology for the third regulatory period including the key parameters of the regulatory formula and pricing in the electricity and gas industries, December 2009.

France: 7.25% real, before tax.

Georgia: Regulatory commission defines the rate of return individually; basically, from 8% to 12% of pure profit in gas sector. Transit is free from VAT.

Germany: 9.29% nominal and 7.56% real interest rate on equity depending on the share of New / Old Assets in the RAV.

Lithuania: Profit margin shall be no lower than the arithmetic weighted average of the annual interest percentage rate of auctions of 10-year Government bonds within the last 36 calendar months, which shall not exceed 5%. As a result, the profit rate before taxes for natural gas undertakings is 5% of the economically justified regulated value of asset.

FYROM: 9-9.5%.

Norway: 7% real, before tax.

Poland: 9% nominal, before tax.

Portugal: 8% real, before tax.

Spain: 3.75% spread over the ten years Spanish Bond (the interest rate of the ten years Spanish bond was about 3.5% in January 2006 and over 5% in January 2011).

UK: 6.25% real, before tax.

6.5 Rate-of-Return Regulation and Network Planning

Rate-of-return regulation always contains an implicit assumption about the future level of pipeline use; typically that it works at full capacity or as close to it as can be managed given operational flexibility needs. Historically, if a TSO has invested in a pipeline which turns out to be used only at a fraction of its capacity, then no allowance is normally made in setting an initial RAV for this mistake and the TSO is allowed to take the full revenue charge for the unused capacity from existing customers. This tariff increase may lead to further reductions in pipeline usage.

In order to avoid investments in under-utilised capacity, the regulator may allow future allowed system expansion, usually for at least five years ahead. In the long term such decision need to be made on the basis of supply and demand forecasts not only for domestic supplies, but also for significant flows expected for the supply of other countries, in particular in the case of transit countries where transit flows exceed domestic consumption by far. To take a concrete example, the Slovak regulator may well be asked in the next decade to allow investment in Slovak lines into the RAV of a Slovak TSO based, at least in part, upon demand projections in Belgium or the U.K. and prospective competing supplies in these countries. In principle, such issues can be resolved by the same process of negotiation and joint planning between regulator and system planner, though this introduces new dimensions of complexity in national regulation and, ultimately, tariff setting if cross-subsidisation between local and transit gas tariffs is to be avoided.

Market liberalisation and unbundling have made this problem even more challenging. In the EU, one way of addressing it is the development of Union-wide Ten Year Network Development Plans as required under Regulation 715/2009(EC).

6.6 Unit Tariff Methodology

The second stage of deriving a regulated tariff involves spreading the allowed annual revenue across actual gas shipments to derive a unit tariff. In order to provide a stable framework for gas transport and trading, it is common to base tariff derivation upon forecast gas flows through a system for one or more years into the future and then to adjust TSO revenues up or down when actual flows are known. The tariffs may be broken into commodity and capacity charges.

A simple way of setting a unit tariff would be divide the revenue requirement by the volume of natural gas shipped within a year. This is what is practiced, e.g. in Kazakhstan, where the tariff for the transportation of 1000 m^3 of natural gas is determined according to the following formula:

$$T=R/V$$

where

R = total planned yearly revenue of the TSO

V = total annual volume of transportation of natural gas

With the help of similar formulas, the unit tariff may be set by the regulator or be calculated by the TSO under a methodology approved by the former. Under incentive regulation, the regulator may set a price cap on the tariff, e.g. for reasons of competitiveness (see above). If a revenue cap is set, the TSO has normally more flexibility in setting the tariff.

Revenues and prices may be subject to adjustments to inflation or consumer price indices. For example, in Germany corrections to the revenue cap are introduced based on the development of the general consumer price index following a delay of two years. The adjustment of operational costs to the inflation rate is quite common. In Lithuania and Slovakia, which apply price caps, tariffs are adjusted by half of the inflation rate. These adjustments are justified by the effect of inflation predominantly on the operational costs, taking into account 50% of expected efficiency savings. In Norway, the tariff is likewise adjusted to the Norwegian consumer price index. In the case of transit through Ukraine, it is the inflation rate in the European Union which has an influence on the level of the transit tariff. In Kazakhstan, foreign currency exchange rates are taken into account as a factor defining the overall revenues of the operator.

As for the inflation adjustment of capital costs, this is taken into account during asset valuation or is included in the WACC (nominal WACC, see above).

Tariff and capacity booking methodologies need not be identical for the same TSO. However, there is a clear tendency for the two to be conceptually identical.

There are essentially four types of tariff methodologies currently in use to allocate the overall costs to the shippers:

- postal;
- distance-based;
- point-to-point; and
- entry/exit.

6.6.1 Postal Tariffs

Postal tariffs use a single fixed fee for the transport of any volume of gas within the area covered by the tariff. Low-pressure distribution systems normally use postal tariffs.

The advantages of postal tariffs can be seen precisely in their use in distribution or other highly meshed and concentrated systems; they are simple, transparent and are easy for new entrants to use. This simplicity means that they are often the first tool used by a new regulator when it sets about the complex task of overseeing the gas sector. Effectively, total allowed revenues can be divided by required system capacity, resulting in a unit tariff. Postal tariffs may or may not be construed as a capacity charge.

Postal tariffs are most suitable for simple and small systems. Otherwise they may have disadvantages. They are discriminatory between consumers in different parts of large systems, given that different amounts of investment have been required to serve different consumers. Moreover, they do not provide signals for efficient use of the system based on spare and tight capacity in different parts of the system. Social policy may be a justification for the use of postal tariffs equal for the whole population. It is particularly noteworthy that in some countries the use of postal tariffs is limited to domestic transmission. This is the case in Belarus, Ukraine and Kazakhstan, where transit is subject to distance-based tariffs. In Ukraine a specific link has been established between transmission and distribution tariffs. All system users pay the same single common transportation tariff, except for those consumers who receive their gas directly from the main high-pressure pipelines. The transmission tariff for the main pipelines for a given region is derived by subtracting the regulated distribution tariff set for that region from the single common transportation tariff.

Postal tariffs for transmission are still in use in Poland, Lithuania and FYROM. In Poland, a group tariff is in force, resembling a postal tariff, while tariffs on the Polish section of the Yamal pipeline are distance-based. The terms for the future entry-exit model in Poland are being negotiated between the TSO Gaz-System and the Energy Regulatory Office. In view of the requirements from EU legislation, Portugal has altered the transmission tariff methodology from postal to a fully decoupled entry-exit system in 2010.

6.6.2 Distance-Based Tariffs

Under distance-based tariffs, a shipper is required to pay a charge based on the distance between designated entry and exit points. They are usually expressed on a booked capacity basis in a dimension of € or $/m^3/h/100 km/year. A capacity charge is paid regardless of utilisation. It may be combined with commodity-based elements to reflect variable costs, and in particular the costs of fuel gas. The exact transportation costs would then depend on the load factor.

Where the load factor is high like in most long distance transportation (transit) systems serving long-term contracts with a high minimum pay (usually corresponding to at least 7000 hours of full utilisation, or a load factor of about 0.8) it may be practical to express the transport tariff in relation to the volumes transported. The unit used in the FSU is $/1000m^3/100 km.

Distance-based tariffs are most useful for systems in which gas moves in one direction for long distances, with rather few intermediate takeoff points. In Europe, they have been used by a number of important systems, though current EU legislation requires the use of an entry-exit system. They are still used by some TSOs, e.g. in Germany or in Poland (Yamal). Outside the EU, distance tariffs are the norm for transit, though they are usually presented in the form of a commodity charge rather than a capacity charge in view of the high utilisation factor for transit volumes. The use of commodity charges may be less efficient in case of decreasing load factors, e.g. as a result of the emergence of alternative supply routes, as they do not provide an effective tool to make free capacity available for other users.

The continued usefulness of distance-based tariffs for linear systems is confirmed by the tariff model developed under the Intergovernmental Agreement on the Nabucco Project. According to the Agreement, "the tariff shall be distance-related and (expressed in EUR/ ((Nm^3 (0°C)/h)*km) / y.), which means that the tariff shall be uniform and apply to all sections of the pipeline".[30]

Distance-based tariffs have the advantage of being rather simple, transparent and cost-reflective in an apparent way for one-directional flows. However, they are criticised on a number of important counts. Notably, they may not be properly cost-reflective in systems where there is not one simple route between entry and exit points or where linear gas flows may be subject to some kind of displacement. European regulators have argued that distance may only be a factor in case of a not sufficiently meshed transportation grid.[31] They also favour incumbent users on the basis of the so-called portfolio effect under which shippers with multiple contracts based on several entry/exit points can minimise their transport charges by implicit swaps within their contract portfolio. New entrants with few contracts can only do this by engaging in open-market swaps with other shippers, something which is difficult to do in the early stages of market development. On the other hand, the use of a short distance of a system may also block the capacity of the system upstream and downstream.

30 Nabuccco agreement (see footnote 24), p. 20.

31 ERGEG Report on the transmission pricing (for transit) and how it interacts with Entry-Exit Systems, Ref: E06-GFG-18-03, 6 December 2006.

6.6.3 Point-to-Point Tariffs

In this tariff system, a specific tariff is quoted for every entry/exit pair within the system. The advantage is that tariffs are explicit and should be cost-reflective, provided the system is physically modelled correctly. Nevertheless, this system is criticised for being very opaque. It can also become very complex, if there are a large number of entry and exit points. The method is also subject to criticism because of the portfolio effect and because it fails to provide any clear signals about capacity constraints at specific points in the system. The advantage for the operator is that he will have an overview of the flows requested and the required capacity to serve it.

6.6.4 Entry-Exit Tariffs

In this tariff system, a separate tariff is quoted for each entry and exit point. Under the entry/exit tariff system, capacity booking can be done on the same basis that is separately for each entry and exit point, with actual movements being based, ex-post, upon combining a shipper's portfolio of capacity contracts. The typical unit for a capacity-based entry-exit tariff would be € or $/m^3/hour(day)/year or € or $/kWh/hour(day)/year.

The split of entry and exit booking makes it difficult for the system operator to know whether entry capacity booked can be served, because it depends finally on the total balance between entry and exit capacity booked. System reliability requires the TSO to provide balancing services between the aggregate input and offtake of network users, for which additional gas (balancing gas) volumes may have to be procured.

Entry/exit tariffication almost inevitably requires detailed physical and financial modelling of system flows which can become rather complex. At the same time, the entry/exit system allows for the development of a much more flexible market in capacity contracts, allowing new entrants easier access to the system. Ultimately, this market in capacity contracts can lead to a semi-regulated market in which some charges are set by the market, rather than by the regulator. This advantage has been offered by the UK system of auctioning entry capacity, which nevertheless led in the past to enormous scarcity rents in St. Fergus without triggering the investment to reduce the scarcity. The entry-exit system allows charges to be based much more closely on marginal rather than on historic costs. In practice, however, full-cost recovery based on historic investment usually takes priority.

In highly meshed systems operating with small transport volumes relative to the overall system capacity, the system may work like a tub where extra gas put into the system raise the overall level and can be taken out of the tub anywhere without causing any specific costs.

The establishment of an entry-exit system for access and tariffs has become mandatory in the EU under Regulation 715/2009. Article 13 requires that tariffs for network users shall be set separately for every entry point into or exit point out of the transmission system. Against this background, a number of European TSOs have recently replaced

distance-based or postal tariffs by entry-exit tariffs. Portugal, which recently changed from a postal system to a fully decoupled entry exit model, argued in its response to the questionnaire conducted for this study that setting transmission tariffs on the basis of the costs specific to the individual entry or exit point ensured a more efficient use of the infrastructures, a more efficient allocation of costs and a more rational use of the capacity. Also tariffs independent from the contractual path would contribute to market development because also suppliers can exchange and compete for gas inside the transmission network in a level playing field.

In some EU member states the implementation of this regulation is still pending. Others are exempt from the application of Regulation 715/2009 based on their status as emergent and isolated markets (Cyprus, Estonia, Latvia, Finland). Major new infrastructure and natural gas transmission systems which have been granted derogations from TPA in relation to take-or-pay commitments (Art. 48 of Directive 2009/73/EC) may be exempt from its application as well. Outside the EU the entry-exit system is applied by Norway. In Turkey, tariffs are also set on the basis of an entry-exit system.

Entry/exit tariffs tend to resemble postal systems if tariffs are set in a rather uniform way for most entry or exit points. This is practiced, e.g. in Spain or by some TSOs in Germany. For linear systems carrying large volumes of long-distance transit the entry-exit system may not be the most obvious solution.

Entry/exit tariffs have been criticised because of a possible effect of cross-subsidisation between different services. In its 2005 Transit Report Gas Transmission Europe (GTE) noted as shortcomings of the entry-exit model that short distance transmission prices are generally too high and long distance prices are normally not cost reflective.[32] Further it was stated that "transit through an entry-exit system may lead to cross-subsidisation between transit and transportation for the domestic market". GTE recommended that in cases where cross-subsidisation is clearly identifiable and produces unacceptable distortions, the application of specific tariffs for transit could be more appropriate". The European Regulators (ERGEG) suggested at that time that specific entry/exit tariffs such as backhaul and short haul tariffs might be necessary to avoid cross-subsidies. Where the natural gas grid was not sufficiently meshed and flows – particularly transit flows – were uni-directional tariffs could take into account the load factor, the distance of transportation, the capital investment per capacity unit and volumes. For exclusively linear long-distance transit not interconnected with other domestic transmission systems the distance could be taken into account to avoid cross-subsidisation of long-distance shipments by shorter distance.[33]

In the meantime, the entry/exit model has been introduced to some typical transit systems as well. The case of Slovakia should be noted, where transit volumes are bigger by a factor of more than 10 than domestic supply volumes. The Slovakian TSO Eustream applies a decoupled entry/exit tariff system with four entry/exit points (Veľké Kapušany at the Ukrainian, Baumgarten at the Austrian and Lanžhot at the Czech border as well as a domestic point). As can be verified by the tariff calculator

32 GTE Transit Report, See above, footnote 10.
33 ERGEG report, see above.

on Eustream's website, capacity at the domestic exit point is considerably cheaper than at the border exit points. In the Czech Republic, exit fees for domestic transport into the distribution systems are included in the distribution tariff to end consumers established by the regulatory authority, and this transmission capacity is not separately bookable by shippers.

The entry/exit system may be disadvantageous for cross-border and transit flows because of the phenomenon of "pancaking". It implies that for cross-border flows network users have to pay separate exit and entry charges for each border they want to trade across. In Spain, a 30% reduction in the transmission tariff is applied to transit gas in order to avoid this phenomenon.

In the EU, pancaking shall be avoided in the future by bundling capacity services at the borders between member states and the areas of TSOs. According to the "Gas Target Model" currently under development the EU gas market shall be built on the basis of hub-to-hub trading across the EU territory instead of the established national gas markets.[34]

An evaluation of the most suitable tariff type cannot be given, as this depends on the network structure, its size, the volumes for domestic supplies as well as transit volumes.

6.6.5 Distinction of Consumer Groups

A distinction of different consumer groups for tariff setting purposes is practiced in a number of countries analysed. In Poland, group tariffs are applied, with the prices or fee rates in the particular tariff group determined with regard to justified costs of conducted business activity connected with supplying of gas, taking into account the elimination of cross subsidising. In Armenia, two consumer groups are distinguished by volume of consumption, one up to 10.000 m^3 per month and one more than 10.000 m^3 per month.

A distinction of consumer groups is also practiced in some cases with regard to capacity allocation. For example, in Armenia, preference is given to power generating facilities with highest energy efficiency. In Kazakhstan, capacity allocation is carried out dependently on consumer categories, by distinction of the general population from corporate bodies.

6.6.6 Auctions

Building a single liberalised natural gas market requires a high degree of cooperation between TSOs. In the EU, this cooperation has been institutionalised by the Third Internal Market Package and the establishment of the European Network of transmission system operators for gas (ENTSO-G). Among the most important tasks of this entity is the elaboration of network codes with regard to 12 subjects.[35] Their

34 ACER Framework Guidelines on Capacity Allocation Mechanisms for the European Gas Transmission Network, FG-2011-G-001 of 3 August 2011.

35 According to Art. 8(6) of Regulation 715/2009 these areas comprise:

content shall be elaborated in line with framework guidelines submitted by the Agency for the Cooperation of Energy Regulators (ACER) and the final network codes be adopted by the European Commission.

The preparation of a network code on capacity allocation in the EU is currently under way. It is noteworthy that ACER's Framework Guidelines on Capacity Allocation provide that capacity services shall be allocated via auctions.[36] Regulated tariffs shall be used as reserve price in auctions for firm and interruptible capacity. ACER further requested that auction revenues exceeding the allowed revenue shall be used for "different aims subject to the approval of the National Regulatory Authority, such as lowering the network tariffs, removing congestion by investments or providing incentives to the Transmission System Operators to offer maximum capacity".

The introduction of auctions as the single capacity allocation mechanism in the EU is remarkable in so far as it is obviously not the most common capacity allocation mechanism; only very few of the countries analysed have experience in this regard. In the draft Energy Charter Transit Protocol auctions have been mentioned as one possible mechanism to manage contractual congestion in the network, with first-come-first-served and pro-rata as other options from a non-exclusive list. Auctions are used as a congestion management mechanism in the Czech Republic in connection with the limitation of re-nomination rights, in Portugal, Switzerland and in Great Britain, where auctions are the normal capacity allocation mechanism. Excess revenues from auctions are used to decrease tariffs (Czech Republic, Portugal), to overcome congestion by investment into the infrastructure (Portugal) or reallocated back to the shippers (UK). It is interesting to note that a considerable number of countries noted that no congestion occurs in their systems because of the availability of excess capacity (e.g., Belarus: 19.2 bcm free capacity in 2010, FYROM, Georgia, Lithuania, Slovakia and Spain). This is also often the reason for the absence of a secondary market for capacity. Secondary markets may otherwise serve as effective tools to overcome or prevent contractual congestion in connection with use-it-or-lose-it or use-it-or-sell-it rules.

More common mechanisms for capacity allocation and congestion management have so far included open subscription periods, first-come-first served/ first-committed-first-served, pro-rata allocation or a combination of those. The development of network

(a) network security and reliability rules;
(b) network connection rules;
(c) third-party access rules;
(d) data exchange and settlement rules;
(e) interoperability rules;
(f) operational procedures in an emergency;
(g) capacity-allocation and congestion-management rules;
(h) rules for trading related to technical and operational provision of network access services and system balancing;
(i) transparency rules;
(j) balancing rules including network-related rules on nominations procedure, rules for imbalance charges and rules foroperational balancing between transmission system operators' systems;
(k) rules regarding harmonised transmission tariff structures; and
(l) energy efficiency regarding gas networks.

36 ACER Framework Guidelines on Capacity Allocation Mechanisms for the European Gas Transmission Network, FG-2011-G-001 of 3 August 2011, p. 12.

codes providing for auctions and the necessary capacity platforms are currently being established in a number of EU countries. Moreover, ENTSO-G is working on a harmonised auction design, as requested in the ACER's corresponding framework guidelines.

6.6.7 Capacity Products

A comparison of gas transmission tariffs is difficult not only because of the more and more widespread use of the entry/exit system with a large number of entry/exit combinations that can be chosen, but also because TSOs operating under this model offer various capacity products, distinguishing firm from interruptible capacity and capacity contracts of different duration, short term from long term, peak seasons and so on. Firm capacity is intended to be available at all times during the period covered by the capacity contract and is normally more expensive. Contrary to that, interruptible capacity is offered as available. At this stage of the negotiation process within the EU on the network code on capacity allocation, standard capacity products and auctions are foreseen for yearly, quarterly, monthly, daily and within-day firm capacity allocation.

In view of the long-term natural gas import contracts which have been the practice in continental European countries and the need for corresponding transit and transmission contracts for the use of the gas infrastructure it is worth noting that the duration of transit/transmission contracts is independent from the duration of supply contracts for natural gas in all countries analysed. As has been noted above, under EU Regulation 715/2009 network charges shall not be calculated on the basis of contract paths.

From a security of supply perspective long-term purchase contracts have always played an important role. In its 2005 Transit Report, GTE recalled that to "ensure transmission of quantities under long-term purchase contracts, long-term transit contracts are needed".[37] Ensuring the availability of pipeline capacity for long-term supply contracts, often seen as a prerequisite to make large infrastructure investments viable, has been an objective during the negotiations on the Energy Charter's Transit Protocol. However, the parties did not succeed in agreeing a mutually acceptable formula. As a result, the security of long-term supply contracts and the financing of strategic long-term investments in production and the transportation infrastructure may be at risk.

The possible duration of long-term capacity contracts is limited to one year in Lithuania, FYROM, Portugal and Turkey; two years in Denmark, four years in Poland (transfer agreements are in place with Gazprom Export until May 2020 and with PGNiG until December 2022) and 17 years in the UK. Multiple years capacity contracts are possible in Armenia (normal duration one year), Georgia, Germany, Kazakhstan, Norway (within license period for pipelines which is mostly until 2028), Slovakia, Spain and Switzerland.

Against the background of the request by the EU Agency for Cooperation of Energy Regulators (ACER) that existing capacity contracted before the entry into force of the network code on capacity allocation shall be bundled at the exit and entry points

37 GTE Transit Report (see above).

no later than five years thereafter ("sunset clause"), the validity of existing long-term capacity contracts in the EU cannot be taken for granted any longer.

6.6.8 Capacity Charges, Commodity Charges

Network users pay for the use of the infrastructure either according to the capacity booked for a given period, according to the volumes of natural gas shipped or a fee based on both capacity and commodity charges. The two cost categories may be used to cover fixed and variable costs respectively. Capacity charges need to be paid irrespective of whether the capacity has been used or not, thereby incentivising the users to free capacity by selling it to other network users on the secondary market or by releasing it back to the TSO. Commodity charges are paid dependent on the volume of gas shipped.

The use of capacity or commodity charges determines to what extent the actual tariff depends on the load factor of the pipeline. The load factor plays a role in so far as the split between capacity payment and volume payment favours shippers with high load factors, as shippers need to book their peak consumption capacity and pay for it. For pure capacity based tariffs the load factor is irrelevant.

In the EU capacity charges are practiced by the vast majority of countries. Whereas in a number of EU countries charges are based exclusively on capacity (Czech Republic, France, Germany, Netherlands, Slovak Republic) some of them also foresee commodity charges, typically covering 20-30% (Denmark, Poland), or 5-10% of the overall network charges (Portugal, Romania). The commodity price in Portugal is considerably higher in peak usage hours than in off-peak hours. With the goal of achieving more tariff flexibility, and enabling the access to the gas system of market players with time Concentrated uses, the transmission tariff in Portugal includes two extra tariff options, a short duration transmission tariff and low-load-factor transmission tariff.

In Great Britain, tariffs are a combination of capacity (for firm flow rights) and commodity (levied across actual flows). Even under capacity based tariffs, shippers may have to pay fees for the compressor gas used. This is the case in Belgium and the Czech Republic. In Slovakia, shippers have to give a part of the gas volume for operational purposes. The tariffs rates at the individual entry or exit point represent from 0.1 to 1.1% of the volumes of gas transported. In Spain, the cost of compressor gas is included in the tariff, but 0.2% of the gas transported is kept by the transmission operator as shrinkage.

Outside the EU charges are typically levied according to the volumes of gas transported. In Georgia, the transportation tariff methodology defines a tariff rate for annually transported volume and is the same for any consumer category. In Belarus, Kazakhstan and Ukraine, tariffs are set for each 1000 m^3 transported independent from the distance (postal tariff) or for each 100 km in the case of transit. The gas necessary to operate the compressor stations is purchased by the respective pipeline operator and is part of the overall costs.

CHAPTER 7: Conclusion

In view of the vanishing distinction in regulation of natural gas transit from domestic transmission, this report has focused on common regulatory principles, while also discussing the possibility to accord a distinct treatment of transit either under a separate regime or within the general regulation in place.

The analysis has confirmed that regulated tariffs based on the principles of transparency, non-discrimination and cost-reflectiveness have become the norm in the member states of the Energy Charter. One of the purposes of this report has been to describe the methodology used to determine such tariffs.

Regulated tariffs have been introduced to improve equal access conditions to the networks by the network users. As such they may contribute to the objective of the Energy Charter Treaty to promote access to international markets on commercial terms, and generally to develop an open and competitive market, for energy materials and products. The Energy Charter Treaty does not require a system of mandatory third party access. And indeed, such a system has not been introduced in the Eastern part of the constituency. In these countries, regulated tariffs are applied to domestic flows, whereas transit typically remains outside of regulation and subject to intergovernmental agreements.

In the Western part of the constituency a system of mandatory third party access has been introduced. In the EU, the distinction between transit and domestic transportation has been abolished. In individual cases tariffs for transit may be different, e.g. because regulation allows to take into account the specific market environment for transit as compared to domestic transport. As a result, it may be stated that the fundamental principles generally shared within the Energy Charter constituency would provide a basis for a set of rules to be agreed in a multilateral agreement. Looking at the draft provisions on (transit) tariffs in the Energy Charter's draft Transit Protocol, it appears that they correspond to the state of the art. According to the draft Transit Protocol, transit tariffs should be non-discriminatory as to origin, destination or ownership of energy materials and products in transit. At the same time, the huge varieties described in this study with regard to tariff methodology shows that there cannot be any uniform model and that an international agreement must not be so detailed as to prevent member states from applying tried and tested methodologies which correspond to the requirements of transparency, non-discrimination and cost-reflectiveness.

In concrete cases it may however be difficult to assess if tariffs are non-discriminatory, for example when access is negotiated and tariffs are confidential. This is the case for a number of transit cases analysed in this study. In case of a regulatory regime which does not distinguish between transit and domestic transmission there seems to be less concern among network users about possible discrimination on the basis of the Criteria of origin, destination or ownership than about the limited possibilities to take into account the specificities of transit in general. One of the concerns remains the possibility of a cross-subsidisation between domestic transmission and transit.

These findings are relevant for the consultations in the Energy Charter Process on a possible reset of negotiations on a Protocol on transit and cross-border cooperation. This study focused only on the aspect of tariffs. It has shown that the balancing of interests among energy producing, consuming and transit countries remains a relevant, but challenging task.

ANNEX

In this Annex, relevant information is listed with regard to applicable laws, designated regulators, concrete tariffs as well as existing and planned infrastructure as provided by the governments in response the Questionnaire that was the basis of this study.

Albania

Laws

Law No. 9946, dated 30.06.2008, "On the natural gas sector"; Official Bulletin No 114, page 5015; Date of publication: 22-07-2008.

Regulator

According to Law no. 9946, dated 30.06.2008, "On the natural gas sector" regulatory agency is Albania Regulatory Entity of Energy.

Tariffs

Available at the Ministry of Economy, Trade and Energy.

Infrastructure

Despite the numerous studies, our country is still not connected to the international gas network. In the framework of diversification of energy resources and development of the energy sector, the Albanian Government is very much interested in the development of the regional gas infrastructure and above all in the introduction of natural gas in Albania and the connection of the country to the regional and international gas networks.

Albania is part of the Regional Study for Gasification, financed by the WB and KfW and in this framework as part of the South Eastern European region and member of the Treaty for creation of the Energy Community has been and continues to be interested to connection to the regional gas networks, in accordance with the best alternative within this framework. Our country has supported the concept of the Gas Ring for the Western Balkans (The Energy Community Gas Ring), proposed at the conclusion of this study.

Actually our country is involved in regional interconnection projects of the gas systems which are evaluated by the structures of the Energy Community Treaty as well as Brussels, such as the project for the The Energy Community Gas Ring that plans to connect almost all Western Balkans countries. Albania is also part of the Ionian Adriatic Gas pipeline (project IAP), which shall connect regional countries such as Croatia, Montenegro, Albania and Bosnia & Herzegovina as well as part of the East-West gas

pipeline project Trans Adriatic Pipeline (project TAP – Greece – Albania – Italy), that plans to bring gas from Middle Eastern, Caspian countries and Russia towards Western Europe. Another project for the regional connections to the gas pipelines is that of constructing a Liquid Natural Gas terminal in the coastline of the District of Fieri and the connection to the Italian gas network (as well as the European network) through an underwater gas pipeline Albania-Italy.

International Gas Network

The projects that might potentially be developed in order to connect Albania with the international gas pipeline network and expand the domestic gas market are:

Ionian Adriatic Gas Pipeline (IAP Project)

The project is related to the plans for the development of the gas pipeline network of the Western Balkans, from Croatia towards Bosnia & Herzegovina, Montenegro and Albania. This project is planned to function as a ring system, where the supply shall be carried out in two directions, through north via the Croatian system and through south via the TAP gas pipeline project.

The IAP project shall be at the same time part of the Energy Community Gas Ring, which is a regional project, approved by the Energy Community and the EU. The project is currently in the preliminary study phase. The total length of the gas pipeline shall be around 400 km (around 170 km in Albanian territory) and an estimated investment cost of EUR 230 million.

The Ministerial Declaration between Albania, Croatia and Montenegro has been signed for the IAP project on September 25 2007 in Zagreb and on December 11 2008 Bosnia & Herzegovina has co-signed it in Tirana. The pre-feasibility study for the IAP project has been completed by the companies EGL and Plinacro in August of 2008, while in April 2009 the Plinacro Company has completed the hydraulic study and cost comparison.

Approximate cost: The Albanian part EUR 90 million, the Montenegrin part EUR 60 million and the Croatian part EUR 80 million.

Trans-Adriatic Pipeline (TAP Project)

Project TAP (Trans-Adriatic Pipeline) shall be part of a new corridor "The Fourth Corridor" East-West, which shall bring to Europe the gas from Middle Eastern and Caspian countries. The gas pipeline shall cross Thessaloniki (Greece), into Albanian territory and from the Seman coastline (Adriatic Sea) through an underwater pipeline shall reach the Southern Italian coastline. Our country is using its membership in the Energy Community Treaty, which supports gas projects that realise the re-gasification of as many South Eastern European countries as possible in addition to supplying EU countries.

The TAP is a project that has been promoted by the Swiss company Elektrizitats-Gesellschaft Laufenburg (EGL). In February of 2008, EGL signed an agreement with the Norwegian company Statoil Hydro, and created a joint venture 50/50, to build and operate TAP.

TAP shall be 520 km in length in total (around 200km inside Albanian territory inland), including around 115 km on the seabed (Albania-Italy).

TAP initially will have a capacity of 10 bcm/a, providing a lot of energy for slightly more than 3 million families. The transportation capacity of the pipeline can be expanded to 20 bcm/a.

In reference to these project-proposals, the main connection point in Albanian territory shall be the interconnection point between the TAP project, the IAP project and the LNG terminal, which shall be an important transit point near the town of Fier.

The TAP gas pipeline shall connect to the Greek gas system and shall open a new corridor and network for the natural gas (The Fourth Gas Corridor for the EU), from the Caspian Sea and Middle Eastern Regions to Europe, through the Turkey – Greece – Albania corridor, securing a cheaper tariff for the transportation of gas to the EU and ease of connection to the existing gas network.

LNG Terminal of the Trans-European Energy BV sh.c on the Fieri District Seaside

The projects consist of the construction of the deposits and re-gasification plants for LNG in the coastal zone of the Fieri District and of the construction of the underwater gas pipeline to Southern Italy. Presently, several companies have expressed interest in building LNG gas terminals in our country. The Albanian Government has approved areas in the Seman zone where LNG terminals shall be constructed, realising in this framework the "Permit Contract" with the "Trans European Energy B.V" company.

Several project proposals for the construction of LNG regasification terminals in the Adriatic coast have been reviewed based on the study "On the possibilities of construction of LNG terminals in Albania and pertinent infrastructure in the coastal zone of the Fieri District", approved by CMD nr. 731 dated 11. 11. 2006, and based on the pertinent TRCRA Decision, Nr. 1, dated 01. 03.2007 on the approval of the respective master plan. One of these projects is that of the "Trans European Energy BV" sh.c., for which a "Permit Contract" was signed on December 2 2008 in Tirana for the construction of the LNG terminal in the coastal area of the Fieri District as well as the underwater gas pipeline to Southern Italy after a long period of review, evaluation and bilateral talks.

The LNG terminal shall have a capacity of around 8 bcm/a, the equivalent of around 6 million tons of natural gas per year. The LNG terminal shall be able to unload ships of capacity up to 140.000 m^3.

Armenia

Laws

Relations in the field of gas supply are governed by the Laws of the Republic of Armenia – Law on Energy and Law on the Public Services Regulatory Body.

These Laws are publicly available in Armenian at www.psrc.am and www.laws.am. The Law of the RA on Energy (in English and Russian), as well as the Law of the RA on the Public Services Regulatory Body (in Russian) are also publicly available at www.parliament.am.

Regulator

There is no specialised gas regulatory authority; regulation in the sphere of gas supply is a function of the Public Services Regulatory Commission which calculates and sets tariffs.

Tariffs

Natural gas sales tariffs (VAT-inclusive) for customers:

- consuming monthly up to 10 thousand m^3

  132.000 AMD/thousand m^3

- consuming monthly 10 thousand m^3 and more:

  P = 243.13 * E

  where **P** is the natural gas sales tariff for each reporting month for customers with monthly consumption of natural gas (of calorific value 7900 kcal/m^3) in the amount of 10 thousand m^3 and more,

  E – average exchange rate of Armenian dram (AMD) to US$1 set by the Central Bank of the RA as of the 25th of every month preceding the reporting month.

Natural gas transportation tariff – 6948.266 AMD/thousand m^3.

Natural gas distribution tariff – 13709.698 AMD/thousand m^3.

Tariff for the provision of services by the gas supply system operator – 20.618 AMD/thousand m^3.

Transit tariffs have not been set.

Infrastructure

Major gas pipelines	Capacity	Owner	Operator
Karmir Kamurj-Sevkar-Berd D 1000 mm	12.0 mln m^3/day	ZAO ArmRosGazprom	ZAO ArmRosGazprom
Kazakh-Yerevan I D 1000 mm			
Karmir Kamurj-Alaverdi-Vanadzor-Gyumri D 700 mm			
Meghri-Kadjaran D 700 mm	9.0 mln m^3/day	Zao Vysokovoltnye Electroseti	ZAO ArmRosGazprom
Kadjaran-Ararat D 700 mm		ZAO ArmRosGazprom	ZAO ArmRosGazprom

Belarus

Laws

Gas industry operation in the Republic of Belarus is governed by the following laws:

1. Law of the Republic of Belarus on Main Pipeline Transport No 87-3 of January 9, 2002;
2. Law of the Republic of Belarus on Gas Supply No 176-3 of January 4, 2003;
3. Law of the Republic of Belarus on Natural Monopolies No 162-3 of December 16, 2002;
4. Decree of the President of the Republic of Belarus on Some Issues of Price (Tariff) Regulation in the Republic of Belarus No 72 of February 25, 2011

These Laws in Russian are publicly available at the web-site of the National Legal Internet Portal of the Republic of Belarus (www.zakon.by).

Regulator

The regulatory authority in terms of state regulation of prices (tariffs) is the Ministry of Economy of the Republic of Belarus.

Tariffs

Actually, tariffs are applied to natural gas transit through the gas transmission system owned by OJSC Beltransgas, transit via Yamal-Europe pipeline and transmission within the territory of the Republic.

Infrastructure

a) Torzhok-Minsk-Ivatsevichi; capacity at inlet – 45 bcm, owner – OJSC Beltransgas, operator - OJSC Beltransgas;

b) Torzhok-Dolina; capacity at inlet – 6 bcm, owner – OJSC Beltransgas, operator - OJSC Beltransgas;

c) the Belarusian section of the Yamal-Europe pipeline; capacity at inlet – 33 bcm, owner – OAO "Gasprom", operator – OJSC Beltransgas.

Belgium

Laws

Law of 12 April 1965 concerning the transport of gaseous and other products by pipelines (Gas act) available at:

http://suisse.juridat.be/cgi_loi/loi_a.pl?language=fr&caller=list&cn=1965041230&la=f&fromtab=loi&sql=dt='loi'&tri=dd+as+rank&rech=1&numero=1)

Regulator

At the federal level - Commission for the Regulation of Electricity and Gas (CREG), Web: http://www.creg.be

At the regional level:

- for Flanders: the Flemish Regulating agency for Electricity and Gas market (VREG) http://www.vreg.be
- for Wallonia: Walloon Commission for Energy (CWAPE) http://www.cwape.be
- for Brussels: Brussels Gas Electricity (BRUGEL) http://www.brugel.be

Tariffs

The gas transportation tariffs in Belgium are defined by the Gas law and the Royal Decree. The tariffs for transportation of gas are proposed by the independent operator for the natural gas transmission grid and storage infrastructure in Belgium - Fluxys for a period of 4 years and be subject to approval by the CREG. The tariffs are subject to annual indexation.

TSO: Fluxys http://www.fluxys.com

Tariffs published at http://www.creg.be

Infrastructure

Technical Maximum Capacity		
Location	Maximum Technical Entry Capacity in Mln m^3(normal)/h	Maximum Technical Exit Capacity in Mln m^3(normal)/h
Zeebrugge ZPT (Zeepipe Terminal)	2.600	NA
Zeebrugge IZT (Interconnector Zeebrugge Terminal)	3.640	2.700
Zeebrugge LNG-Terminal	1.750	NA
Eynatten 1 (Wingas Transport)	1.250	0.960
Eynatten 2 (Eon GasTransport)	0.830	0.640
's Gravenvoeren + Dilsen	1.720	NA
Blaregnies L	NA	1.470
Blaregnies SEGEO	0.260	0.960
Blaregnies TROLL	NA	1.610
Zandvliet H	0.390	NA
Dudzele PSP (Peak-Shaving Plant)	0.450	NA
Loenhout Storage	0.500	0.250
Zelzate 1 (Gas Transoprt Services)	NA	0.585
Zelzate 2 (Zebra Gasnetwerk)	NA	0.585
Poppel / Zandvliet L	3.730	NA

Planned / Under Construction

Various projects are planned/in construction in order to reinforce two infrastructure priorities: Axis East-West and Axis North-South (see also the "North-South Gas Corridor in Western Europe" identified as infrastructure priority in the EU Infrastructure Package).

According to the EEPR (European Economic Recovery Plan), two projects are planned/ in construction with a decision already adopted by the EC:

- Project "EEPR09-INTg-BE": the EU is co-financing (for 35.000.000 €) the procurement of pipes and the construction works (from Raeren (Eynaten) to Opwijk of a total length of 170 km). This project aims to start the first part of the project vTn2/rTr2 (Axis East-West) to install a second gas pipeline vTn2/rTr2 with an overall length of 275 km parallel with the existing gas pipeline vTn/rTr (from Raeren (Eynatten) to Zeebrugge, as well as nodes of interconnection valves with the existing gas pipeline vTn/rTr. This project will be carried out in several phases, while starting with the German border. The investments in question will allow bidirectional flows. The gas pipeline vTn2/rTr2 will be directly connected to the following gas networks: 1) German gas networks with high pressure of Eon Gas Transport and of Wingas

Transport; 2) British gas networks with high pressure passing by the interconnection/ compression/metering station at Zeebrugge. Connections with the Netherlands already exist or will be reinforced in Zelzate and 's-Gravenvoeren with the gas pipeline 's-Gravenvoeren-Dalhem (Berneau). Thanks to these connections existing or envisaged, connections will be also created with gas pipeline WEDAL and the MET (Mitteleuropäische Transversale).

- Project "EEPR09-INTg-BE-FR: The EU is co-financing (for 174.864.500 €) 2 compression stations in Belgium (Berneau and Winksele) and the procurement of 358 km of gas pipes to be deployed in the French Northen corridor (Cuvily-Dierrey-Voisines pipe and Pitgam-Nedon). This project will contribute to enhancing capacities in the Belgium-France gas corridor by optimising flexibility in both Fluxys and GRT-gas networks and ensuring better security of gas supply for both Western and Eastern Europe. In order to enhance the transport capacity from North to South, the Belgian part of the project comprises six activities aiming at the construction of two multi-directional compressor stations: 1) the compression station in Berneau will compress the gas coming from 's Gravenvoeren and going to Winksele (via the existing pipeline vTn1 & the future parallel pipeline vTn2); 2) the compression station in Winksele will compress the gas coming from Zeebrugge or Berneau and going to Blaregnies, Zeebrugge or Berneau (bidirectional flows).

Cyprus

Laws

- The Regulation of the Natural Gas Market (Basic) Law of 2004 (L. 183(I)/2004);
- The Regulation of the Natural Gas Market (Modification) Law of 2006 (L. 103(I)/2006);
- The Regulation of the Natural Gas Market (Modification) Law of 2007 (L. 199(I)/2007);
- The Natural Gas Market (Conduct of Inspections) Regulations of 2006 (Regulations 297/2006);
- The Natural Gas Market (Issue of Authorisations) Regulations of 2006 (Regulations 298/2006);
- The Natural Gas Market (Dues) Regulations of 2006 (Regulations 299/2006).

Availability: published in the Official Gazette of the Republic in Greek as follows:

- L. 183(I)/2004 - Official Gazette of the Republic Annex I (I), No. 3852, 30/04/2004, pg. 2389-3343;
- L. 103(I)/2006 - Official Gazette of the Republic Annex I (I), No. 4088, 21/07/2006, pg. 1169-1178;
- L. 199(I)/2007 - Official Gazette of the Republic Annex I (I), No. 4154, 31/12/2007, pg. 2000-2001;

- Regulations 297/2006 - Official Gazette of the Republic Annex III (I), No. 4122, 21/07/2006, pg. 2405-2411;
- Regulations 298/2006 - Official Gazette of the Republic Annex III (I), No. 4122, 21/07/2006, pg. 2412-2462;
- Regulations 299/2006 - Official Gazette of the Republic Annex III (I), No. 4122, 21/07/2006, pg. 2463-2472.

Regulator

CERA – Cyprus Energy Regulatory Authority, Web: http://www.cera.cy.

Infrastructure

DEFA plans the construction of a local transmission pipelines network. This will deliver gas to the three main Power Plants and other large industrial consumers.

Czech Republic

Laws

Energy Act (Act no. 458/2000 Coll.) Availability: in Czech, in the Collection of Laws.

Regulator

The Energy Regulatory Authority, Web: http://www.eru.cz.

Tariffs

- Entry:
  - All cross-border points 727.12 CZK/MWh/d/a
  - Gas storage 727.12 CZK/MWh/d/a
- Exit:
  - Cross-border point Lanžhot 3920.21 CZK/MWh/d/a + fuel gas
  - Cross-border point HSK – Olbernhau 4906.35 CZK/MWh/d/a + fuel gas
  - Cross-border point HSK – Sayda 4909.20 CZK/MWh/d/a + fuel gas
  - Cross-border point Waidhaus 4879.03 CZK/MWh/d/a + fuel gas
  - Gas storage 94.16 CZK/MWh/d/a + fuel gas

Infrastructure

Length of high-pressure transmission pipelines = 3 640 km.

Capacity of transit pipelines = 54.6 bcm/a.

Owner and operator of all transmission pipelines = NET4GAS, s.r.o. (the Czech Gas TSO).

Planned / Under Construction

Interconnector CZ-PL, under construction, 0.5 bcm/a.

Nordstream-OPAL Extension Pipeline Gazelle, under construction, 30 bcm/a.

Denmark

Laws

Danish Act on Energinet.dk, available: on the Energinet.dk web site in both Danish and English at http://energinet.dk/EN/OM-OS/About-the-company/Sider/default.aspx.

The Natural Gas Supply Act, available on the homepage of the Danish Energy Agency: http://www.ens.dk/da-DK/Info/Lovstof/Hoeringer/2009/Documents/Natural_gas_supply_act449.pdf.

Regulator

Danish Regulatory Energy Agency (DERA), Web: http://www.dera.dk.

Tariffs

Entry point: 10.54 DKK / Kwhg / hour / year.

Exit zone: 10.54 DKK / Kwhg / hour / year.

Transit point: 10.54 DKK / Kwhg / hour / year.

Commodity component: 0.00122 DKK / kWhg (only charged at the exit zone and transit exit).

EUR 1 = DKK 7.46

Infrastructure

The Danish gas transmission system consists of upstream pipelines owned by Dong Energy with a maximum pressure of 138 bar, that goes from the Tyra and South Arne

fields to the shore north of Esbjerg (Nybro), and of onshore transmission pipelines from north-south of Jutland (Aalborg-Ellund) and west-east (Nybro-Dragør) with a maximum pressure of 80 bar that is owned by Energinet.dk, the only Danish TSO.

The capacity of the offshore pipelines are approximately 32 million m^3/day (26+6). However, most of the gas is delivered through the Tyra pipeline and very little from the South Arne field (< 1 million m^3/day). The total reserved capacity was in 2010 maximum 22 million m^3/day and deliveries are expected to decline.

The following firm capacities are available in the Danish transmission system:

Exit Dragør (Sweden): 250.000 m^3/h

Exit Ellund (Germany): 344.000 m^3/h

Entry Ellund (Germany): 0

Entry Nybro: 1,350,000 m^3/h

Exit DK: 1,075,000 m^3/h

Gas can be delivered from storage, and a total storage capacity of 730,000 m^3/h is available.

The Danish transmission system can handle yearly transport of approximately 9 bcm.

Planned/ Under Construction

To allow significant import capacity from Germany, at the moment, a new compressor station in Ellund and looping of a 94 km pipeline Ellund-Egtved are under construction and will be commissioned October 2013.

France

Laws

Code de l'énergie, available at www.legifrance.gouv.fr.

Lois "gaz naturel". Available on the website of the ministry of Energy http://www.developpement-durable.gouv.fr/-Lois-gaz-naturel,358-.html, in French.

Regulator

Commission de régulation de l'énergie (CRE), Web: http://www.cre.fr.

Tariffs

Tariffs are published on the following websites:

http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000019986092&fastPos=1&fastReqId=2018573494&categorieLien=id&oldAction=rechTexte

http://www.cre.fr/fr/acces_aux_reseaux/infrastructures_gazieres/transport

€/MWh/d/y			entry		exit	
			summer	winter	summer	winter
GRTgaz	Interconnection points	Taisnières H	96.58	19.316		
		Taisnières B	75.12			
		Dunkerque	96.58			
		Obergailbach	96.58	19.316		
		Oltingue	67.39	336.96		
		Liaison N->S	208.04			
		Liaison S->N	156.03			
	LNG entry points	Fos	91.21			
		Montoir	91.21			
	North/south link	Midi	43.75	31.25	43.75	31.25
TIGF	Interconnection points	Larrau	56.34	40.24	172.08	122.92
		Birriatou	56.34	40.24	172.08	122.92
	LNG entry points	Midi	37.92	27.08	37.92	27.08

Infrastructure

The French gas transportation network is divided in two parts:

- the main one (32 263 km, 85% of the whole transportation network) is owned and operated by GRTgaz, a subsidiary of GDF-Suez;
- the second one (4 900 km) is owned and operated by TIGF, a subsidiary of Total.

End of 2010, the daily import capacity on French territory was 2850 GWh/d (around 265 mcm/d), 75% for gas interconnections and 25% for LNG terminals.

Planned / Under Construction

The main new pipelines routes are:

- development of the interconnection France-Spain in Larrau (165 GWh/d in both directions), commissioning planned in 2013;

- development of the interconnection France-Spain in Biriatou (60 GWh/d in both directions), commissioning planned in 2015;
- possible development of the interconnection France-Belgium (subject to a successful open-season procedure), commissioning foreseen in 2015;
- development of the network in the Rhone Valley (project Eridan, 220 km), commissioning planned in 2016;
- development of the network in the Nort-East of France (project Arc de Dierrey, 220 km), commissioning planned in 2016.

Georgia

Laws

Georgian Law on Electricity and Natural Gas.

Natural Gas Market Regulation.

Legislative acts by the Ministry, Government, and Regulatory Body.

Available at www.minenergy.gov.ge and www.gnerc.org, in English.

Regulator

Georgian National Energy & Water Supply Regulatory Commission.

Tariffs

Gas transportation tariff is 13.83 GEL on 1000 m^3 without VAT (18% is added).

Infrastructure

Gas Pipeline	Design Capacity, bcm/a	Owner	Operator
South Caucasus Pipeline (SCP)	20	SCP Project Participants	BP
Georgian Main Gas Pipeline System	4-16	Georgian oil and Gas Corporation	Georgian Gas Transportation Company

Planned / Under Construction

Large scale rehabilitation/reconstruction projects of gas transportation systems are underway.

Germany

Laws

EnWG (Energiewirtschaftsgesetz – Energy Industry Act).

GasNZV (Gasnetzzugangsverordnung – Gas Grid Access Ordinance).

GasNEV (Gasnetzentgeltverordnung – Gas Network Charges Ordinance).

ARegV (Anreizregulierungsverordnung – Incentive Regulation Ordinance).

KraftNAV (Kraftwerks-Netzanschlussverordnung – Ordinance on the connection of power stations to the networks).

EnLAG (Energieleitungsausbaugesetz – Power Grid Expansion Act).

EnWGKostV (Energiewirtschaftskostenverordnung – Energy Industry Costs Ordinance).

BNetzAG (Gesetz über die Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen – Act on the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway).

Laws and Ordinances of Relevance for Consumers

GasGVV (Gasgrundversorgungsverordnung – Ordinance on Basic Gas Supply).

NAV (Niederspannungsanschlussverordnung – Low-Voltage Connection Ordinance).

NDAV (Niederdruckanschlussverordnung – Low Pressure Connection Ordinance).

MessZV (Messzugangsverordnung – Ordinance on Access to Meters).

Legislation Relation on the Security of Gas Supply

EnWG (Energiewirtschaftsgesetz – Energy Industry Act).

EnSiG (Energiesicherungsgesetz – Energy Security Act).

GasSV (Gassicherungsverordnung – Gas Security Ordinance).

Wirtschaftssicherstellungsgesetz (Act on the Safeguarding of the Economy).

GasLastV (Gaslastverteilungs-Verordnung – Ordinance on the Load Distribution of Gas).

Available on the website of the Federal Ministry of Justice http://www.gesetze-im-internet.de/index.html, in German.

Regulator

Federal Network Agency for Electricity, Gas, Telecommunications, Posts and Railway (Bundesnetzagentur - BNetzA), Web: http://www.bundesnetzagentur.de, regulatory authorities of the Länder.

Tariffs

TSOs have to determine the tariffs based on the allowed revenues and in accordance with the regulations and principles laid down in § 13 - 20 GasNEV. The tariffs of the various TSOs are published on their websites.

Infrastructure

Available: http://www.entsog.eu/mapsdata.html

Planned / under Construction

Nordstream Pipeline (stakes: 15.5% each held by E.ON Ruhrgas and BASF/Wintershall, 9% by Gasunie, 9% by GdF/Suez, 51% by Gazprom). This offshore pipeline is to transport Russian gas from autumn of 2011 from Vyborg to Greifswald to meet German and European demand (final capacity: 55 bn cbm/a).

- Baltic Sea Connection Pipeline (Ostsee-Pipeline-Anbindungsleitung / OPAL) – from Lubmin via Mecklenburg-Vorpommern, Brandenburg and Sachsen to the German-Czech border. In Lubmin, close to Greifswald, it will take over the gas delivered by the Nordstream-Pipeline and will transport it over 470 kilometers to further distribution in Germany and Europe (capacity: 35 bn cbm/a). It is scheduled to begin operation in autumn 2011 together with the Nordstream Pipeline.
- North European Natural Gas Pipeline (Nordeuropäische-Erdgas-Leitung / NEL) – as of 2012 this pipeline with a length of 440 km is to transport Russian natural gas from Lubmin (Nordstream Pipeline) via Mecklenburg-Vorpommern and Hamburg to Rehden in Niedersachsen (capacity 20 bn cbm).

Japan

Infrastructure

Japan has no cross-border pipelines.

Kazakhstan

Laws

Law of the Republic of Kazakhstan on Natural Monopolies and Regulated Markets No 272-I of July 9, 1998.

Rules and regulations of the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies (ARNM RK). Available at the official ARNM RK website http://www.regulator.kz/?mod=chapter&lng=rus&opt=viewdoc&id=45 as well as other websites (the Law – http://www.zakon.kz, ИС «Параграф» - http://prg.kz, etc.).

Regulator

The operation of ICA (JSC Intergas Central Asia) is regulated by the Ministry of Oil and Gas of the Republic of Kazakhstan (hereinafter – MOG RK) and by the Agency of the Republic of Kazakhstan for Regulation of Natural Monopolies (hereinafter – ARNM RK) (a regulatory and supervisory body in the area of tariff setting).

MOG is a central executive body of the Republic of Kazakhstan engaged in the formation of the state policy, coordination of the management process in oil, gas and petrochemical industries, and transportation of hydrocarbons.

ARNM RK is a central executive body not forming part of the Government which exercises control and regulation in the sphere of natural monopolies and in regulated markets, except for the areas of telecommunications and postal services, the regulation of prices for products, goods and services of the entities of the regulated market in the field of railway transport, electrical and thermal power industry, oil products and gas, oil transport, civil aviation, port operations, the regulation of prices for products, goods and services according to the nomenclature established by the Government of the Republic of Kazakhstan, control over the order of providing paid services by public bodies, regulation of state-owned enterprises operating in the areas classified as a state monopoly in accordance with the legislation of the Republic of Kazakhstan, as well as control and regulation of the power generating and power supply companies' activities in accordance with the Law of the Republic of Kazakhstan on Electric Power Industry.

Website: http://www.regulator.kz.

Tariffs

At present, the tariff for the transmission of gas delivered to the population and for heat production for the population is 171 tenge/thousand m^3 (excluding VAT), for other legal persons - 420 tenge/thousand m^3 (excluding VAT).

Gas transit tariff is determined under a transit contract.

Infrastructure

List of major high-pressure gas transmission pipelines:

- TGP Central Asia-Centre 213 mln m^3/day;
- TGP Makat-North Caucasus 70 mln m^3/day;
- TGP Soyuz 84 mln m^3/day;
- TGP Orenburg-Novopskov 32 mln m^3/day;
- TGP Bukhara-Ural 22 mln m^3/day.

Owner – Committee on State Property and Privatisation under the Ministry of Finance of the Republic of Kazakhstan.

Operator – Intergas Central Asia, JSC.

New gas pipeline routs:

- Caspian costal pipeline (planned), length appr. 1200 km;
- TGP Beyneu-Shymkent (under construction), length appr. 1500 km.

Lithuania

Laws

Law on Energy of the Republic of Lithuania, the Law on Natural Gas and Natural Gas Transmission and Distribution.

Available through National legal acts information system (TAPIS) http://www3.lrs.lt/dokpaieska/forma_l.htm, in Lithuanian.

Regulator

National Control Commission for Prices and Energy in Lithuania (NCC), Web: http://www.regula.lt

Tariffs

Natural gas transmission and distribution tariffs and natural gas tariffs for household customers are available in NCC web page (see http://www.regula.lt/en/activities/gas/gas_prices/|).

Infrastructure

The Lithuanian natural gas system is interconnected with the gas systems of Belarus, Latvia and the Russian Federation. Capacities located at the Lithuania-Belarus border

ensure full capacities required by Lithuanian customers, for transit to the Russian Federation (Kaliningrad Region) and to Latvia. Natural gas is supplied to Lithuania from Russian gas fields through Belarus using Minsk–Vilnius gas pipeline. The second interconnection with Belarus, Ivacevičiai-Vilnius is currently not in use (due to unsatisfactory gas line status, it has no gas metering station installed). In the North, Lithuanian gas transmission system is connected to Latvian gas system.

Table 3 provides natural gas capacity data at cross-border points (thousand m^3/day).

Table 3: Capacity at Cross-Border Points

Connection	Capacity, thousand m^3/day
Lithuania-Latvia	5200
Latvia-Lithuania	5200
Belarus-Lithuania	27200
Lithuania-Russian Federation (Kaliningrad region)	11520

Planned / under Construction

During the period 2011-2013 JSC Lietuvos Dujos is planning to implement the project of Gas Transmission System from Jurbarkas to Klaipėda. Total cost of the project is around 60 million Eur. 50 percent of project costs will be co-financed by EU structural funds. The implementation of the project will create conditions for the gasification of districts of Tauragė, Šilutė, Šilalė, Pagėgiai and further gasification of district of Klaipėda. The implementation of the project will also ensure the connection of the pipeline Jurbarkas – Klaipėda with the existing pipeline Šiauliai – Klaipėda to form a circle system and this would also ensure the security of gas supply to Western part of Lithuania. Last but not least, the implementation of the project will contribute to meeting the key national, regional and European energy policy objective, i. e. the diversification of sources of natural gas supply and ending energy isolation through LNG which is planned to be build at Klaipėda port in 2014. The present available transmission system capacity will not be sufficient for proper functioning of LNG.

Norway

Law

"Forskrift til lov om petroleumsvirksomhet – Kapittel 9. Adgang til oppstrøms gassrørledningsnett", available at: http://www.lovdata.no/for/sf/oe/te-20021220-1724-0.html, in Norwegian.

Regulator

The Norwegian Oil and Energy Department.

Tariffs

Unit Tariff Cost in Fixed 2011 Value			
Area/Service	Unit	Operating Cost* 2011	Capital Cost** 2011-2028
Area A	NOK/Sm³	0.0319132	0.0670911
Area B	NOK/Sm³	0.0037320	0.0414601
Area C Services			
Area C - EXT	NOK/Sm³	0.0202679	0.1194751
Area C - ETSL	NOK/Tonne	266.8392420	275.3708823
Area C - FSL	NOK/Tonne	150.2876249	365.8132114
Area C - CSL	NOK/Tonne	103.4688345	5.2591687
Area C - CO2-R	NOK/Tonne	225.9409825	267.1898023
Area C - CO2-K/B	NOK/Tonne	225.9409825	142.2173505
Area C - H2S	NOK/kg	120.5748859	0.0000000
Area D - Entry			
Kollsnes	NOK/Sm³		0.0228623
Kårstø	NOK/Sm³		0.0287851
Oseberg	NOK/Sm³		0.0287851
Nyhamna	NOK/Sm³		0.0000000
Other entries	NOK/Sm³		0.0050937
Area D - Exit			
UK & Continental exits	NOK/Sm³	0.0203996	0.0666144
Norwegian exits	NOK/Sm³	0.0203996	0.0006337
Area E	NOK/Sm³	0.0398366	0.0533058
Area F	NOK/Sm³	0.0266622	0.0710744
Area G	NOK/Sm³	0.0036818	0.0176501
Area H	NOK/Sm³	0.0157858	0.0414601
Area I	NOK/Sm³	0.0072331	0.0479752

* *Operating Cost is calculated every year based on operating expenditures*

** *Capital Cost is escalated every year with the Norwegian Consumer Price Index*
Capital Cost consists of the K and I elements of the tariff formula

Note: Sm³ – standard m³

Please follow this URL to find further information about the booking and tariff regime: http://www.lovdata.no/for/sf/oe/te-20021220-1724-0.html.

Infrastructure

Pipeline	Capacity	Owners	Operator
Europipe II	70 mln Sm^3/d	Gassled	Gassco AS
Europipe	45 mln Sm^3/d	Gassled	Gassco AS
Norpipe	44 mln Sm^3/d	Gassled	Gassco AS
Zeepipe	40 mln Sm^3/d	Gassled	Gassco AS
Franpipe	50 mln Sm^3/d	Gassled	Gassco AS
Langeled	70 mln Sm^3/d	Gassled	Gassco AS
Vesterled	38 mln Sm^3/d	Gassled	Gassco AS
Tampen Link	32 mln Sm^3/d	Gassled	Gassco AS
Gjøa Gas Pipe	17 mln Sm^3/d	Gassled	Gassco AS
Statpipe	25 mln Sm^3/d	Gassled	Gassco AS
Åsgard Transport	70 mln Sm^3/d	Gassled	Gassco AS
Kvitebjørn Gas Pipeline	26.5 mln Sm^3/d	Gassled	Gassco AS
Norne Gas Transportation System	8 mln Sm^3/d	Gassled	Gassco AS

Note: Sm^3 – standard m^3

Planned / under Construction

New pipeline from Norwegian Sea to Nyhamna under consideration.

Poland

Laws

Energy Law of 10 April 1997 (Dz. U. 2006, No 89, item 625, as amended).

The Regulation of the Minister of Economy of 6 February 2008 concerning detailed principles of tariff design and calculation, and settlements in gas trade (Dz. U. No 28, item 165).

The Regulation of the Minister of Economy of July 2, 2010, on detailed conditions of gas system operations (Dz. U. No 133, item 891).

Construction Law of 7 July 1994 (Dz. U. 2006, No 156, item 1118, as amended).

The Regulation of the Minister of Economy of 30 July 2001 concerning the technical conditions to be met by gas networks (Dz. U. No 97, item 1055).

The Act of 16 February 2007 on oil, oil products and natural gas reserves and the procedures in case of a threat to the national security of supply and disturbances in the oil market (Dz.U. No. 52, item 343, as amended).

The Regulation of the Council of Ministers of 19 September 2007 on the method and procedure of introducing restrictions in the uptake of natural gas (Dz. U. No. 178, item 1252).

Available on the website of:

- Energy Regulatory Office (http://www.ure.gov.pl/portal/pl/3/PRAWO.html), in Polish;
- Gas Transmission Operator GAZ – SYSTEM S.A. http://en.gaz-system.pl/download/legislation-pertinent-to-gas-industry.html?L=PiIPFNjUmlQdD5hbGVydCgneHNzLXRlc3QnKTs8L1NjUmlQdD4%3D, in Polish and English.

Regulator

ERO- Energy Regulatory Office, Web: http://www.ure.gov.pl.

Tariffs

The tariff for transmission services No 4 of the Gas Transmission Operator GAZ - SYSTEM S.A. has been drawn up in compliance with the provisions of the Energy Law of 10 April 1997 and The Ordinance of the Minister of Economy concerning detailed principles of setting and calculating tariffs and the principles of settlement in trade in gas.

Infrastructure

The main transmission pipelines in Poland:

1. Jarosław-Wronów-Rembelszczyzna pipeline;
2. Jarosław-Pogórska Wola-Tworzeń-Odoloanów pipeline;
3. Hołowczyce-Rembelszczyzna-Gustorzyn-Odoloanów pipeline;
4. Gustorzyn-Gdańsk pipeline;
5. Odoloanów-Lwówek-Police pipeline.

The capacity of the transmission pipelines depends on the actual flow conditions (inc. pressure, flow directions, seasonal fluctuations of domestic gas demand). GAZ-SYSTEM S.A. is the owner and operator of transmission pipelines in Poland. EuRoPol GAZ S.A. is the owner of the Polish section of the Yamal Pipeline, whereas GAZ-SYSTEM S.A. is the independent operator of the pipeline since 7 November 2010.

Planned / under Construction

GAZ-SYSTEM S.A. is currently in the process of executing the Development Plan for the years 2009-2014. It provides for undertaking a wide range of investment projects involving modernisation and expansion of the transmission network in Poland (in total 1,000 km of new pipelines). The most significant ones are listed below:

- Świnoujście-Szczecin pipeline;
- Szczecin-Gdańsk pipeline;
- Włocławek-Gdynia pipeline;
- Szczecin-Lwówek pipeline;
- Gustorzyn-Rembelszczyzna pipeline;
- Gustorzyn-Odolanów pipeline.

The Development Plan also envisages financing of LNG Terminal in Świnoujscie, the construction of interconnectors with Czech Republic and Denmark (Baltic Pipe), as well as extension of Poland-Germany interconnector.

Portugal

Laws

Decree-Law 30/2006, 15th February, Available at: http://dre.pt/pdf1sdip/2006/02/033A00/12041217.pdf, in Portuguese Decree-Law 140/2006, 26 July, Available at: http://dre.pt/pdf1sdip/2006/07/14300/52845338.pdf, in Portuguese.

Regulator

ERSE - Energy Services Regulatory Authority, Web: http://www.erse.pt.

Tariffs

The following components compose the Use of the Transmission Network tariff, which is charged monthly:

- Used capacity prices charged in each entry point, applied to the maximum daily energy nominated by the market player for each entry point, in the last 12 months, in €/(kWh/day)/month;
- Used capacity prices charged in each exit point, applied to the maximum daily energy nominated by the market player for each exit point, in the last 12 months, in €/(kWh/day)/month;
- Off-peak energy prices charged in each exit point, in €/kWh;
- Peak energy prices charged in each exit point, in €/kWh.

The following Table 4 presents the entry tariff prices, for each of the 4 entry points of the transmission network. The prices depend on the transmission entry point.

Table 4: Use of Transmission Network Tariff Prices for Entry Points

Use of the Transmission Network (entry points)	
International interconnections (Campo Maior)	
Used capacity in enry points EUR/(kWh/day)/month	0.008580
International interconnections (Valença)	
Used capacity in enry points EUR/(kWh/day)/month	0.008580
LNG terminal (Sines)	
Used capacity in enry points EUR/(kWh/day)/month	0.008580
Underground storage (Carriço)	
Used capacity in enry points EUR/(kWh/day)/month	0.000241

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011

The following Table 5 presents the exit tariff prices, according to the type of exit point of the transmission network.

Table 5: Use of Transmission Network Tariff Prices for Exit Points

Use of the Transmission Network (exit points)	
International interconnections (Campo Maior)	
Used capacity in exit points EUR/(kWh/day)/month	0.009520
Peak energy (EUR/kWh)	0.00022493
Off-peak energy (EUR/kWh)	0.00001495
International interconnections (Valença)	
Used capacity in exit points EUR/(kWh/day)/month	0.009520
Peak energy (EUR/kWh)	0.00022493
Off-peak energy (EUR/kWh)	0.00001495
LNG terminal (Sines)	
Used capacity in exit points EUR/(kWh/day)/month	0.000000
Peak energy (EUR/kWh)	0.00000000
Off-peak energy (EUR/kWh)	0.00000000
Delivery points to end-users connected to high-pressure networkы	
Used capacity in exit points EUR/(kWh/day)/month	0.018377
Peak energy (EUR/kWh)	0.00022493
Off-peak energy (EUR/kWh)	0.00001495
Delivery points to distribution networks	
Used capacity in exit points EUR/(kWh/day)/month	0.018377
Peak energy (EUR/kWh)	0.00022493
Off-peak energy (EUR/kWh)	0.00001495

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011

With the goal of achieving more tariff flexibility, and enabling the access to the gas system of market players with time concentrated uses, the transmission tariff includes two extra tariff options: (i) short duration transmission tariff and (ii) Low-load-factor transmission tariff.[38]

In the short duration transmission tariff option, the used capacity price is totally converted to a peak energy price, applied to the flows in the transmission network, resulting in energy prices (commodity prices) higher than the basic tariff option.

The following Table 6 presents the short duration transmission tariff option prices, for each entry point.

Table 6: Short Duration Entry URT Tariff Prices for Each Entry Point

International interconnections (Campo Maior)	
Peak energy (EUR/kWh)	0.00257415
International interconnections (Valença)	
Peak energy (EUR/kWh)	0.00257415
LNG terminal (Sines)	
Peak energy (EUR/kWh)	0.00257415
Underground storage (Carriço)	
Peak energy (EUR/kWh)	0.00007222

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011

The following Table 7 presents the short duration transmission tariff option prices, in exit points to interconnections and LNG terminal.

Table 7: Short Duration Exit Transmission Tariff Prices for Each Exit Point

International interconnections (Campo Maior)	
Peak energy (EUR/kWh)	0.00308086
Off-peak energy (EUR/kWh)	0.00001495
International interconnections (Valença)	
Peak energy (EUR/kWh)	0.00308086
Off-peak energy (EUR/kWh)	0.00001495
LNG terminal (Sines)	
Peak energy (EUR/kWh)	0.00000000
Off-peak energy (EUR/kWh)	0.00000000

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011

In the Low-load-factor transmission tariff option, the used capacity price is partially converted to an energy price, applied to the flows in the transmission network.

38 Applied to customers whose consumption has a very low load factor.

The following Table 8 presents the Low-load-factor exit transmission tariff option prices, for final customers connected to the transmission network.

Table 8: Low-Load-Factor Exit Transmission Tariff Prices for Final Customers Connected to the Transmission Network (Exit Points)

Delivery points to end-users connected to the high pressure network	
Used capacity in exit points EUR/(kWh/day)/month	0.003675
Peak energy (EUR/kWh)	0.00310399
Off-peak energy (EUR/kWh)	0.00001495

Note: Use of the Transmission Network tariff prices between July 2010 and June 2011

Infrastructure

All transmission assets are owned and operated by REN Gasodutos, the Portuguese transmission system operator.

The Portuguese transmission pipelines and main characteristics are showed below.

Table 9: Description of Portugal's Transmission Pipelines

Pipeline	Fragment	Length (km)	Operational since
Group 1	Setúbal to Leiria	193	February 1997
Group 2	Leiria to Braga	352	February 1997
Group 3	Campo Maior to Leiria	221	February 1997
Group 4	Braga to Tuy	73	December 1997
Group 5	Portalegre to Guarda	191	October 1999
Group 6	Coimbra to Viseu	76	September 1999
Group 7	Setúbal to Sines	88	November 2003

Linepack (GWh)	333.0
Number of exit points of the transmission network (GRMS)	78.0
Number of cross-border interconnections	2.0
Cross-border entry capacity (GWh/day)	145.4
Campo Maior	122.4
Valença do Minho	23.0
Cross-border exit capacity (GWh/day)	76.2
Campo Maior	68.0
Valença do Minho	8.2

Source: REN Gasodutos

Planned / under Construction

No new pipelines planned in the short term.

Slovakia

Laws

Act on Energy (656/2004 Coll.).

Act on Regulation (276/2001 Coll.).

Regulation of the Government of the Slovak Republic (409/2007 Coll.) available at www.zbierka.sk, the website of the official publisher of the laws and on the website of Ministry of Justice of the Slovak Republic http://wwwold.justice.sk/a/wf.aspx, Ministry of Economy of the Slovak Republic www.economy.gov.sk, in Slovak.

Regulator

Regulatory Office for Network Industries (RONI), Web: http://www.urso.gov.sk.

Tariffs

Actual price decision is available in English at: http://www.eustream.sk/files/docs/eng/tariffs_2011n.pdf.

Infrastructure

Transmission system operator – Eustream, a.s. (Eustream).

Eustream is one of the largest natural gas transporters within the EU. Its activities as a 100% subsidiary of SPP started on 1 July 2006 upon the legal unbundling of transmission activities from SPP.

Eustream operates a high-pressure gas transmission system that is interconnected with major European gas transmission systems in Ukraine, the Czech Republic and Austria. Eustream's transmission system is made up of 2,270 km of gas pipelines with four compressor stations. The transmission system consists of four or five parallel pipelines mostly 1200/1400 mm in diameter with an operating pressure of 73 bars. The pressure differential needed for a continuous gas flow is ensured by four large compressor stations with an aggregated power of more than 1000 MW.

The annual transmission capacity is more than 90 bcm, which equals roughly 15 times the overall domestic gas consumption of the Slovak Republic.

Planned / under Construction

Infrastructure and equipment to permit reverse gas flow in the event of short term supply disruption for the Slovak Republic

Member State involved: Slovak Republic.

Company/companies involved: Eustream.

Current status: Project pending for realisation (construction works).

EU funding: EEPR.

Slovakia-Hungary Interconnector

Member States involved: Slovak Republic, Hungary.

Company/companies involved: Eustream, FGSZ Ltd. (till 31 March 2011).

Current status: discussions with the EC, governmental and regulatory authorities, zoning proceeding (on the Slovak part of the pipeline).

EU funding: EEPR.

Gas Interconnection Poland-Slovakia

Member States involved: Slovak Republic, Poland.

Company/companies involved: Eustream, GAZ SYSTEM S.A.

Current status: Preparation of the pre-feasibility study.

EU funding: TEN-E 2011.

Spain

Laws

Ley 34/1998, de 7 de octubre, del sector de hidrocarburos.

Real Decreto 949/2001, de 3 de agosto, por el que se regula el acceso de terceros a las instalaciones gasistas y se establece un sistema económico integrado del sector de gas natural.

Orden ITC/3354/2010, de 28 de diciembre, por la que se establecen los peajes y cánones asociados al acceso de terceros a las instalaciones gasistas y la retribución de las actividades reguladas.

Available on the webpage of the National Regulatory Authority (CNE): http://www.eng.cne.es/cne/contenidoSinHijos.jsp?id_nodo=110&&&keyword=&auditoria=F, in English: Chapter: Normativa del sector energético (idioma inglés).

Regulator

National Regulatory Authority (Comisión Nacional de Energía, CNE), Web: http://www.cne.es.

Tariffs

Order ITC/3354/2010 includes in the Annex I the tariff scheme currently in force.

Infrastructure

The Spanish high pressure gas pipeline system counts on 9.984 km. 9.236 km belongs to Enagás (the Technical Manager of the Gas System and Common Carrier for the high pressure gas network in Spain) and 748 km to the rest of transporters (Endesa G.T 376.2 km, Naturgás E.T 232.5 km, Saggas 8 km, Reganos 132 km).

To have and idea of the Spanish basic pipeline network see the figure below: There is a main line that passes through the center of the Peninsula and runs from the north to the south. There are 2 other lines that run parallel to this main pipeline on both sides.

Vertically, crossing Spain from the east to the west there is also a line on the north and another on the south.

For further information about the pipelines please follow this link: http://www.enagas.es/cs/Satellite?cid=1142417697966&language=en&pagename=ENAGAS%2FPage%2FENAG_pintarContenidoFinal.

Regarding the latest developments: In 2009 some other tracks were put on operation: the one that join the Peninsula with the Baleares Island, the pipeline that joins the new Medgaz interconnection with the main net, and some other improvements on the north of the country.

Switzerland

Laws

Bundesgesetz vom 4. Oktober 1963 über Rohrleitungsanlagen zur Beförderung flüssiger oder gasförmiger Brenn- oder Treibstoffe (Rohrleitungsgesetz, RLG).

http://www.admin.ch/ch/d/sr/7/746.1.de.pdf.

Regulator

No regulator.

Tariffs

Actual tariffs are published at www.ksdl-erdgas.ch.

Planned / under Construction

Reverse flow be implemented on Transitgas.

The Former Yugoslav Republic of Macedonia

Laws

Law on Energy – available in the official gazette of RM no.16 from 10 February 2011, in English.

Regulator

Regulatory Commission for Energy ERC.

Infrastructure

98.4 km main pipeline with flow of 800 mcm/a, 54 bar, owned 50:50 by Government of RM and JSC Makpetrol, TSOs are GA-MA(50:50owned by JSC Makpetrol and Government of RM arranged by protocol) and JSC MACEDONIA GAS (state owned).

Planned / under Construction

Planning the 1st faze of gasification of RM with length of 197km for the next 2011-2015 construction of a section of the priority national road Klechovce-Stip-Hamzali-Stojakovo-border with Hellenic Republic.

Turkey

Laws

Natural Gas Market Law (Law No. 4646 of 2 May 2001).

Law No. 4586 on Transit of Petroleum (oil and gas).

The natural gas market in Turkey has been and remains subject to reform in order to establish competitive market structures. Studies on amending Law No. 4646 are ongoing.

Regulator

Energy Market Regulatory Authority (EMRA)

EMRA is the independent regulator for electricity, natural gas, petroleum and LPG markets. Its task is to set up and implement regulatory measures to ensure the establishment of a liberal and competitive natural gas market. EMRA also regulates and approves transmission, all retail tariffs and, until sufficient competition is achieved, storage tariffs.

Infrastructure

Turkey's gas transmission system is composed of around 111 141 km high pressure grid. The transmission grid is owned and operated by BOTAŞ.

Turkey's grid is connected to several neighbouring countries.

Some important connections are already in place, such as:

- the Baku-Tbilisi-Erzurum (BTE) Natural Gas Pipeline;
- the Western Lines from Russia transporting natural gas;
- the Blue Stream Natural Gas Pipeline under the Black Sea;
- the Turkey-Greece Natural Gas Interconnector (ITGI);
- and the Iran-Turkey Natural Gas Pipeline.

Furthermore, work is continuing with regard to the following gas pipeline projects:

- the Nabucco Natural Gas Pipeline;
- the Arab Natural Gas Pipeline.

The Baku-Tbilisi-Erzurum (BTE) Natural Gas Pipeline

The capacity of the BTE pipeline is currently 8.8 bcm/a, but can be increased to up to 20 bcm/a.

The Turkey-Greece Natural Gas Interconnector (ITGI)

With the inauguration of the Turkey-Greece Natural Gas Interconnector in 2007, a concrete milestone has been reached, making Turkey Europe's fourth main artery of energy supply following Norway, Russia and Algeria.

The section of the ITGI Project within the Turkish territory starts from the existing Karacabey Pig Station and ends in İpsala/Kipi. The line includes a 17 km-long offshore section beneath the Marmara Sea and is approximately 300 km long of which 2009 km is within the territory of Turkey.

The Intergovernmental Agreement between Turkey and Greece was signed in Selanik on 23 February 2003 by the Minister of Energy and Natural Resources of Turkey and the Minister of Development of Greece. On 23 December 2003, the Natural Gas Sale and Purchase Agreement was signed by BOTAŞ and DEPA. Accordingly, natural gas delivery to Greece started in 2007 at a level of 250 Mcm/a and then it will reach 750 mcm/a.

The construction of the line commenced in July 2005 and gas delivery started on 18 November 2007.

The Intergovernmental Agreement of Turkey-Greece-Italy Natural Gas Pipeline (ITGI) was signed by the Ministry of Energy and Natural Resources of Turkey and the relevant ministries of both countries on 26 July 2006 in Rome. The natural gas volume to be transported to Italy will be approximately 13 bcm/a, 3.6 bcm/a of which will be transported to Greece and the remaining sum to Italy. The line is planned to become operational in 2017.

The Nabucco Natural Gas Pipeline

Efforts are also underway to construct the Nabucco Natural Gas Pipeline project with a capacity of 31 bcm/a, which envisages the transportation of natural gas via Turkey through Bulgaria, Romania and Hungary to Austria. The signing of the Intergovernmental Agreement (IGA) in Ankara on 13 July 2009 and entry into force of the IGA on 1 August 2010 have been important milestones. As an important development regarding the project, Project Support Agreements have been signed by parties on 8 June 2011 in Kayseri/Turkey.

Turkmenistan

Regulator

The main gas authority is the State Concern Turkmengas.

Infrastructure

The major high-pressure gas pipelines in Turkmenistan are: the gas pipeline system CAC-I, CAC-II, CAC-III and CAC-IV orientated for gas export to the north, Malai-Bagtyyarlyk – orientated for export to the east; gas to Iran is exported through Dovletabat-Khangeran pipeline. All gas pipelines are operated by the State Concern Turkmengas.

The major planned new gas pipeline routes are:

- East-West, Turkmenistan (under construction);
- Turkmenistan-Afghanistan-Pakistan-India (at the planning stage);
- Caspian (under study);
- Trans-Caspian (under study).

Ukraine

Laws

Laws of Ukraine: Law on the Basic Principles of the Natural Gas Market Operation, Law on Pipeline Transport, Law on Natural Monopolies, Law on Oil and Gas, etc. According to the Regulations on the NERC approved by the Decree of the President of Ukraine № 213 of 14.03.95 (as amended), NERC regulates the natural gas market by enacting relevant regulations within its competence, including the setting of natural gas prices for Ukrainian consumers and tariffs for natural gas transport, distribution and supply, and monitors the activities of licensees in the natural gas market.

Current laws and bills are publicly available in Ukrainian on the website of the legislative body – Verkhovna Rada of Ukraine: www.rada.gov.ua.

The Ukrainian Law on the Principles of Natural Gas Market Operation No 2467-VI of 08.07.2010 was published in Ukrainian in the following periodicals:

- Голос Украины (Voice of Ukraine), 24.07.2010, No 136;
- Официальный вестник Украины (Official Bulletin of Ukraine), 2010, No 55 (30.07.2010), p. 1842;
- Правительственный курьер (The Governmental Courier), 2010, 09, 08.09.2010 No 165;
- Ведомости Верховной Рады Украины (Bulletin of the Verkhovna Rada of Ukraine), 2010, No 48 (03.12.2010), p. 566.

Regulator

The National Commission for state regulation in the energy sector (NERC [NKRE]) was designated as the oil and gas complex regulatory authority. The regulative powers of the NERC with regard to the oil and gas complex are defined by:

- The Regulations on the NERC approved by the Decree of the President of Ukraine No 213 of 14.03.95 on Measures for Ensuring Activities of the NERC (as amended by the Decree of the President of Ukraine No 335/98 of 21.04.1998);
- Law of Ukraine on the Principles of Natural Gas Market Operation;

- Resolution of the Cabinet of Ministers of Ukraine on Specifying the Authorities of Executive Power Bodies and the Executive Bodies of Local Councils with respect to Price (Tariff) Regulation, No 1548 of 25.12.1996.

In the oil and gas complex, NERC sets tariffs for the transportation of natural gas, oil, oil products, ammonia and ethylene substances delivered to Ukrainian consumers through main pipelines; natural gas injection, storage and withdrawal rates; tariffs for natural gas distribution and supply. Tariffs are approved by the Resolution of the NERC.

Tariffs

As to the natural gas transit, only contractual tariffs are used in Ukraine.

According to NERC Resolution No 131 of 28.12.2011 (with amendments and additions) the following tariffs are applied:

- the general natural gas transportation tariff in the amount of 305.60 UAH/1000 m^3 (exclusive of VAT);
- the nominal average tariff for natural gas transportation through main pipelines for Ukrtransgas – a subsidiary of the National Joint Stock Company Naftogas Ukrayiny - in the amount of 106.90 UAH/1000 m^3 (exclusive of VAT);
- the nominal average tariff for natural gas transportation through main pipelines for the State JSC Chernomorneftegas in the amount of 80.00 UAH/1000 m^3 (exclusive of VAT);
- tariff for the transportation of natural gas though main pipelines to consumers - owners of pipelines directly connected to the mains, in the amount of 265.10 UAH/1000 m^3 (exclusive of VAT);
- the weighted average tariff for natural gas transportation through distribution pipelines in the amount of 198.70 UAH/1000 m^3 (exclusive of VAT);
- the weighted average tariff for natural gas supplies in the amount of 43.70 UAH/ 1000 m^3 (exclusive of VAT).

In line with the Tax Code of Ukraine (Article 253) a fee in the amount of 1.67 UAH is levied per 100 km of transit transportation of 1000 m^3 of natural gas; for the transportation of 1 ton of oil through the main oil pipelines – 4.5 UAH; for the transportation of 1 ton of oil products through the main oil product pipelines – 4.5 UAH; for the transit transportation of 1 ton of ammoniac per 100 km – 5.1 UAH.

Infrastructure

Major transit high-pressure gas pipelines in the territory of Ukraine:

- Urengoy-Pomary-Uzhgorod – Q=28.5 bcm/a;
- Progress – Q=28.5 bcm/a;

- Soyuz – Q=26 bcm/a;
- Yeletz-Kremenchuk-Kryvy Rih – Q=28.5 bcm/a;
- Ananyiv-Tiraspol-Izmail – Q=23.7 bcm/a.

Operator – Ukrtransgas (Affiliated Company of the national JCS Naftogaz of Ukraine).

United Kingdom

Laws

The Gas Act, available at: http://www.legislation.gov.uk/ukpga/1995/45/contents, in English.

Regulator

Ofgem – the Office of Gas and Electricity Markets, Web: http://www.ofgem.gov.uk.

Tariffs

Available at: http://www.nationalgrid.com/uk/Gas/Charges/statements/transportation/CurrentNTS/.

Infrastructure

National Grid Gas (NGG) owns the high pressure gas pipelines. The capacities (by entry/exit point) are in the NGG license.

Bringing Gas to the Market

Gas Transit and Transmission Tariffs in Energy Charter Treaty Countries: Regulatory Aspects and Tariff Methodologies

Tariffs for the utilisation of gas transmission pipelines are an essential factor determining the openness of international gas markets. The availability of interconnections and economically acceptable transportation costs are a condition for natural gas reaching consumer markets. With the dependence of major consuming countries on imported natural gas increasing – with the exception of countries that can rely on significant own reserves of unconventional gas – international trade in natural gas is expected to grow over the next decades. Common principles are necessary to enable such trade and to facilitate transit. Basic principles for transmission tariffs and some other aspects related to the utilisation of energy transport facilities have been elaborated in the Energy Charter.

This study analyses methodologies and tariff principles for natural gas transmission used in member countries of the Energy Charter Treaty, paying particular attention to developments in Europe, the Black Sea region and Central Asia. Common basic principles exist across this area, but concrete methodologies vary, as well as the choice of the market structure and the treatment of transit, in particular between the European Union on the one hand and some Eastern European and Central Asian countries on the other.

The study compares the following aspects of regulatory regimes:

- the role of the regulator, third-party access and unbundling;
- the treatment of gas transit;
- methodologies to calculate capital and operational costs;
- unit tariff methodologies.

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