CHAPTER 5

Turkey's Natural Gas Market Liberalisation in the Context of the EU

5.1 Introduction

Energy for a strategically important country like Turkey, which sits at the crossroad of major supply and demand regions, clearly plays a crucial role both economically and politically. Therefore, the role of liberalisation in a healthier gas sector to serve the country's many needs has been particularly debated in Turkey since the late 1990s, and Turkey, whose natural gas consumption today accounts for more than one third of the EU's gas supply, has begun restructuring its inherently monopolistic natural gas industry in conjunction with the process of liberalisation of the markets. Different parts of the market have thus far been affected by the reforms created by the country's first and only NGML although the degree and form of which vary considerably. Against this background, the objective of this chapter is to provide an updated overview of Turkey's natural gas market liberalisation in the context of the EU energy legislation and to discuss how regulatory institutions have attuned to sector developments. Furthermore, it is intended to answer the first research question: "What are the characteristics of the legal framework that has been created to ensure natural gas market liberalisation in Turkey and how effective is it?"

To do so, the chapter begins with a review of Turkey's natural gas market structure before and after the NGML to compare how the reforms have led to changes including price regulation and the subsidies. It then studies the compulsory measures of the EU Energy Directives and compares the compliance of the 2001 Law with those. The final section concludes.

O. Demir, *Liberalisation of Natural Gas Markets*, The Political Economy of the Middle East, https://doi.org/10.1007/978-981-15-2027-3_5

5.2 The Turkish Natural Gas Market Structure: Before and After the Natural Gas Market Law of 2001

Although a marginal amount of natural gas was already being produced by TPAO in the mid-1980s (IEA 2013) natural gas was properly introduced to Turkish consumers in 1987 following the first gas sales and purchase agreement signed between BOTAŞ and Soyusgaz of the USSR in February 14, 1986. The Statutory Decrees No. 350 in 1988 and No. 397 in 1990 were the earliest legislations regarding the country's natural gas sector which granted the governance of the sector consecutively to BOTAŞ authorisation to be able to import, purchase, transmit and sell natural gas and LNG (Yardımcı 2011). At that time, only the production segment of the sector was open to private participants and BOTAŞ was the sole seller to OIZs and industrial users consuming more than 1 mcm gas per year which, in other words, meant that BOTAŞ was the direct price setter for almost 80% of the market and indirectly for the rest.

The introduction of liberalisation reforms in Turkey's energy markets began on 20 February 2001, when the government of Turkey approved the Electricity Market Law No. 4628, which was soon followed by the NGML No. 4646 to be effective from 2 May 2001. The provisions of both laws aimed at the harmonisation of the Turkish energy legislation with the EU's energy acquis (Akçollu 2006) and the NGML was developed to introduce competition into the sector and enhance opportunities for private sector involvement with the hope, in turn, to create lower prices and consumer choice for final gas users (USITC 2001). BOTAŞ was a vertically integrated de facto monopoly until the enactment of the 2001 Law[1] as stated above and held considerable market power by participating in all aspects of the market except production and later distribution (Fig. 5.1).

The 2001 Law can be considered as the beginning of a long, onerous process of transition for Turkey's gas sector governance and institutional framework, in which the liberalisation reforms were predominantly driven

[1] BOTAŞ was founded to transport Iraqi crude oil to Turkey in 1974. The responsibilities of BOTAŞ was first expanded to natural gas transportation and trade activities in 1987 and soon followed by further monopoly rights granted on natural gas import, distribution, sales and pricing in 1990. Formerly acting as an affiliation to TPAO, BOTAŞ was restructured as an independent state-owned enterprise as a result of advancing natural gas operations (Çetin and Oğuz 2007).

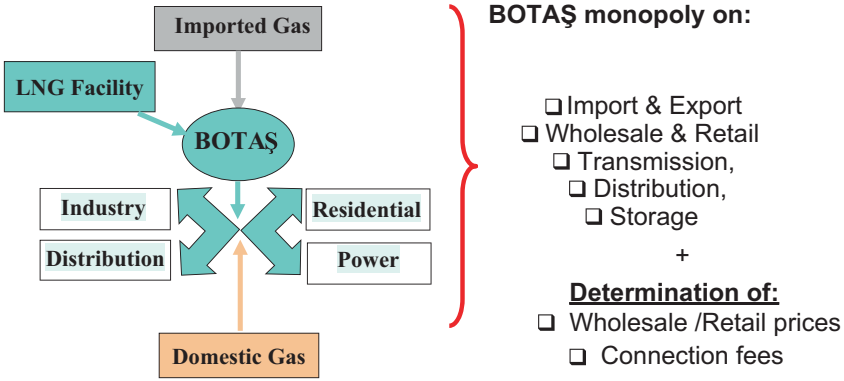

Fig. 5.1 Turkish natural gas market structure before the 2001 Law. (Source: Yardımcı (2018, 6))

by the EU energy directives. Following the provisions of the First Directive, the initial primary objectives were set out for the domestic market starting with the encouragement of the private sector to participate in market activities. This was bolstered with the establishment of an independent regulator, the Energy Market Regulatory Authority (EMRA), which was again initially set up as part of the liberalisation reform process for the electricity market and later became the sole regulatory authority for the entire energy market centralising powers previously spread amongst various agencies.[2]

The Law allowed a preparatory period of 12 months starting from May 2001 for both the EMRA to enact the secondary legislation (Table 5.1) and the companies keen for market entry to prepare for the licence applications. Given there was no availability of licence or certificate grants to any company until the end of the preparatory period, the companies which were already involved in the market, based on an acquired legal right, document, permission or authorisation prior to May 2001, were allowed to continue their acts for a maximum of 24 months starting from the date the 2001 Law came into effect. Permanent continuation of their market activities was strictly conditioned to (1) submission of a new application to

[2] The duties of the EMRA was expanded to the oil market as a solely responsible authority by the Petroleum Market Law (PML) No. 5015 in 2003 and for liquefied petroleum gases (LPG) by the Law No. 5307 in 2005. In 2013, the EML No. 6446 was revised and the duties of the EMRA were re-arranged and expanded even further.

Table 5.1 Natural gas market regulations and communiqués by EMRA

Natural Gas Market Law
Natural Gas Market Law (NGML) No. 4646
Natural Gas Market Regulations
Natural Gas Market Regulation on Licensing
Natural Gas Market Regulation on Certification
Natural Gas Market Regulation on Distribution and Customer Services
Natural Gas Market Regulation on Tariffs
Natural Gas Market Regulation on Facilities
Natural Gas Market Regulation on Transmission Network Operation
Natural Gas Market Regulation Internal Installations Regulation
Regulation on Organised Natural Gas Wholesale Market
Regulation on Information Security of Industrial Control Systems Used in Energy Sector
Regulation on Selection of Legal Persons Applying for Natural Gas Storage Activities at the Same Facility
Regulation on Principles and Procedures for Carrying out Inspections, Preliminary Researches and Investigations within the Natural Gas Market
Regulation on Basic Utilisation Principles and Procedures Applicable to Natural Gas Underground Storage Facilities
Regulation on the Establishment of Basic Utilisation Principles and Procedures Applicable to Liquefied Natural Gas
Natural Gas Market Communiqués
Communiqué on Principles and Procedures Applicable to Grid Connections
Communiqué on Principles and Procedures Applicable to Illegal or Irregular Use of Natural Gas
Communiqué on Liquefied Natural Gas Transmission
Communiqué on Determination of Thresholds as a Basis for Natural Gas Invoicing and Its Rudiments
General Communiqué on Accounting Practices and Financial Reporting
Communiqué on Fines to be Applied Under Article 9 of Natural Gas Market Law

Source: EMRA

the EMRA within 20 months from the effective date of the Law and (2) be not previously banned from performing such activities (NGML 2001, Art. 6/6a(4); Temporary Art. 1).

In these circumstances, the effective control held by the state-owned BOTAŞ over import and wholesale segments of the market was to be terminated so the nationwide gas market could be freed of monopoly power abuse. Article 7a(2) of the Law is specifically concerned with the liberalisation of gas market supplies and thus with the formation of a stable and transparent gas market along with private companies, neither of which is to be able sell more than 20% of the forecasted national gas consumption

per annum (excluding producers). This was particularly important for breaking the BOTAŞ monopoly in the supply chain since the Law precluded BOTAŞ from executing any more gas purchase contracts until its import share was gradually reduced to 20% of the national consumption by 2009. Although the Law theoretically required all companies to constrain their market shares, a set of principles as per Article 4/4a(3) and Temporary Article 2 placed two further restrictions on the operational flexibility of prospective import licensees planning to enter the market:

- New import companies cannot import natural gas from countries with which BOTAŞ already has unexpired gas sales agreements.
- The licensees must store 10% of their imported gas in the national territory for five years.

From 2003, Turkey began updating the 2001 Law and issued several amendments to clarify and place additional liabilities on the market participants. In that vein, the Law which initially allowed all companies to perform only one market activity and enabled them to participate in another legal entity with the condition they not own or hold the majority shares outside their market field was amended to exclude BOTAŞ[3] from such liability in 2008. In the same year the amendment No. 9/7/2008-5784/20 also introduced an exception in favour of BOTAŞ being able to sign new LNG import contracts as opposed to the Temporary Article 2 which prohibited BOTAŞ' new contract signings until its market share was gradually reduced to one fifth of the national consumption.

With the exception of two companies, Bursagaz and Esgaz[4] which were owned and operated by BOTAŞ, the distribution segment of the Turkish gas market was essentially municipality owned prior to 2001. The 2001 Law oversaw that those two companies be transferred to the Privatisation Administration within two months after its enactment and privatised within six months in order to remove BOTAŞ from the distribution segment completely along with other three municipality-operated companies (i.e. EGO, IGDAŞ and Izgaz). Provided the clearance of external debts

[3] And its current subsidiaries and prospective companies BOTAŞ may set up for international projects in the future.

[4] The companies distributed gas in Bursa and Eskisehir, respectively, and their privatisation was overseen within 3 years.

was backed by the Treasury, the municipalities were mandated to remain in all distribution cities/regions by holding up to 20% of shares.[5] What is more, the Law thwarted distributors from buying more than 50% of their supply from a single supplier (whether importer or wholesaler) per Article 7/4d and restructuring the distribution segment of the industry this way appears to have not only been favourable to new entrants but also laid effective groundwork for achieving a free and competitive trade in the gas market.

Nonetheless, despite the fact that the 2001 Law has broadly created the necessary conditions for the establishment of a competitive market the distribution sector continues to be regulated owing to its monopoly characteristics. To this end, the Law empowers the EMRA to ensure that open, non-discriminatory access is provided to new entrants for domestic gas distribution on a tender basis and to regulate the interregional/intercity transportation rates, tariffs and terms of service. This is actually a direct illustration of 'competition for the market' commonly applied by countries when the competition within the market is not feasible/undesirable as discussed in Chap. 2 in greater detail. When observing the number of licences granted to state-owned and private companies by the EMRA following the adoption of the 2001 Law between 2005 and 2019 (Table 5.2), it would be appropriate to say that the impact of Turkey's first legislation towards liberalisation had been effective and there was noticeable interest from private participants who were drawn into the market.

As identified in the previous chapter, the ownership of Turkey's natural gas sector is still largely with the state. The infrastructure is owned by the government and each segment of gas value chain has its own issues to be addressed. In a very broad sense especially when compared with the gas market structure before the Law, the essentials of a competitive market, at least legally, seem firmly established and Turkey had clearly moved from a single vertically integrated utility to a partially competitive market structure with a diverse set of generation, distribution, storage and wholesale companies now operational (Fig. 5.2).

[5] The Law oversees that the distribution companies must offer a 10% partnership to municipalities of their operation region with no capital investment in return. The share of municipalities could be increased for another 10% in return of capital equivalence paid by the municipalities' own resources given that the municipality does not hold any debt to the Treasury (NGML, Art. 4/4 g).

Table 5.2 Number of licences granted to companies by EMRA, 2005–2019

No.	*Type of licence*	*2005*	*State Owned*	*Private*	*2019*[a]	*State Owned*	*Private*
1	Import	6	6	–	65	10	55
	Long Term (Pipeline&LNG)	5	5	–	18	9	9
	Spot LNG	1	1	–	46	1	45
2	Export	1	1	–	14	1	13
3	Whole sale	11	1	10	51	1	50
4	Storage	2	1	1	8	4	4
	Storage (LNG)	1	–	1	4	2	2
	Storage (Underground)	1	1	–	4	2	2
5	Transmission	10	1	9	15	1	14
	Transmission (Piped Gas)	1	1	–	1	1	–
	Transmission (LNG)	9	–	9	14	–	14
6	Compressed Natural Gas (CNG)	28	–	28	95	–	95
	CNG Sale	21	–	21	38	–	38
	CNG Transmission and Distr.	7	–	7	40	–	40
	CNG (Auto)	–	–	–	17		17
7	Distribution	33	–	33	72	1[b]	71
	Total	137	18	119	320	33	287

Source: EMRA

[a]As of April 2019

[b]Istanbul Metropolitan Municipality still owns IGDAŞ

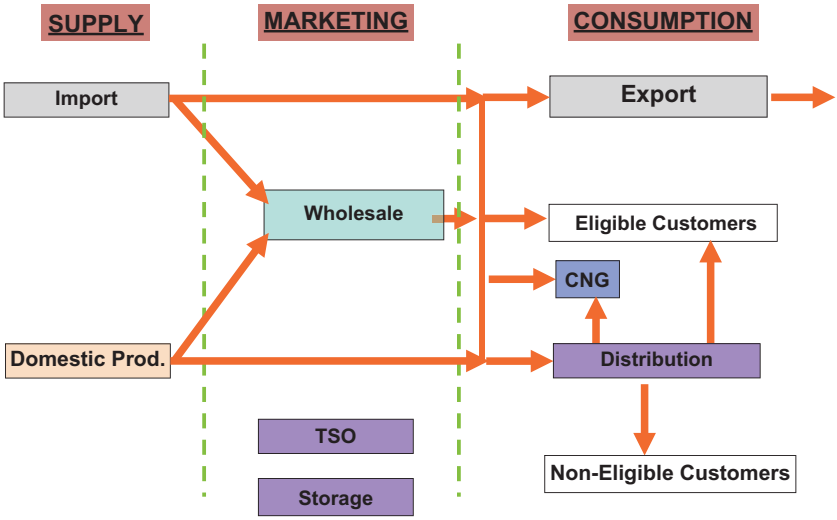

Fig. 5.2 Turkish natural gas market structure after the 2001 Law. (Source: Yardımcı (2018, 7))

5.2.1 *Pricing Regulations and Subsidies*

According to the 2001 Law natural gas producers and importers sell their gas to eligible customers, wholesalers, importers, distributors and CNG companies[6] at unregulated prices whilst distributors sell gas to end users at regulated prices. Transmission and dispatch control tariffs, a key contribution to reflect balance between fixed and variable costs, are also regulated and set up *ex ante* according to predefined methodologies (subject to "revenue cap" regulations) approved by the EMRA. Since 2011 the focal point of the distribution tariffs (subject to "price cap/hybrid" regulation) has been the rising end user prices applied by those distributors who came to the end of their eight-year fixed tariff periods (see Sect. 4.4.5). This particularly highlights the importance of regulating this new "competition introduced for" sector appropriately and monitoring all anti-competitive behaviour ahead of broader governance progress if necessary. In terms of storage, the NGML and respective regulations leave the contract terms and tariffs for access to storage to be freely determined between market participants.

In a competitive setting, natural gas markets are expected to be sustainable, secure and providing affordable gas to users reflecting both supply and demand fundamentals (UNECE 2012). In the progress towards this, gas-pricing mechanism is another area to look at. In 2014 alone, gas-on-gas (GOG) price formation was used in just over half of all pipeline gas import (304 bcm) made worldwide, Europe being the main contributor (200 bcm). At the heart of that were Germany, Italy, the UK and France wherein prices were determined by the interplay of supply and demand, and trades were made over a variety of different periods (e.g. daily, monthly, annually or other). In 2018, the GOG competition increased from almost zero in 2005 to 75%, whereas oil price escalation (OPE) declined from 85% in 2005 to 22%. Likewise, for pipeline imports there has been a continuous rise in GOG competition at the expense of oil price escalation, rising from 23% in 2005 to 61% in 2018, as OPE declined from 57% to 31%. Together with Spain and Italy, Turkey is one of the contributors to OPE price formation which constitutes 30% of all pipeline imports made worldwide, and it is argued that the global decline in OPE has been partly offset by the imports of piped gas from Turkmenistan to China, and in 2016, the change in one of the gas contracts from Russia to Turkey. Unlike the UK, Belgium and the Netherlands, where the domestic market

[6] Producers can only sell 20% of their output to eligible customers and the rest to other participants.

pricing mechanism is GOG, Turkey uses it for the importation of spot and short-term priced LNG cargoes (IGU 2019, 13–14). BOTAŞ treats the cost of imported gas as a trade secret and does not reveal them but it is indicated at many platforms that Turkey pays relatively high prices particularly for Iranian and Russian gas.

Whilst future developments will determine the exact role of long-term oil-indexed contracts in Turkey's liberalising gas market, the country replaced its pricing mechanism for energy products with cost-based pricing in 2008 and introduced subsidisation in 2009, and as it is discussed in Rzayeva (2014), BOTAŞ' profitability has been severely impacted since then (loss of TRY1.3 bn in 2011 and TRY606 mn in 2012). When used as a tool for political gain, subsidisation in the energy sector may look appropriate from the end users' point of view, but could apparently be incompatible with the solvency in the gas sector. In the case of Turkey it is also notably controversial in terms of natural gas and electricity applications since BOTAŞ tends to recover its losses by increasing the price of gas sold to built-operate (BO)- and built-operate-transfer (BOT)-based natural gas–fired power stations (GFPPs) which produce about 30% of country's electricity (Fig. 5.3).

To provide a starting point for a brief discussion on subsidies, it would probably be correct to first acknowledge the fact that finding a commonly agreed definition of subsidies is difficult since countries largely decide to adopt their own definition of energy subsidies as IEA et al. (2010) explained. The report reveals that although judicious use of energy subsidies might help address market failures or respond to social and distributional objectives, especially where social welfare mechanisms for directly

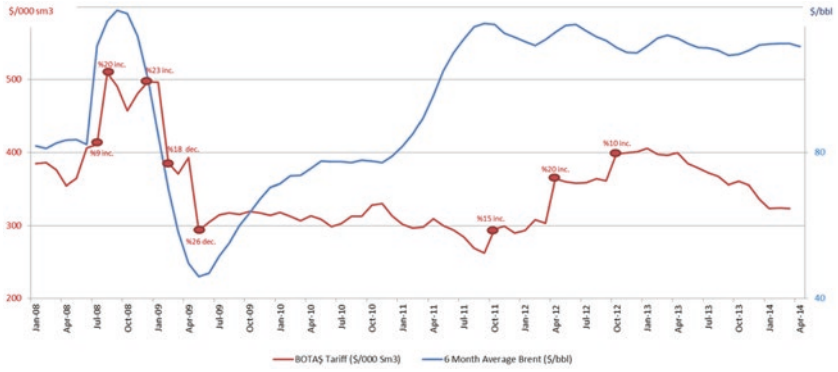

Fig. 5.3 Cross-subsidisation of BOTAŞ. (Source: Keuchel (2014, 9))

providing income support to the poor do not exist, they are not free from shortcomings and may insidiously lead to distortive price signals, higher energy production/consumption and barriers to entry for cleaner energy services and thus create environmental challenges (ibid., 8) (Table 5.3).

Coal subsidies represent the largest subsidies that Turkey provides to fossil fuel producers (and to coal consumers) due to country's vast reserves followed mostly by petroleum. However, given the increasing prevalence of

Table 5.3 Post-tax energy subsidies in selected countries, 2015

	2015		
Country	*US$ billion*	*% GDP*	*Per capita US$*
Argentina	19	2.9	435
Australia	29	2.3	1198
Canada	43	2.7	1191
China	1432	12.8	1025
Colombia	13	4.6	278
Costa Rica	1	2.2	257
Côte d'Ivoire	2	5.6	81
Ethiopia	2	2.5	16
France	35	1.4	545
Germany	72	2.1	885
India	209	10.0	160
Indonesia	97	11.3	377
Iran	111	29.6	1399
Jamaica	1	4.4	217
Japan	177	4.0	1382
Kazakhstan	29	15.6	1617
Mexico	54	4.6	431
Morocco	3	2.9	84
Pakistan	18	6.8	97
Philippines	10	3.4	99
Russia	551	40.3	3832
Saudi Arabia	117	17.9	3709
South Africa	45	14.0	806
Tanzania	2	4.0	34
Thailand	40	9.9	577
Turkey	64	7.4	814
Ukraine	61	66.7	1357
UAE	22	6.3	2452
UK	28	1.0	427
USA	649	3.6	2028

Source: Coady et al. (2019, 35)

gas use, the total value of natural gas subsidies has increased notably depending on year-to-year fluctuations in world prices, shifts in demand and domestic pricing policy changes. As discussed in Chap. 4 the upstream activities of TPAO have now been expanded to large-scale offshore developments in the deep waters of Turkey and overseas, and thus the largest subsidy in the form of a direct budgetary transfer goes to TPAO (Bast et al. 2014).

A review carried out by Coady et al. (2006) found supporting evidence that universal energy subsidies were not a cost-effective way to protect the real incomes of poor households, since they involved substantial leakage of benefits to higher-income groups using examples from Bolivia, Ghana, Jordan, Mali and Sri Lanka. Similarly, the Independent Evaluation Group of the World Bank found that the bottom 40% of the population ranked by income distribution receives only 15–20% of the fuel subsidies whilst the rich receive the most of the total value of the subsidies (IEG 2008 in IEA et al. 2010, 24). When looking at Turkey, however, it is hard to estimate and monitor whether the BOTAŞ subsidisation of residential consumers is really distinguished between truly poor and better-income consumers. An interesting approach, at this junction, came from Rzayeva (2014), who discussed that the scale of gas subsidies provided to Turkish customers through low, regulated tariffs was not necessarily stimulating excessive demand and argued that the (subsidised) price of gas, which was US$390/1000 m^3 for households at the time of writing, was not entirely affordable for the average income level of Turkish population anyway.

Given the national circumstances, it would not be incorrect to say that currently available subsidies are fundamentally specific to Turkey, and although the greater proportion the Turkish private gas sector opposes them, the government backs the concept as it uses them as policy instruments to attain various economic and social objectives. In line with the arguments of private gas sector players in Turkey, Oil Change International (2015) also suggests that Turkey should phase out fossil fuel subsidies altogether by implementing the G20 commitments since they threaten Turkey's economy with a strained budget, increasing government liabilities, and heightening the risk of stranded assets whereas IEA (2006) attaches importance to the broad benefits of the transition period during which a healthy degree of caution on the speed of implementing price adjustments may be given and potential social discontents could be forestalled. At the time of writing, there has been no sign of any revision on the existing subsidies provided in the sector.

As discussed in Chap. 2, a large body of literature exists indicating that countries' success in materialising reform programmes may not always be as great as the policymakers and/or international organisations suggest.

This situation may become even more insurmountable if one considers the increase of susceptibility in transferring the strategic energy monopolies to the private sector. Being no different to any other developing country trying to reform their gas markets, the past 18 years in Turkey have been a watershed for the test of liberalisation policies and regulations by all market participants including the state-owned national champion, BOTAŞ. The following sections analyse the dynamic evolution of the Turkish natural gas market in terms of the EU energy directives and provide what liberalisation has actually meant for Turkey, to what extent Turkey has managed to realise the reforms depending on the appropriateness of its governance structures and other characteristics. In that context the first research question "What are the characteristics of the legal framework that has been created to ensure natural gas market liberalisation in Turkey and how effective is it?" is addressed.

5.3 The Liberalisation Process: Compliance of the 2001 Law with the EU Energy Directives

As has been discussed in Chap. 1, the EU initiated the process of creating market integration via various energy Directives for a borderless internal energy market where competition is ensued in all segments of natural gas and electricity industries. The EU mandates the alignment of member states' (MSs) energy laws with the Community Energy Acquis and the implementation of the relevant regulatory instruments, which have been framed through the Directives since the 1990s, to be finalised (Corbeau et al. 2012).

Also as briefly touched upon in Chaps. 1 and 4, the liberalisation of the energy markets was not due to the obligations of EU membership since Turkey has no legal obligation outside of the scope of the Customs Union until the accession negotiations were officially launched between Turkey and the EU[7] in 2005 (EC 1999). Liberalisation had been in the government policies and progress reports for quite some time until the IMF-guided economic stabilisation programme formed in 1999 (IMF 1999a, b;

[7] Turkey's official candidacy and the reaffirmation of its political criteria fulfilment were approved at the Helsinki Summit on 10–11 December 1999 and the Brussels Summit on 16–17 December 2004 respectively. The accession negotiations were subsequently launched between Turkey and the EU in October 2005.

CBRT 2001a, b) actually gave the process a concise direction. Thanks to the advance level of alignment with the IMF reforms, Turkey only had to bring the prevailing laws into force and check the functioning of the competitive markets as required. It would also be fair to say that the 2001 Law has achieved most of the hallmarks of a liberalised market (at the time) transposing the EU dimension of energy reforms into Turkey's legislation although the full implementation remains unaccomplished. Table 5.4 shows the major concerns of the EU's first, second and third energy directives and the compliance of Turkey's NGML with them (Table 5.5):

The basis of European energy reform is analysed in more depth in the next section by distinguishing the four mandatory instruments used to weigh up the institutional feasibility of such reforms for the structurally monopolistic Turkish gas industry. First is the establishment of regulatory authority, which is one of the major requirements for liberalisation of energy markets to ensure that they are financially viable, stable and transparent where independent regulation and supervision are provided for sufficient energy resources at low cost and in a reliable and environment-friendly manner. It is followed by other measures, namely, unbundling, market opening and third-party access (TPA). The TPA has subsections analysing respective Network Codes of the EU towards the creation of internal gas market and Turkey's place in it, with special emphasis on the role of wholesale market functioning inclusive of capacity allocation and congestion management, gas balancing arrangements and transmission tariff structures.

5.3.1 Energy Market Regulatory Authority

In February 2001, the Turkish government enacted the Electricity Market Law and ultimately created a new electricity market regulatory authority, the name of which was later changed to an umbrella term, "Energy Market Regulatory Authority," and oversaw all energy markets, natural gas, petroleum and liquefied petroleum gases, to be subject to regulatory authorisation by 2005. The EMRA is structured as a commission with nine members and its responsibilities in terms of the natural gas market include introducing and promoting competition; protecting the interests of consumers; optimisation of quality, reliability and safety of the services; introduction of investment and improving the transparency of the regulations. The EMRA has been undergoing structural changes since 2003, and with the adoption of the EU directives in particular, the power and responsibilities of the EMRA have been refined and expanded greatly to, for example,

Table 5.4 Compliance of the Turkish natural gas market law with the EU directives

	EU First Directive (1998/30/EC)	*EU Second Directive (2003/55/EC)*	*EU Third Directive (2009/73/EC)*		*Turkey The 2001 Law*	
Effective date	10/08/98	04/08/03	03/09/09		02/05/01	
Transposition date	10/08/00	01/07/04	03/03/11		–	
End of validity	30/06/04	02/03/11	–		–	
Unbundling	Transmission • Accounting (mandatory) • Legal (optional) Distribution: • Accounting Storage: • Accounting	TSO and DSO[a] • Legal (mandatory) • Management (optional) • Accounting (optional) (Possibility of exemption from legal & management unbundling for DSOs)	TSs & TSOs[b] • Ownership – ISO – ITO Establishment of LNG & Storage System Operators (LSOs & SSOs)	DSOs • Legal • Management • Accounting	TSO (BOTAS) • Accounting[c] LSOs & SSOs • Accounting	DSOs • Accounting • Legal Distribution & retail still bundled
TPA	Transport and LNG access: rTPA, nTPA or hybridTPA Distribution and price system: Postage stamp tariffs Distance-related tariffs Entry-exit tariffs	Transport: rTPA Storage: rTPA, nTPA	Transport: rTPA Storage: rTPA, nTPA Upstream pipelines: rTPA, nTPA		Transport: rTPA Storage: rTPA Distribution and price system: Postage stamp tariffs Entry-exit tariffs	

Market opening[d] (Eligible consumers)	Phase 1 (20% openness): Power Gen. & Retail consumers of >25 mcm by 2000 Phase 2 (28% openness): PGs & all consumers of 15 mcm by 2003 Phase 3 (33% openness): PGs & all consumers of 5 mcm by 2008	All consumers except households by 2004 All consumers by 2007	Consumers eligible in multiple systems can have supply contracts in another state	80% market openness Formerly: >1 mcm for old distribution regions >15 mcm for new distribution regions As of 2019: All consumers (except households with <75.000 m^3 consumption) served by distributors/tenderers completed 5 years in business (as stated in tender notice/license for new distribution regions)
Regulatory body (RB)	Establishment of a RB	Establishment of a RB	Establishment of ACER to complement national regulators	Establishment of EMRA in 2001

Source: EMRA; EC (2000); EU Law and Publications (First; Second; Third Gas Directives)

[a]Countries serving less than 100,000 customers were exempted from both legal and management unbundling requirements for their DSOs

[b]Further separation of production and supply from transmission networks

[c]BOTAŞ accounting unbundling meant separation for monopoly BOTAŞ' trading (import, export and wholesale) and transmission and storage (LNG) activities

[d]First Directive also introduced a "ceiling" on market opening (concerned states wherein the market openness was already >30% in phase 1 could limit their openings in a balanced manner, namely to 38% in phase 2 and 43% in phase 3)

Table 5.5 Timetable of actions required by the 2001 Law

Actions Required			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Enactment of 2001 Law															
Preparatory Period															
Unbundling of BOTAŞ	Accounting by 2003	Distributors													
		BOTAŞ													
	Legal by 2009	BOTAŞ													
Privatisation of BOTAŞ' Activities															
Gas Release Program (Private 80%, BOTAŞ 20%)															
Mandatory Storage	Importers														
	Wholesalers	Sales to Eligible Cust.													
		Sales to Distributors													

Source: Akçollu (2006, 11)

acceptable accounting principles and procedures; regulating third-party access to network and storage/LNG facilities; unbundling; wholesale and retail pricing; and setting tariffs for transmission, storage and distribution services.

Similar to regulators of other countries in the liberalisation process, the EMRA is considered administratively and financially autonomous,[8] growing in experience and improving the clarity of its secondary legislation via regulations, communiqués and Board decisions (USITC 2001). With regard to establishing a competent regulatory authority with the same minimum set of competences to be shared in all other member states, as required by the 1st and 2nd Directives, the alignment with the EU's Directives was fully achieved by the 2001 Law (Akçollu 2006). Given the monopolistic structure of the Turkish natural gas market and the national champion BOTAŞ being responsible for virtually all operational activities within the entire gas market, the EMRA was given the task of processing Turkey's gas market transition from exclusive ownership and control by BOTAŞ in both upstream and midstream activities to the competitive market. The EMRA has been allowing private sector participants in various gas market activities previously reserved solely for BOTAŞ by granting, amending and policing licences/certificates to companies which either produce, import, transmit, store, wholesale, export or act as retail suppliers since 2003. The EMRA forms not only the secondary legislation

[8] The EMRA is mostly financed through fees collected from certificates; approvals; permissions; visa transactions and licence applications, including renewals, modifications, licence copies and annual licence fees.

but also determines the conditions and fees of the licences and arranges the transfer of operating rights within the scope of existing contracts based on the provisions of the 2001 Law. Table 5.6 illustrates responsibilities of the EMRA in line with other regulatory bodies.

The EMRA consists of the Energy Market Regulatory Board and Presidency and Service Units whilst the power of decision taking fully lies with the Board. The Board has nine members with one president and a

Table 5.6 Tasks of the energy market regulatory authority

Allocation of Licences and Certificates	• Granting, amending, policing and revoking (when necessary) licences to companies which produce, import (long term or spot), transmit (piped gas, LNG or CNG), distribute, store (LNG or underground), wholesale, export or act as retail suppliers or gas operators • Determining length, scope, conditions and fees of licences and rights and liabilities of the licensees • Arranging transfer of operating rights within the scope of existing contracts • Forming, modifying, executing and auditing distribution and customer services regulations
Allocation of fair/ reasonable profits	• Regulating natural gas transport and distribution to ensure that prices charged are fair and reasonable in Turkey
Promoting competition	• Promoting and protecting competition both in gas supply and demand markets to prevent power abuse of existing monopolist(s) • Ensuring compliance with the legislation designed to prevent further monopolies • Cooperating closely with the Turkish Competition Authority
Efficiency and rationality	• Promoting rational use of natural gas whilst ensuring due protection of the environment in Turkey
Optimisation of quality	• Promoting interests and rights of Turkish users through improvement of quality of public service • Setting service quality standards, which may be accompanied by financial incentives and penalties
Reliability, safety and continuity of the services	• Setting technical and safety standards for the Turkish gas industry • Raising the levels of safety and reducing the number of incidents connected with the provision of service • Ensuring the continual and uninterrupted provision of services at all times • Promoting efficiency and continuity of transport and distribution services
Market opening	• Revising definition and conditions of eligibility and announcing thresholds for eligible customers at the end of December each year

(*continued*)

Table 5.6 (continued)

Third-Party Access	• Facilitating and enforcing non-discriminatory TPA to existing and newly constructed networks (provided that sufficient capacity is available), and promoting better operation, reliability and equality • Setting standards for management of transmission network capacities in a transparent, reliable and fair manner whilst consulting all relevant parties whilst setting up principals • Determining charges for capacity procurement and utilisation • Approving a suitable methodology for access tariffs proposed by BOTAŞ • Approving structure of balancing market and methodology for setting fixed charges for the purchase and sale of balancing energy • Determining rules, in some cases, for allocation of costs for (un) bundled businesses and taking an active role in setting out requirements of the compliance audit • Reviewing and implementing rules for transparent and non-discriminatory allocation of congested infrastructure • Carrying out an audited account of the use of any revenues from capacity allocation mechanisms • Involving in investment decisions of network operators through revenue-setting procedure (and deciding on possible exemptions for TPA for new investments, if any) • Developing guidelines concerning the form and content of applications for coverage under the BOTAŞ network code
Guidelines for consumer switch procedure	• Enabling customers with simple and flexible procedures to change supplier without charge • Metering of consumption, including designation of who is responsible at what cost
Monitoring and reporting	• Monitoring and reporting to the Ministry on security of supply issues • Supervising fulfilment of obligations and rights of concessionaires and licensees • Carrying out all inherent and necessary actions for fulfilment of the functions of transport and distribution services in accordance with the prevailing rules • Monitoring market performance of participants and keeping records • Ensuring compliance of obligations and rights of licensees with environmental legislation • Examining market and system operations • Ensuring the NGML is authorised and appropriately treated in the market • Enforcing and improving transparency of regulations

(*continued*)

Table 5.6 (continued)

Unbundling	• Eliminating restrictions on foreign trade • Providing partial or full unbundling of natural gas transportation services from gas marketing services • Requiring all firms to maintain an accounting separation between business segments
Pricing structure	• Identifying and ensuring cost reflecting prices
Securing investments	• Overseeing the introduction of investment • Promoting investments to ensure supplies in the long term • Involving in investment decisions of network operators through revenue-setting procedure and decides on possible exemptions for TPA for new investments
Dispute settlement	• Acting as dispute settlement authority for the upstream industry • Conducting settlement procedures inclusive of financial compensations • Ensuring service quality standards (accompanied by financial incentives and penalties when necessary)
Guidelines for other issues	• Designating a supplier of last resort (SoLR) although the SoLR has not been yet designated in Turkey • Defining new functions for meters • Encouraging introduction of new technologies enabling more sophisticated metering of consumption

Source: EMRA; Campodónico (1999), USITC (2001)

vice president, and they are appointed by the Council of Ministers, among those who hold degree in law, political sciences, administrative sciences, public administration, economics, engineering, management or finance degree as well as having had at least a ten-year experience in public institutions/organisations or private sector. The EMRA follows the government renumeration policy with some autonomy, and has not signalled any problem in attracting and, more importantly, retaining its professional staff because of it. In terms of losing staff to the regulated industry, the EMRA does not have any restriction for professional staff leaving the agency although a cooling-off period applies to the case of senior management (whilst former board members and agency heads keep receiving remuneration during this period). The Board members have a fixed term office of six years and they cannot be taken from office before the term ends (unless found guilty of breaching the terms or committed offence in relation to their duties). They are entitled to be reappointed for another term (EMRA 2018b).

During the last 18 years, there was a noticeable acceleration of change in the attitudes of both the EMRA and market players, and how they interact. Whilst acknowledging the accelerated evolution, with the prospect of further and gradual revolution it would be wise not to underestimate the independence of the EMRA or in fact market regulators in general. The EU gives highest importance to independence of NRAs whilst this issue also underpins a rising reliance on natural gas liberalisation process. The same applies to the OECD, and in its dedicated report published in 2016 it looks at how independence works in practice together with key trends and evidence from selected OECD countries (OECD 2016). Based on the OECD survey questionnaire, Table 5.7 presents key features of regulatory independence evidence from Turkey.

According to OECD (2016) it is inevitable and indeed desirable that executives and regulators interact in their daily work. For Turkey, these interactions are mainly informal although Turkey is one of those countries where government can participate in public consultations and when they do their submissions are given the same weight as other stakeholders. Generally, the Turkish government communicates with the EMRA directly (via informal contact) and indirectly (via media statements). Whilst the EMRA receives instructions/official guidance from the government on long-term strategies, it confronts equal pressures from industry, too. Their interactions are also formal (e.g. via consultations and public enquiries for the development of regulatory decisions as well as conflictual where the industry challenges the regulator's decisions through judicial review) and informal (via media, public events and informal meetings). The government issues informal statements on its expectations of the conduct of the regulator's activities and because they are non-binding it provides the EMRA a loose policy framework within which it has liberty to choose how it plans to meet those expectations. To avoid being subject to pressure and potential conflicts of interest and to institute transparency and disclosure requirements for both its staff and activities, the EMRA commits to the Public Service Ethics Code. Nomination and appointment of the EMRA's Board/Head is respectively made by the government and the Head of State without executive power. The Board/Head then becomes responsible for the final appointment of the EMRA's own professional staff. Whilst senior management is responsible to a head of professional body, they are directly accountable to the government by Law.

As mentioned before the EMRA's funding sources are collected directly from fees, other charges and fines which do not go through the national

Table 5.7 Key features of regulatory independence evidence from turkey

Instructions from executive							
Reporting and Accountability	To whom senior management is responsible to?	Board	Head of professional body	Chairperson	Board/Chair and Head of professional body	Executive	Legislature
		–	✓	–	–	–	–
	To whom senior regulator is directly accountable by law or statute?	Representatives from regulated industry	Parliament	Government	Other		
		–	–	✓	–		
Taking instructions	In which cases the regulators receive instructions or official guidance from government or parliament?	Long-term strategy	Work programme	Individual cases or decisions	Appeals		
		✓	–	–	–		
Ethic codes and Training	Use of ethics codes amongst regulators	Regulator's ethics code	Public service ethics code	Regulators and public service ethics code			
		–	✓	–			
Retention	Regulators' remuneration	Government salary policy	Autonomous salary policy	Government salary policy w/some autonomy			
		–	–	✓			
Stating expectations	Does government issue formal statements on its expectations of the conduct of the regulator's activities?	No	Yes-binding	Yes-non-binding	Yes-only for non-regulatory activities		
		–	–	✓	–		
Indicating preferences	How does government indicate its preferred position regarding regulatory decisions, if it does so?	Public consultation	Media statements	Informal contact	Official written correspondence	Indirectly via industry	
		✓	✓		–	–	

(*continued*)

Table 5.7 (continued)

Staff							
	Who appoints the regulator's staff?	Professional body	Board head	Board and professional body	Minister		
		–	✓	–	–		
Nomination	What authority nominates the board/head?	Executive	Mixed selection committee	Independent experts only	Executive and Legislature	Legislature	Up to government
		–	–	–	–	–	✓
Appointment	What authority nominates the board/head?	Executive	Head of state without executive powers	Legislature	Executive and legislature	Other regulator	
		–	✓	–	–	–	
Tour of duty	Is there security of tenure for board members/head?	Yes	No				
		✓	–				
Exit	Restriction on pre- or post-employment of professional staff	No restriction	Cooling-off period	Conflict of interest rules	Restrictions before leaving	Cooling-off for senior management and Restrictions before leaving	
		✓	–	–	–	–	
	Are there restrictions on pre- or post-employment of board members/head?	No restriction	Cooling-off period	No restriction but conflict of interest rules			
		–	✓	–			
Budget							

Funding sources	What are regulators' funding sources?	Fees and other charges/fines	Fees and general revenues	General revenues
		✓	–	–
Determining the fees	Who sets the regulatory fee?	Regulator	Minister or government	
		✓	–	
Appropriating general revenues	What is the timeline for budget appropriations	Annual	Multi-annual	
		✓	–	

Source: Compiled by author based on OECD (2016) and Interview data

treasury and a parliamentary appropriation unlike most NRAs in Europe. The fees are fixed by the regulator itself and the timeline for budget appropriations is annual. The EMRA is subject to the Public Finance Management and Control Law No. 5018 which powers the Supreme Court of Accounts for external audits of the EMRA. It gets audited for its financial activities, decisions and transactions and whether or not they comply with laws, institutional objectives and national plans, and the results are reported to the Turkish Grand National Assembly (TBMM). The Minister of Energy and Natural Resources is fully entitled to audit all activities and transactions of the EMRA whilst the State Supervisory Council and Prime Ministry Inspection Board can also do so if requested (ibid., 8).

5.3.2 Unbundling

BOTAŞ, acting on an entirely monopolistic structure up until 2 May 2001, was responsible for gas procurement, transport, distribution, storage and wholesales in the Turkish natural gas market. This very structure, as discussed in Chap. 2, makes BOTAŞ a perfect candidate for a solution called vertical separation, or unbundling, which is proposed to increase the independence of network managements and to foster network companies' direct focus on their main activities by encouraging innovations and investments in the grid (Mulder et al. 2005). Whilst academic debate over its merit continues, the EU directives have introduced unbundling regimes with different degrees of structural separations for the member states with a main goal of separating network operations from production and supply activities. The 2001 Law required BOTAŞ to keep separate accounts for each activity it is involved in from 2003 onwards and to continue its vertically integrated structure (except for distribution) until 2009. A restructuring was envisaged thereafter and according to which BOTAŞ was only to be left with the monopoly on pipeline transmission whilst other to-be-formed legal entities were to be privatised by 2011 (Temporary Art. 2). Nevertheless, in Turkey where the implementation of such a drastic unbundling regime had been long prescribed, no step has been taken towards either legal separation or ownership unbundling of BOTAŞ. Presently, BOTAŞ' transmission and commercial activities are only subject to accounting unbundling (Table 5.8).

Acknowledging the regulatory gap outlined above, the AKP government considered revising the NGML Law and consulted the Turkish Competition Authority regarding the restructuring of BOTAŞ under Law

Table 5.8 TSO unbundling regimes in Europe

Country	*NRA*	*Company*	*Unbundling model*	*Country*	*NRA*	*Company*	*Unbundling model*
AT	e-Control	Gas Connect	ITO	ES	CNE	Reganosa	OU
AT	e-Control	NABUCCO	Other	ES	CNE	ENAGAS	OU
AT	e-Control	TAG	ISO	FR	CRE	GTRgaz	ITO
AT	e-Control	BOG	ITO	FR	CRE	TIGF	ITO
AT	e-Control	TAG	ITO	FR	CRE	TIGF	OU
AT	e-Control	Gas Connect Austria	ITO	GR	RAE	DESFA	ITO
BG	DKER	Bulgartransgas	ITO	HU	HEO	FGSZ	ITO
BE	CREG	I (UK)	OU	HU	HEPUA	Magyar Gaz Tranzit	OU
BE	CREG	FLUXYS	OU	IE	CER	BGE	ITO
CZ	ERU	NET4GAS	ITO	IT	AEEG	ITG	ITO
DE	BNetzA	Bayernets	ITO	IT	AEEG	SNAM Rete Gas	ITO
DE	BNetzA	Fluxys	OU	IT	AEEG	SNAM Rete Gas II	OU
DE	BNetzA	GRTGaz	ITO	IT	AEEG	SGI	OU
DE	BNetzA	jordgas	ITO	LT	NCC	AB Amber Grid	OU
DE	BNetzA	Nowega	ITO	NL	NMa	Gasunie Transport	OU
DE	BNetzA	Terranets	ITO	NL	NMa	BBL	Other
DE	BNetzA	GASCADE	ITO	PL	URE	Gaz-System	OU
DE	BNetzA	GTG Nord	ITO	PL	URE	Gaz-System Yamal	ISO
DE	BNetzA	Ontras	ITO	PL	URE	Gaz-System Yamal II	ISO
DE	BNetzA	Gasunie Transport	OU	PT	ERSE	REN Gasodutos	OU
DE	BNetzA	Thyssengas	ITO	RO	ANRE	Transgaz	ISO
DE	BNetzA	OGE	ITO	SE	EI	Swedegas	OU
DE	BNetzA	NEL	ITO	SI	AGEN	Plinovodi	ITO

(*continued*)

Table 5.8 (continued)

Country	*NRA*	*Company*	*Unbundling model*	*Country*	*NRA*	*Company*	*Unbundling model*
DE	BNetzA	Gasunie Ostsee	OU	SK	URSO	Eustream	ITO
DE	BNetzA	Fluxys DE	OU	TR	EMRA	BOTAŞ	Accounting
DE	BNetzA	OGE	ITO	UK	Ofgem	BBL	Other
DK	DERA	Energinet-gas	OU	UK	Ofgem	Interconnector (UK) Ltd	OU
ES	CNE	Reganosa	OU	UK	NIAUR	PTL	OU
ES	CNE	SAGGAS	ISO	UK	NIAUR	BGTL	OU
ES	CNE	ENAGAS	ISO	UK	Ofgem	PTL	OU

Source: GIE; EMRA

No. 4054 on the Protection of Competition in 2012. The initial revision to the Law foresaw an ownership unbundling for the existing vertically integrated company and envisaged the establishment of two separate corporations: (1) BOTAŞ to be responsible for transmission and operations of storage and LNG facilities; and (2) Doğal Gaz Ticaret ve Taahhüt A.Ş. to take over the import, export and wholesale activities, which would eventually comply with legal unbundling. As presented in Chap. 3, it was the Third Directive that introduced the radical "ownership unbundling (OU)" of network businesses and given the fierce opposition from France and Germany it did not become mandatory but remained optional along with comparably milder legal and functional separations to go with (i.e. ISO and ITO). For various reasons elaborated upon in their official response paper, the Competition Authority of Turkey argued that the country had more legitimate reasons than France and Germany to not opt for the radical OU given its strengths and weaknesses both nationally and internationally, and suggested BOTAŞ set up a trading company, Doğal Gaz Ticaret ve Taahhüt A.Ş., as a separate legal entity only (Soysal et al. 2012).

Another concern of the 3rd Directive was the specifics of exactly what is to be unbundled at the retail level and the designation of DSOs and closed distribution system (CDS) operators as per Article 24–28. The 2001 Law has, however, not distinguished between distribution and retail, and (due to franchising) distribution is presently a monopoly in every region whilst every distributor is also a retailer (Yilmaz n.d.). When viewed from this perspective the unbundling of Turkish DSOs is still in accordance with the Second Directive, which required the effective legal and accounting unbundling of distribution companies. More than 70 distribution companies are now unbundled to a certain extent but of course the discussions held at the EU level regarding, inter alia, how to forestall DSOs' taking advantage of their competitive position on the market (not least household and small non-household customers, who bear the ultimate risk, to be the high candidate for priority) (CEER 2013) seem far away with the Turkish decision-makers and energy regulator under the current circumstances.

From the standpoint of the EU, ownership unbundling is the most effective tool to solve the inherent conflict of interests and hence free the network operator from any supply and production interests. Article 11(3b) of the 3rd Directive explicitly states that if certification is requested by a transmission system owner or a TSO which is controlled by a person(s)

from a third country or third countries, the NRA should notify the Commission and refuse the certification if it should put at risk the security of the energy supply of the member state and the Community. By that, the EU principally targets Russia's attempts to be involved in the downstream markets of European countries and aims to thwart Gazprom and all other corporations representing Gazprom's interests from acquiring transmission operators due to the "level playing field" provision that bars vertically integrated utilities from these markets. In other words, Gazprom will have to prove the compliance of its subsidiaries with effective unbundling regulations to the national regulators (Grätz 2009, 78).

This argument holds true in the Turkish case as well. As presented in Chap. 4, BOTAŞ has transferred two of its long-term gas purchase contracts to private companies, and a detailed analysis of ownership structures of these companies (Table 5.9) suggests that Russia's downstream expansion in the Turkish gas market is likely to remain the status quo.

Table 5.9 Contracts transferred to private companies and ownership structures

	Private company	*Import destination*	*Import amount (bcm)*	*Ownership structure*
Gas Release Programme 1	Shell Energy A.Ş.	Russia	0.25	Royal Dutch Shell—100%
	Bosphorus Gas Corp. A.Ş.	Russia	0.75	Gazprom Germania—71%, Tur Energy—29%
	Enerco Enerji San.&Tic. A.Ş.	Russia	2.5	Akfel Group—60%, OMV Gas&Power—40%
	Avrasya Gaz A.Ş.	Russia	0.5	Gaprombank—60%, Tahincioğlu—40%
		Total	4 bcm	
Gas Release Programme 2	Kibar Enerji Dağ. San. A.Ş.	Russia	1	Kibar Holding—100%
	Bosphorus Gas Corp. A.Ş.	Russia	2	Germania Gazprom—71%, Tur Energy—29%
	Akfel Gaz San. ve Tic. A.Ş.	Russia	2.25	Gazprom Schweiz—100%
	Batı Hattı A.Ş.	Russia	1	Eksim Group—60%, BIM—40%
		Total	6 bcm	

Source: EMRA; Rzayeva (2014)

Control of Akfel Gaz and its shares in Avrasya Gaz and Enerco Enerji were transferred to the Saving Deposit Insurance Fund (TMSF) of Turkey due to owners' involvement in the coup attempt in July 2016

Initially, in three out of the seven companies the ownerships had been largely with Russia's Gazprom, and as per the Turkish Competition Authority's decision on the case of Akfel Gaz in 2015 the number of Russian-controlled Turkish import companies increased to four.[9] The analysis in Chap. 4 presented that no import countries had the motivation to sell gas to companies other than BOTAŞ in the course of 2005 unless some of which were forward integrated into the market and made money that way (Deloitte 2012). Although one would argue that these companies do not seem to be a direct threat to the transmission operator BOTAŞ just yet, they are indeed the country's fresh suppliers brought into the sector to provide competition and better priced natural gas to customers. Most of those companies have now directly integrated themselves with the main supplier, Russia, with noticeably cheaper import prices compared to their counterparts. This grand strategy of Russia to implicitly re-sell gas to itself as a means of such importers and gaining ground in the Turkish domestic market can be considered as a straightforward illustration of Turkey's vulnerability and market players' expose to asymmetry of information, discrimination and non-transparency as acknowledged in the 2012 report of the Competition Authority of Turkey (Soysal et al. 2012).

5.3.3 Market Opening

As discussed in Chap. 4, distribution is one of the very few segments in the Turkish gas industry wherein only private entities have actively participated since 2003 if one ignores the binding provisions of the Law that oblige respective municipalities to remain in the process with at least 10% of the shares. Prior to the implementation of the 2001 Law, the gas distributors were responsible for supplying gas to customers regardless of their eligibility in so-called old regions.[10] In line with the EU Gas Directives which obliged market opening, or retail choice, for all customers from July 2007, the Board of EMRA passed the first amendment to the 2001 Law on 27 December 2002 (Decision No. 76) and distinguished the eligible customers (and customer associations) as below:

[9] The control of Akfel Gaz (and its shares in Enerco Enerji and Avrasya Gaz) was transferred to the Savings Deposit Insurance Fund of Turkey (TMSF) due to shareholders' involvement in the coup attempt in 2016.

[10] Istanbul, Ankara, Eskisehir, Izmit, Bursa and Adapazari are the old regions whereby seven privately and/or municipality-owned natural gas companies started the distribution of natural gas was between 1992 and 1998.

(1) *Gas-fired power generators*
(2) *Combined heat and power co-generators*
(3) *Natural gas producers*
(4) *Other final customers and customer associations consuming more than 1 mcm of gas* (Article 8a)

Whilst the eligibility of customers in the first three categories was independent from their annual consumption level and the 1 mcm threshold remained effective for the old region customers only, the EMRA was empowered to set and approve the eligibility limits for the new region consumers (based on regions' development, infrastructure and gas consumption levels). This was changed in 2004 however and all customers of the new regions who used more than 15 mcm per annum were entitled to eligibility according to the Board Decision No. 408. Those that informed their regional distributors about their commitment to exceed the threshold within the current year and submitted their bilateral agreements with other suppliers were also acknowledged as eligible customers. The 2006 amendment extended the opening to certain customers who owned more than one facility within the same region and allowed them to be considered as eligible by the sum of their estimated consumption at each facility if that was how they could exceed the set threshold (Dec. No. 1032).

From 2008 the eligibility limits have continually reduced from 1 mcm down to 700,000 m^3 in 2011, to 300,000 m^3 in 2013 and finally to 75,000 m^3 in 2015. The regional differences in terms of threshold levels were also removed to make the provisions applicable to all customers. Of course, that is not to say all consumers based in the new regions could just choose their marketer as they wished since the Law continued to approve the captivity of household and other small ineligible customers to distributors, who won the franchise biddings to supply the region with gas, at least for the first five-year period (Dec. No. 1808/1; 2966) (Table 5.10).

As illustrated in Fig. 5.4, the customer range with substantial market shares in 2011 spanned from eligible customers with more than 700,000 m^3 gas consumption (using 38.65% of total gas supply) to comparatively small users (61.35%), including residential users, businesses, government offices and other small-scale industrial users (EMRA 2012). The number of captive residential customers who were served by their regional distributors accounted for 78% of small customers in 2014 (EMRA 2014) and as of 2018 the share of eligible customers was 4.07% in total (EMRA 2018a). Although in a perfectly competitive market such a percentage would have

Table 5.10 The evolution of eligible consumer thresholds in Turkey, 2005–2018

Years	*No. of board decisions*	*Eligible consumer limit (m^3)*	
		Current companies and successful tenderers completing the first 5 years	*Other companies granted licences upon tenders*
2005	408	1,000,000	15,000,000
2006	629	1,000,000	15,000,000
2007	1032	1,000,000	15,000,000
2008	1438 and 1808	1,000,000	15,000,000
2009	1896	1,000,000	15,000,000
2010	2378	800,000	15,000,000
2011	2966	700,000	15,000,000
2012	3600	300,000	15,000,000
2013	4168	All consumers except the ones with less than 300,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence
2014	4793	All consumers except the ones with less than 100,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence
2015	5362	All consumers except the ones with less than 75,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence
2016	5920	All consumers except the ones with less than 75,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence
2017	6778	All consumers except the ones with less than 75,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence
2018	7537	All consumers except the ones with less than 75,000 m^3 consumption (households) are eligible consumers	Stated in the tender notice and the licence

Source: EMRA (2018b, 24)

made that category of customers the most targeted for gas suppliers to compete on the landscape of the Turkish retail gas market has nonetheless closed this large section of the market to competition since 2003, due to franchised distribution regions, and residential customers having not been able to capture the benefits that an open market would purportedly bring. Theoretically, market openness in all its forms was energised in the 2001 Law in that the operation of competitive gas markets would work to further stability and socially beneficial economic outcomes. The Law foresaw

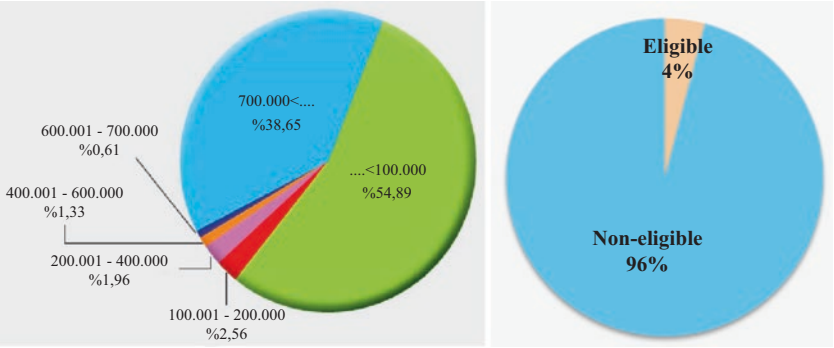

Fig. 5.4 Natural gas customer profiles in Turkey, 2011–2017. (Source: EMRA (2012, 2018a))

the materialisation of openness by reducing the market share of the sole player BOTAŞ and thus the emergence of alternative suppliers for the customers. When compared with a number of EU MSs which outperformed the provisions in the Directives and managed to realise 80% or more market openness as early as 2005,[11] it would not be incorrect to say that Turkey's aim of opening four fifths of the market has not been achieved at all and is unlikely to be so until BOTAŞ' still existing 78% market power (decreased from 100%) is further diminished.

Encouraging the active participation of consumers to influence suppliers through their choices, improvement of products and services regarding both quality and price is of high importance (UNECE 2012). Almost two decades since the momentous 2001 Law, eligible customers have made no significant switch from one supplier to another in Turkey and the switching rate in 2011 remained as low as 13.99% similar to the 14.10% rate of 2010. Not surprisingly, given their bargaining power and asymmetry of information in the market, the sale of 83% of natural gas was realised by the very large eligible customers who chose to trade with alternative suppliers whilst small eligible customers preferred to re-negotiate their terms with the local retailers (EMRA 2012). Most switching actions took place in the new regions (Fig. 5.5).

[11] Such as Austria, Denmark, Germany, Italy, the Netherlands, Spain and the UK 100%; Greece and Sweden 95%; Belgium and Finland 90%; Ireland 86% and finally Luxembourg 80% (CNE 2012).

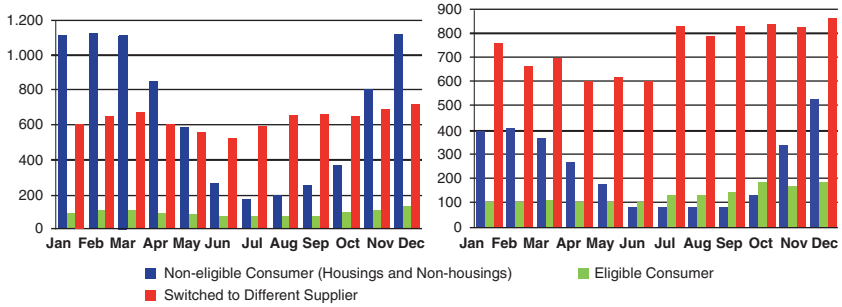

Fig. 5.5 Gas sales to eligible and non-eligible customers by distributors, 2011. (Source: EMRA (2011, 56–57))

Turkey has aimed to introduce competition into the retail segment of the industry in phases and all the amendments made to the Law have required a series of measures to provide eligible customers free choice of supplier and to enable other suppliers such as importers, producers and wholesalers to serve those eligible customers (Dec. No. 4169 Art. 13). At the end of 2017, there were ten E&P companies at the service of eligible customers and sold 59.68% their produce to these customers with the additional wholesale licences they held. TPAO and Thrace Basin Natural Gas Corporation are actually the oldest and largest E&P companies in the market collectively providing more than 80% of the supplies since 2003 whilst Park Place Energy Limited-Türkiye and Corporate Resources B.V. Ltd. are the latest entrants to the market.

According to the 2001 Law production companies must have shipping and delivery agreements with the transmission company to gain a wholesale licence (unless have their own transmission pipelines) although they are allowed to transport their gas to eligible customers through direct lines should the production fields be remote from the connection systems. There are nine import licensees[12] able to sell piped gas to eligible customers and eight of these have contracts with BOTAŞ to transport their gas both from abroad and to eligible customers through its infrastructure. In terms of importation of spot LNG, BOTAŞ and Egegaz are the only entities that own and operate their own LNG terminals whereas the other 44 companies who applied as new entrants into this large-volume LNG retail

[12] BOTAŞ alone holds seven licences for its import contracts with different countries.

segment are without one. To the contrary, transmission of LNG is fully participated in by 14 private licensees with no state participation at all.

With regard to prices, both captive residential customers and eligible customers who did not switch continue to purchase gas from their franchised distributors at regulated prices whereas other large customers and their choice of suppliers are free to determine the prices and transaction conditions between them as long as the regional distributor is notified within 15 days[13] (Dec. No. 4169 Art. 8a). In such cases, the distributor reserves the right to ask the switching customers to replace their existing meters with remote reading meters to make instant information flow reachable in real time.[14] Additionally, customers who consume 300 mbar gas (or higher) are required by the EMRA to establish an automatic volume corrector system once they gain the eligibility (Art. 7b).

The fees for the eligible customers who fail to meet the eligibility thresholds (those who continue to be supplied by their regional distributor) in any given year remain bundled with the price of transportation, unit service and depreciation charge, and the difference between the retail prices charged to eligible and non-eligible customers by the distributors. Should distributors be charged differently by their own supplier based on the number of eligible customers they have in the region, then the failed eligible customers shall also pay that difference to the distributor which is to be returned to the supplier of the distributor in the first place. The liability for paying regional distributors the retail price difference between eligible and non-eligible customers persists even when the failed eligible customers are provided gas by other suppliers (Dec. No. 4169 Art. 3).

When complaints handlings are looked at, major differences can be seen between the EU MSs and Turkey. Whereas invoicing and debt collection were the key problem throughout Europe in 2017 (by 26.8%), Turkey's EMRA received more complaints related to grid connection during the same year (by 60%), as shown in Fig. 5.6. The difference prevails amongst the type of complaints the EU and the Turkish NRAs get since priorities of the customers are currently different. European customers mainly worry about the prices because they have been all eligible since

[13] Not doing so may cause the eligible customers to be still served by the regional distributor. The timetable for eligible customers to return from other suppliers back to their regional distributor is 15 working days prior to the expiry date of their current agreements.

[14] Vice versa, the distributors are obliged to provide the eligible customers with technical information about the current counters upon written request (Dec. No. 4169 Art. 7a).

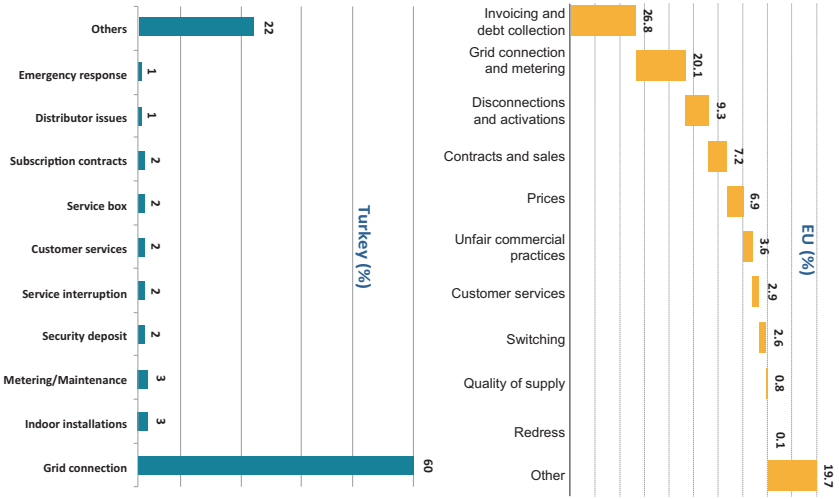

Fig. 5.6 Average shares of EU and Turkish consumer complaints addressed to NRAs, 2017. (Source: EMRA (2018b), Gence-Creux et al. (2018, 43))

2007 and perfectly entitled to switch between suppliers if they think prices or services are not right for them. Nonetheless, the Turkish customers are captive and the regulated price they pay is the same for everyone within the same category of consumer groups. Unless they become eligible or some sort of switching right is given to them we expect these differences to continue but only change forms if any. One to two months is generally accepted time period for the NRAs of the MSs to respond to a complaint although the suppliers and DSOs are expected to handle them even earlier. This period in Turkey is one month and the EMRA is responsible for handling complaints itself and forwarding them to another body if and when needed.

The complaints are expected to continue as long as the mis-selling attempts of suppliers continue in both Turkey and the EU. Indeed, between 2003 and 2008, there were continual cases against EGO (then the gas distributor of Ankara), for unfair practices such as not informing the consumers regarding their gain/loss of eligibility in writing, preventing them from switching by not informing them about their rights and more importantly charging the eligible customers by the wrong pricing formulae where the USDC rate was added to the cost of natural gas rather

than the transportation fee which, by the 2001 Law, could not be more than the USDC. In March 2003, EGO was fined by the EMRA and given 15 days to stop its unfair actions. In addition, it was decided the customers charged extra were to be reimbursed based on a monthly calculation correctly done by the company within a maximum 90 days together with their names and titles to be published both on the company's website (for 60 days) and twice in two local newspapers (Dec. No. 1537/1).

5.3.4 Third-Party Access to Transmission Network

Since the production sites and entry points for natural gas imports are concentrated in a few provinces BOTAŞ owns and operates extensive pipelines to move gas from suppliers to customers throughout Turkey. In order to curtail the exercise of monopoly power and to eliminate certain forms of access discrimination, the Turkish government issued the regulation for Transmission System Operations in 26 October 2002. Providing the legal basis for a national access regime this regulation paved the way to form the basics of the Network Operation Principles and Procedures (EMRA 2013). Incorporating this commitment into a new piece of binding legislation the BOTAŞ Network Code (BNC) was published on 1 September 2004. Nevertheless, this did not necessarily translate into immediate enforcement until the emergent request of the wholesale company, AKSA Doğal Gaz Toptan Satış A.Ş., to transmit the production of TPAO from the Akçakoca field through the BOTAŞ network in July 2007. This was followed by enquiries from other participants—Shell Enerji A.Ş. in December 2007, Bosphorus Gas Corporation, Enerco Enerji and Avrasya Gaz in 2009—to use the infrastructure for natural gas imports from Russia as a result of the contract release programme (Deloitte 2012; EMRA 2012). However, despite its exclusive ownership and operatorship in transmission, BOTAŞ has been thwarted from holding any exclusive territorial rights and hence the building, owning and operating of the new transmission systems are not in any way limited or restricted. No company has nonetheless come forward to build one thus far due to potentially large cost recovery and perhaps the avoidance of duplication of facilities.

Setting terms and conditions for the organisation of access to natural gas networks, especially in vertically integrated markets, is rather challenging with profound implications for how gas will be priced and traded domestically and internationally. Chronologically, the EU's first, second and third energy directives have introduced progressive terms regarding

the TPA to European gas systems. Whereas the First Directive allowed shippers and transporters to either negotiate the right of access to transmission networks in good faith (nTPA) or to follow a more regulated route on the basis of published tariffs and other obligations (rTPA) with regulatory oversight, the later directives eventually abolished the nTPA and the accessions now have only to be regulated. Under the provisions of the 2001 Law and the BNC, TPA to transmission networks in Turkey is regulated between shippers and the transmission system operator and EMRA sets the transmission tariffs.

According to the definitions set out by the directives and the guidelines for good TPA practice for storage system operators (GGPSSO), member states are provided with the choice of nTPA and/or rTPA to storage facilities, line-pack and other ancillary services. The 2001 Law stipulates negotiated access to storage and LNG terminals and leaves the parties to come to voluntary commercial agreements (Tariffs Reg. Art. 15). However, it is specified in the same Regulation that until the country's storage capacity reach a sufficient level the accessions may be regulated (Table 5.11) (ibid., Temporary Art. 2). This clearly bears the scars of country-specific difficulties relating especially to gas storages proving that what may be straightforward from a regulatory perspective could be much more difficult in practical terms.

Table 5.11 Third-party access regime to gas networks in selected countries

Country	*TPA to*		*Country*	*TPA to*	
	Transmission	*Storage*		*Transmission*	*Storage*
Austria	Regulated	Negotiated	Latvia	Regulated	Regulated
Belarus	Regulated	NA	Lithuania	Regulated	Negotiated
Belgium	Regulated	Regulated	Netherlands	Regulated	Negotiated
Bulgaria	Regulated	Regulated	Poland	Regulated	Regulated
Croatia	Regulated	Regulated	Portugal	Regulated	Regulated
Czech Rep.	Regulated	Negotiated	Romania	Regulated	Regulated
Denmark	Regulated	Negotiated	Serbia	Regulated	Regulated
France	Regulated	Negotiated	Slovakia	Regulated	Negotiated
Germany	Regulated	Negotiated	Spain	Regulated	Regulated
Greece	Regulated	Regulated	Sweden	Regulated	Negotiated
Hungary	Regulated	Regulated	Turkey	Regulated	Negotiated[a]
Ireland	Regulated	Negotiated	UK	Regulated	Negotiated
Italy	Regulated	Regulated			

Source: GIE

[a]EMRA continues to apply rTPA instead on the basis of country's insufficient storage level

That said, a number of rules have been brought to bear on the effects of EMRA's TPA regulations to such activities and they are published under the Basic Principles and Procedures of Use (BUPPs)[15] for LNG terminals in 2010, underground storages in 2012 and floating storage and regasification units (FSRUs) in 2017. The BUPPs are taken to mean the employment of a compulsory instrument for the implementation of indiscriminate, impartial and coordinated operating of storage facilities and are subject to EMRA's approval. Neither BUPP grants privileges to facility owners. However, at this juncture, the argument of Turkey's Competition Agency in its 2012 report is important. It literally states that unless a well-functioning liquid market is enabled and alternative unbundled products are offered to network users, the extent of TPA on networks would not be much different. Indeed, the limited use of both storage facilities and LNG terminals by private companies despite the given TPA since 2011 is a straightforward illustration of this (Soysal et al. 2012).

A further, and arguably contentious, issue all directives seem to support is the—full or partial—exemptions of the existing and major new infrastructure (e.g. interconnectors, LNG and storage facilities) from TPA. Neither the 2001 Law nor the BUPPs contains any basis for clear-cut derogations for Turkey's existing infrastructure except stating that the facility owners shall put capacities into service as long as the system is convenient and the operational reasons are justified. Again, the Competition Agency of Turkey highly advocates that an effective derogation regime would be an obvious contributor to incentivising large investments for the country's very limited storages whilst wholesalers give support to the argument for passing on the storage costs to end users on the segment basis for providing necessary market-based price signals for new infrastructure investments (ibid.; Bulut 2014).

As discussed in Chap. 4, Regulation 715/2009 of the European Parliament and of the Council required member states to establish Entry/Exit (E/E) systems for transmission networks for enhanced competition through liquid wholesale markets. Such systems are preferential simply

[15] The Regulations No. 27230 dated 16 May 2009 and No. 27954 dated 4 June 2011 put in order creation and publication of the related BUPPs for LNG terminals (Marmara Ereğlisi and Aliağa) and underground gas storage facility (Silivri), respectively. The actual BUPPs were officially published for the LNG terminals on 3 June 2010 and for the underground on 28 March 2012.

because they allow the transportation of natural gas through zones and enable network users to book capacity rights independently at different E/E points with great flexibility (Recital 19). One of Turkey's notable successes in terms of compliance with the EU energy directives is the full adaption of E/E systems. As specified in the BNC, the Turkish transmission network comprises of 14 entry points and a large exit zone covering hundreds of exit points throughout the country. Natural gas is brought into the system both at cross-border entry points including gas storages and at entry points from domestic production, and exits the system either at major exit points to distribution networks or at auxiliary exits to directly connected eligible customers at TSO level (Küsmüş 2014).

Globally, when the long used essential "physical flows" at E/E points evince structural and practical flaws—meaning low gas tradability and entry barriers or on the other hand service abandonments and destructive competition—virtual trading platforms (VTP) or virtual points (VPs) have been the usual prescription (Karan and Kazdağlı 2011). DNV KEMA (2013) elaborates on the VPs in greater detail describing them as quite a move away from the traditional trading done at specified physical locations and states that full E/E systems mostly contain at least one VP to facilitate trade of gas between network users (e.g. bilaterally transfer a title of gas or imbalance swap). In the case of Turkey, the ever-changing energy landscape with the involvement of private participants into the market has brought about an alternative (virtual) option to all players in order to offset their imbalances and to trade between themselves whilst the TSO is also allowed to enter the system as a Residual Balancer when needed. Amendments made to the BNC since 2008 incorporated provisions for a VP into the legislation, and the National Balancing Point of Turkey (NBP or UDN) (which is neither as developed nor liquid as its namesake in the UK), has started offering services which do not require capacity booking or depend on physical inputs/offtakes. There also exists a Transfer Point (TP) as part of the E/E system in Turkey where capacity bookings are strictly subject to a physical booking procedure and only a single handover is permitted for the market participants compared to the UDN's unlimited handover offering (Ünal 2014).

The crux of the matter here is that transmission is the only fully monopolistic segment of the Turkish gas market where no private entity participates and the whole ownership and operational liabilities of the grid lie with the state-owned BOTAŞ. Undoubtedly, an important wrinkle in the accession of third parties to such an infrastructure is that government poli-

cies and respective energy regulations should be driven by a transparent and open approach for fair and non-discriminatory accessions of private companies/regional distributors to the system. The scope may even be expanded to other international players should the country become part of the internal gas market once full EU membership is gained. To allow the market participants maximum representation, the EMRA has approved continual revisions to the BNC since 2007 by inviting network users to contribute to the framework guidelines on setting out clear and objective principles for development of the Code and balancing the transmission network of Turkey. The 2019 version of the BNC hence systematically establishes guiding principles for the basic and operational provisions as:

- Liabilities of shippers, transporter and operator
- Entry and exit requirements
- Capacity bookings, allocations, transfers and switching
- Dispatch control and system balancing
- Transport quantities and notification programme
- Internal gas utilisation
- Transfer of possessory rights and responsibilities
- Settlement of disputes
- Gas quality specifications (BNC 2019)

Against the backdrop of limited new entry, unbundling and competition, ensuring an enhanced and well-functioning wholesale market is of high importance to Turkey and in the next section, how capacity allocation mechanisms and congestion management procedure, gas balancing arrangement and transmission tariff structures are formed to do so are delineated in greater detail.

5.3.4.1 Capacity Allocation Mechanisms (CAM) and Congestion Management Procedure (CMP)

From the standpoint of efficient price formation and level of competition, the role of wholesale market liquidity is incontrovertible and that is mainly measured by the number and diversity of market participants, and the volume of wholesale gas trades at trading hubs (ACER 2014). When looked at Turkey, by the same token, it is probably a little early to make mention of a very well-functioning wholesale market and defining the market as still a developing one—where the number of wholesale licensees

has increased from zero in 2002 to 49 in 2017—would be more appropriate. The presence of a still vertically integrated BOTAŞ, a very high market concentration and insufficient interconnection capacity seems to be manifesting problems of liquidity and competition.

In 2015, plans were underway to establish a gas exchange within the Energy Markets Business Corporation (EPIAŞ) or in short Energy Exchange (EXIST)—which was the home for only day-ahead and within-day electricity trade at the time. Similarly, the 2014 Draft Law foresaw empowering Borsa Istanbul (BIST) with the operations of standardised gas contracts and derivatives to come (Art. 12/B). On 1 September 2018 Turkey established the Organised Wholesale Natural Gas Market (OWGM) to let the market players anonymously trade natural gas (day-ahead and intraday) on a platform operated on a continuous trade basis although most of the trades take place for balancing purposes yet (the TSO can also enter the platform and balance the gas network when needed). This being the case, alas, full interpretation of Turkey's wholesale market functioning—the size of which is estimated at €15.7 billion by Accenture (2013)—becomes rather hard.

In the Turkish gas market trades occur in two platforms. First is the Transfer Points where title transfers are carried out at E/E points and second is the UDN which enables shippers[16] to conduct balancing portfolio operations among themselves on Continuous Trading Platform (CTP) (developed by EPIAŞ) within the OWGM. Given the modest gas trade being made with Bulgaria and Greece[17] and Turkey's EU membership status (which makes Turkey not directly impacted by the harmonisation of rules for the CAM and CMP), a merger of the Turkish market with its European counterparts can be regarded as premature at this point. However, the discussions of how to increase the compatibility of Turkey's gas industry with its adjacent markets and to further develop trades with those continue at a national level. Surprisingly, the proposition of ACER for the NRAs to perform a regular self-evaluation process in each state seems to be undertaken by private participants in Turkey, and the rigorous

[16] Who are not importers but have access to the transmission network. These trades mainly happen with gas bought from private importers since BOTAŞ is not keen on its gas to be resold in a virtual environment except the 4bcm gas sold to those companies on the UND due to Russia-Ukraine-related disruptions in 2009 (Deloitte 2012).

[17] All capacity reservations are for forward flow since reverse flow at interconnection points is not allowed (Deloitte 2012).

efforts of private organisations such as PETFORM[18] pointing towards a possible development of a European equivalent gas trade centre (TRGas-Hub) should not go unnoticed. It has thus far managed many extensive consultations, studies and meetings with stakeholders to better understand the status of the market and the extent of the problems and to determine where active intervention of the EMRA is required for a better functioning market (Table 5.12).

Other developments notwithstanding, the major interest of shippers is the capacity. Turkey has applied dramatic changes to capacity allocations following the adaption of E/E systems though BOTAŞ' still bundled transmission and commercial activities as a TSO attract notable criticism from the system users, especially in terms of potential discrimination against other users. BOTAŞ grants standard transportation contracts (STCs) to import, export and wholesale companies, and all companies are required to submit the details of gas to be transmitted.[19] Almost all interprovincial gas distribution pipelines are privately owned—due to franchising—and thus the subscription of distributors to the BOTAŞ transmission system requires regulatory oversight as well.

The CAM and CMP are delineated in the BNC and respective LSO and SSO BUPPs which are approved by the EMRA. Capacity is available on an

Table 5.12 Level of implementation of NC CAM provisions in the EU (status as of April 2016) and Turkey

		Member States																							
	NC CAM PROVISIONS	AT	BE	BG	CZ	DE	DK	EL	ES	FR TIGF	FR GRTgaz	HR	HU	IE	IT	LT	NL	PL	PT	RO	SI	SK	UK	Average per Ch.	TURKEY
1	I. General Provisions	No Scorable Provisions Monitored																							
2	II. Principles of Cooperation	50%	100%	50%	50%	75%	50%	50%	50%	100%	50%	50%	50%	50%	50%	50%	60%	50%	50%	50%	50%	50%	100%	59%	100%
3	III. Allocation of firm capacit	100%	100%	70%	80%	100%	100%	80%	100%	90%	90%	90%	100%	100%	88%	10%	100%	100%	100%	90%	100%	90%	100%	94%	100%
4	IV. Bundling of Cross - Border Capacity	66%	100%	0%	100%	87%	66%	66%	100%	100%	100%	33%	66%	100%	100%	0%	100%	66%	66%	100%	33%	100%	100%	79%	0%*
5	V. Interruptible Capacity	92%	100%	22%	91%	92%	100%	92%	100%	92%	58%	58%	50%	90%	100%	73%	100%	92%	82%	92%	100%	92%	100%	85%	0%**
6	VI. Tariffs and Capacity Booking Platforms	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	####	100%	100%	100%	0%	100%	100%	100%	66%	100%	100%	100%	94%	100%
	Total Average Score	82%	100%	28%	84%	91%	83%	78%	90%	96%	80%	66%	73%	88%	88%	N/A	92%	82%	80%	79%	77%	86%	100%	82%	60%

Source: Compiled by author based on ACER/CEER (2016, 10) and interview data

[a]Not available as Turkey is not part of the ENTSOG; however, the infrastructure and all arrangements are ready.

[b]Previously specified on the NGML but not any more

[18] Standing for the Petroleum Platform Association. See http://www.petform.org.tr/?lang=en&a=1&s=5.

[19] That is, proposed date for the first entry and expected annual quantities for the following 5 years—on a monthly basis; entry and exit points to the network; and delivery requests regarding certain temperature and pressure the gas wanted at the main exit points.

uninterruptable basis in the Turkish market and all reservations made prior to the gas year are considered as yearly (BNC 2019, 24). Capacity allocations are done pro-rata (based on UIOLI arrangements [Akçollu 2006]) when capacity demands exceed the maximum allocable capacity (MAC). The TSO reserves 2% of capacity (for internal use and balancing purposes) in all entry points and the MAC is determined accordingly. The allocation programmes, announced on the booking platform—Electronic Bulletin Board (EBB)—by BOTAŞ, specify how the capacity allocation shall be handled per E/E points before the gas year begins unless the transporter is notified of any specific provisions in the shippers' gas purchase agreements.[20] Nominations are completed within a certain time period day ahead, and requests for changes in schedule are not accepted—except force majeure (Deloitte 2012; BNC 2019). Third-party capacity transfer for a minimum of one month or for the remainder of the year at any entry and major exit points is possible, whereas accession to the grid within the gas year (1 Jan 08.00–1 Jan 08.00) is possible only for the secondary market. The secondary market meant here is a market where unused or idle capacity is offered to shippers (with or without an STC obtained from the TSO earlier) for a minimum of one day (UGS facilities only) up to one month (for all other points). Although the capacity allocation system seems to satisfy market participants as it is, since there has not been any dispute over inadequate capacity (Deloitte 2012), it could be argued that the current system does not necessarily encourage small shippers and the new ones considering to enter the network. Furthermore, neither the specifics of existing and idle capacity allocations nor the unavailability of short-term products seems to totally align with the EU's NC interests.

The avalanche of TPA to the networks increased the MAC significantly (Ünal 2014) and the majority of capacity is allocated to BOTAŞ. The bookings by private companies are mainly clustered at Malkoclar, Silivri UGS, TPAO Akçakoca and TEMI Edirne entry points. The 2001 Law leaves it to the discretion of BOTAŞ to contact the bookers of unused capacity (unused for a minimum of four months[21]) if the capacity amounts to less than 20% of the respective MAC or to cancel and renominate the capacity otherwise. In terms of storage, no unbundled products are available and a minimum term for capacity booking is 12 months.

[20] Especially regarding the allocation methodology of gas to be delivered to multiple import entry points (excluding LNG terminals).

[21] Except the force majeure.

Table 5.13 Utilisation of underground storage capacity via third-party access, 2012–2016

Storage period	*Capacity bookings made by third parties (m^3)*	*Idle capacity (m^3)*
2012–2013	73,676,734	487,323,266
2013–2014	370,076,734	190,923,266
2014–2015	427,557,543	133,442,457
2015–2016	429,997,543	131,002,457

Source: TPAO

Allocations for underground storage, LNG and FSRU capacities are done on FCFS basis (and pro-rata when capacity demands exceed the MAC). A further exploration of the booking process to UGSs shows that not only the amount of unsold idle capacity continues to be high (Table 5.13) but also the allocation of unused capacity within the year is somewhat discriminatory.[22] Similarly, the existing storage users and applicants with big demand are given priority to apply for idle capacity in comparison to new entrants with comparatively smaller market share which can again be considered as an entry barrier. In summary, neither of these seems to align with the interests of either revenue-hungry UGS operators or the service receivers (not least new entrants who look forward to exercising secondary capacity rights at affordable prices), and addressing the capacity-related issues once the market share of BOTAŞ is reduced via further contract/volume release programmes looks to be the next important step for Turkey.

5.3.4.2 Gas Balancing Arrangements

Prior to the gas release programme, BOTAŞ was responsible for inputting and offtaking gas into/from the transmission system and hence the balancing of the system lay solely with it. With multiple network users now operating in the market the transmission system needs to accommodate changing flow patterns and independent input/offtake of gas at different E/E points should be facilitated. The balancing market is improving and shippers who have a balancing contract with the transporter are given access to the UDN to conduct balancing portfolio operations among

[22] For example, no temporary bank guarantee is required from the early applicants in comparison to new entrants. What is more, market participants demanding idle capacity at any time of a storage year are being obliged to pay capacity fee for the whole year regardless of the start and duration of their usage of the system.

themselves on a day-ahead and intraday basis. Marketers impairing the system are subject to various fees[23] all placed under the dispatch control tariffs. To offset imbalances at TPs gas continues to be bought from BOTAŞ by the shippers and this is considered to be a significant barrier for the market liquidity and competition. Regulation No. 715/2009 set one of the essential components of the E/E systems as the VPs and stipulated easy access for network users to VPs for clearly defined balancing mechanisms. As expectedly, in line with varied TPA frameworks to gas infrastructure existing around Europe there is no uniform preconditions for VP accessions either. When compared, aspirant Turkish shippers seem to access the country's VP (UDN) with lesser preconditions than some European countries (DNVKE KEMA 2013).

The UDN is not accessible by non-shippers and by those without a balancing contract although BOTAŞ may require non-contracted shippers to be involved in balancing in case of insufficient natural gas in predetermined entry and/or exit points, or other emergency measures. Clearly, establishing a VP is not always a direct prescription for a liquid market or plenty of participants, and like its many European counterparts the Turkish gas market remains predominantly national given the historic development of the industry and the promotion of national incumbents (EC 2013). Although its connection to the European gas market is presently trivial and the vast majority of gas trading takes place at physical points, Turkey's full integration to the European gas markets requires (1) transposing the EC's harmonised balancing rules into the Law; and (2) addressing the obstacles deriving from national arrangements accordingly.

As detailed in Article 4(4) and 7(b) of the 2001 Law, appropriately provided information by the TSOs as well as other market participants regarding their market operations is central to maintaining the network system within safe operational limits in Turkey. BOTAŞ' Dispatch Control Centre in Ankara monitors and controls the transmission network through SCADA systems used between stations, and the EBB provides an online data exchange between the parties. The BAL NC foresees a number of provisions regarding the frequency of information that TSOs should be providing to shippers, including non-daily, intraday and daily metered offtakes[24]

[23] That is, imbalance, disorder, excess capacity and service interruption fees.

[24] NC BAL defines the daily metered offtakes as measuring and collecting the gas quantity once per gas day; intraday metered offtakes as repeating the measurements two times within the gas day and non-daily metered offtakes as less frequently than once per gas day (Art. 3(10–12)).

(Art 33–36); these upgrades are applicable to the systems used in Turkey, although further improvement and fine-tuning of the technical elements in both SCADA and the EBB are always and regularly needed. Together with Bulgaria, Hungary, Slovenia and the Netherlands, Turkey uses Variant 1 model information system—where the information for non-daily metered (NDM) and daily metered (DM) offtakes is based on apportionment of measured flows during the day—whereas majority of the MSs go for Base Case model[25] (ENTSOG 2017).

Turkey applies daily balancing to keep its system within operational limits during the day (Table 5.14) and financially settle for deviations accumulated over the course of the preceding 24 hours as the BAL NC envisages (ENTSOG 2018). Article 25 of the NC requires MSs to impose specific within-day obligations (WDOs) relating to shippers' imbalances during the day (e.g. system-wide and portfolio based) and a common characteristic of the proposed WDOs is incentivising shippers to balance their flows more frequently by providing them with hourly information about their balance positions instead of delegating TSOs to take residual balancing actions (EC 2013). In Turkey, an entry-exit WDO is used by which incentives are provided for shippers to limit the gas flow or the gas flow variation under specific conditions at specific entry-exit points. Also as said above, BOTAŞ facilitates a purely daily balancing regime and which is probably ideal from the new entrants' point of view and shippers are required to reset their imbalance positions to zero when their flows go beyond predefined "tolerance levels" since not every risk of imbalance can be obviated. The idea behind harmonising the balancing periods across Europe is clearly to preclude arbitrage/abuse opportunities for network users between markets and different balancing regimes (ERGEG 2010; EC 2013). When more cross-border trades take off between Turkey and other EU members, where network users are incentivised to balance on an hourly basis, flows in may be exposed to inefficiency and within-day charges would be affected if Turkey postpones the full harmonisation.

The balancing mechanism of Turkey relies entirely on financial settlement and the imbalance fee is based on the balancing gas buy and sell price. There is a tolerance system provided (Table 5.15) and shippers who impair the system depending on whether or not within the tolerance level are subject to a "balance participation fee" which consists of three parameters: (1) daily imbalance charge (DIC); (2) locational commitment charge; and (3) scheduling charge, which is applicable for imbalances

[25] Where the information for non-daily metered (NDM) offtakes consists of a day-ahead and within-day forecasts.

Table 5.14 Implementation of balancing network code in EU and Turkey

	EU countries			
I. General provisions	No scorable provisions monitored			
II. Balancing system				
Lead-time of submitted trade notification	≤30 min BE/LU, CZ, DE, ES, FR, HU, IE, IT, LT, NL, PT, UK-NI	≤2 hours AT, BG, DK, EE, HR, LV, PL, RO, SI, SK, UK-GB, EL	>2 hours SE, Turkey	
Allocation rules of quantities in case of mismatches of trade notifications	Lesser rule AT, BE/LU, BG, CZ, DE, DK, EE, FR[a], IT[b], LV, NL, PL, PT, SE, SK, EL, Turkey	Reject both trade notification ES, HR, IE, RO, SI, UK-GB, UK-NI	No allocation rule HU[c], LT[d]	
III. Operational balancing				
STSP offered in own balancing zone	Merit order AT, BE/LU, BG, CZ, DE, DK, ES, FR, HR, HU, IT, LT, LV, NL, PL, SK, SI	Merit order with balancing services only EE, EL, IE, PT, RO, UK-NI, Turkey	Use of balancing services BG, CZ, DE, EE, EL, HR, IE, LT, LV, PLH, PT, RO, SI, SK, UK-NI	
Trading platform, trading in adjacent zones and cross-border cooperation	Trading platform in place AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, LV, NL, PL, SI, UK-GB, HR, PT	NRA approval for TSOs trading STSPs in adjacent zones CZ, DE, PL, SK	Cross-border TSOs cooperation when establishing new STSP LV, Turkey	Incentive mechanism in place AT, ES, IT and UK-GB
IV. Nominations				
Nomination and re-nomination provisions for bundled capacities at IPs	Single nomination implemented CZ, ES[e], FR, IE, IT, NL, PL, PT[e], SI, SK, UK-GB, UK-NI	Cooperating w/ adjacent TSO(s) to implement AT, BE/LU, DE, DK, HR, RO, Turkey		

(*continued*)

Table 5.14 (continued)

	EU countries		
Hourly re-nomination cycle and standard re-nomination lead-time of two hours at IPs	Yes AT, BE, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LV, LT, NL, PL, PT, RO, SE, SI, SK, UK-GB, UK-NI, LU (2 hr15'),	No Turkey	
Agreed default nomination with adjacent TSO in the absence of a valid nomination	In place AT, BG, BE/LU, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SE, SI, UK-GB, UK-NI	Not implemented CZ, SK, Turkey	
V. Daily imbalance charges			
Type of imbalance charge	Daily imbalance charge AT, BE, LU, CZ, DE, DK, ES, FR, IT, NL, EL, HU, LT, SI, Turkey	Interim imbalance charge BG, HR, LV, PL, PT, IE, RO, SE, SK	
DIC includes TSO sell/buy prices, weighted average price (WAP) of gas and a small adjustment.	Yes BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, PL-H, PT, SI, UK-GB	No AT, BG, EE, EL, IE, LV, NL, PL-L, PL-T, RO, SE, SK, UK-NI, Turkey	
Reduction of shippers' daily imbalance quantities to zero each day	BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, PL, PT, SE, SK, SI, UK-GB, UK-NI, Turkey	–	
VI. Within-day obligations			
TSOs implement	System-wide WDO	Portfolio-based WDO	Entry-Exit WDO
Within-day obligations (WDOs)	AT, BE/LU	DE and NL	Turkey

VII. Neutrality				
TSOs shall publish the aggregate neutrality charges for balancing at least monthly.	Implemented BE/LU, BG, DE, EL, ES, FR, HR, HU, IE, IT, NL, PL, PT, SK, SI, UK-GB, UK-NI, Turkey	Partially implemented CZ, LT	Others DK, EE, SE, RO	
VIII. Information provision				
During gas day (D), TSOs provide info on (1) overall status of transmission network; (2) their balancing actions; and (3) network users' inputs/ offtakes for gas D	Fully Implemented AT, BE/LU, BG, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IT, LV, NL, PL, PT, SK, SI and UK-GB, UK-NI, Turkey	Partially implemented EE, LT, RO, SE		
Information Model	Base Case model AT, CZ, DK, ES, FR-PEG NORD, FR-TRS, IE, IT, LT, LV, PL-HGAS, PL-LGAS, SE, UK-GB, UK-NI	Variant 1 BE/LU, BG, HU, NL, SI, Turkey	Variant 2 DE, PT	
Provision of Final Allocation Data	No later than end of D+1 AT, BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SE, SI, SK, UK-GB, UK-NI, Turkey			
Cost Benefit Analysis (CBA)	Complete CBA AT, EE, FR, LT, NL, PL and UK-GB	Others BE, BG, CZ, DE, DK, ES, HR, IT, PT, SI, UK-NI, Turkey		
Establishing a Forecasting Party	TSO BE/LU, DK, FR, HR, IE, Turkey	DSO IT, PT, SI, UK-GB, UK-NI	Third Party AT, CZ, ES, NL (4)	Under discussion EE, RO (2)

(*continued*)

Table 5.14 (continued)

	EU countries			
Cooperation of DSO(s) &Forecasting party(-ies) w/TSO	Yes AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, SE, SI, UK-GB, UK-NI, Turkey	No BG, EE, EL, RO, SK		
IX. Line-pack flexibility service (LFS)				
TSOs offer LFS	CZ, FR, NL, PT, SE, Turkey			
X. Interim measures				
Interim Measures	Balancing platform DE, PL, SE, SK, EL, Turkey	Alternative to a balancing platform BG, EL, IE, LV, RO, SK, UK-NI	Interim daily imbalance charge BG, EL, IE, LV, PL, RO, SE, SK, UK-NI, Turkey	Use of Tolerences BG, EL, IE, LT, PL, RO, UK-NI, Turkey

Source: Compiled by author based on ENTSOG (2017) and interview data

[a]In France, in case of mismatch of notification quantities, the lesser rule is applied. When the re-notification quantities are still not equal, they are rejected.
[b]In Italy, in case of mismatch of notification quantities of OTC trading, both trade notifications are rejected, while in case of mismatch of notification quantities of a trade on a gas exchange, the lesser rule is applied. Curtailments or rejections are also possible in case of lacking financial guarantee coverage.
[c]Hungary stated that a mismatch is not possible in case of trades. Offer/accept method is in use.
[d]Lithuania stated that a notification is provided by seller, which is registered in NRA and has to be agreed with buyer.
[e]The TSO cooperation ended up with the establishment of single nomination at both France and Portugal interconnection points after the survey period.

Table 5.15 Permitted tolerance levels for balancing in Turkey

Entry range (m^3)	*A*	*B*	*Permitted tolerance (C)*
0–500,000	0	Entry amount	+/− 0.15 (15%)
500,001–1,000,000	+/− 75,000	EA-500,000	+/− 0.12 (12%)
1,000,001–2,000,000	+/− 135,000	EA-1.000,000	+/− 0.10 (10%)
2,000,001–4,000,000	+/− 235,000	EA-2,000,000	+/− 0.09 (9%)
4,000,001 and above	+/− 415,000	EA-4,000,000	+/− 0.07 (7%)
Exit range (m^3)	*A*	*B*	*Permitted tolerance (C)*
0–100,000	0	Exit amount	+/− 1.00 (100%)
100,001–250,000	+/− 100,000	EXA-100,000	+/− 0.12 (8%)
250,001–1,000,000	+/− 118,000	EXA-250,000	+/− 0.10 (6%)
1,000,001–2,000,000	+/− 193,000	EXA-1,000,000	+/− 0.06 (5%)
2,000,001 and above	+/− 253,000	EXA-2,000,000	+/− 0.04 (4%)

Daily Exits T (Permitted Tolerance Quantity) = A + (B ∗ C)

Source: BNC (2019)

(beyond tolerance levels) caused at entry points of storage facilities, LNG terminals and production facilities, and other E/E points. The cumulative invoicing is made monthly (based on daily accruals).

The BAL NC envisages that the DICs should be based on marginal prices (e.g. marginal sell price where the daily imbalance quantity is positive and marginal buy price where the daily imbalance quantity is negative),[26] plus a small adjustment to incentivise shippers for timely balancing without penalising new entrants applied across Europe, in the Turkish system imbalance charges based on similar parameters that are proposed by the TSO, approved by the EMRA and published on the EBB. Additionally, the NC requires TSOs to remain cash neutral with regard to balancing activities and pass any cost or revenues that arise to the shippers (Art. 29–30). It is the task of EPIAŞ, operator of the OWGM, to ensure the TSO (BOTAŞ) remains clear of both the costs arising from network users' imbalanced positions and financial incentives to intervene the market where it must not. The BUPP clearly sets the rule that any costs or revenues stemming from balancing activities shall be passed to

[26] A marginal sell price is the lower of the lowest price of any trades in title products in which the TSO is involved in respect of the gas day; or the weighted average price (WAP) of gas in respect of that gas day, minus a small adjustment. And a marginal buy price is the higher of the highest price of any trades in title products in which the TSO is involved in respect of the gas day; or the WAP of gas in respect of that gas day, plus a small adjustment (NC BAL, Art. 22(2)(a);(b)).

network users with no exception and EPIAŞ uses Residual Reset Amount (RRA) methodology for calculation of the neutrality charges to do so (again approved and published by the EMRA). The operator invoices the respective parties on a monthly basis (based on daily accruals), and if end of the month balance is positive, BOTAŞ is entitled to maintain 10% of the balance for risk management of its balancing-related market activities (OWGM BUPP, 7.4).

Another key feature of the BAL NC is the provision of operational balancing and nominations. The use of short-term standardised products (STSPs)—for example, title, locational, temporal and temporal locational that are bought and sold on a dedicated balancing or trading platform by TSOs and shippers—is foreseen by the NC in order to facilitate (cross-border) natural gas trading. Since the Turkish market participants already do balancing activities on the CTP, Turkey seems to have passed the interim measures and is ready to focus predominantly on the liquidising side of the wholesale business. Of course, in line with normal expectations, the pursuit of more cross-border natural gas trading implies more market integration with adjacent market areas and for the liquidity this means trades in STSPs of which the Turkish gas market does presently lack.

5.3.4.3 Transmission Tariff Structures

With respect to the transmission tariffs structure, Regulation 715/2009 highlighted two concerns: separate tariffs to be set for each E/E point into/out of transmission network based on cost-allocation mechanisms; and no contract paths to be used for network charge calculations. Accordingly, the TAR NC requires the MSs to apply NRA-set reference price methodologies (RPM), that apply to all E/E points (or cluster of E/E points) including interconnection points (IPs) and non-IPs (other than multi-TSO E/E systems), in order to calculate the reference price for standard firm capacity and interruptible capacity products. The NC requires the RPM to: (a) enable network users to reproduce the calculation of reference prices and their accurate forecast; (b) take into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network; (c) ensure non-discrimination and prevent undue cross-subsidisation including by taking into account the cost-allocation assessments; (d) ensure that significant volume risk related particularly to transports across an E/E system is not assigned to final customers within that E/E system; and (e) ensure that the resulting reference prices do not distort cross-border trade (TAR NC, Art 7).

As the tariffs set in one country can have an impact on access regimes in adjacent countries, the issues regarding tariff structure need to be considered in the context of the integration of gas markets across the EU (DNV KEMA 2013, 67). For this, the TAR NC has been developed to remove the "patchwork of different tariff structures" currently the case for Europe and requires member states to apply a primary reference price methodology (either postage stamp [PSM] or capacity-weighted distance methodology [CWDM]) and secondary adjustments (equalisation, benchmarking and storage adjustment) towards the calculation of a reference price. This price is for a firm yearly capacity product and is expected to be uniformly applicable at all E/E points in all E/E systems.

On account of creating a level playing field the TAR NC favours explicitly equalised revenues (50:50) from the sale of entry and exit capacity, but entry-exit split is yet to be implemented in Turkey. Since capacities are decoupled, the TSO prices them at both entry and exit points[27] whilst its allowed revenue is subject to "revenue cap" regulation (EBRD; ERRANET 2013). The tariffs include a capacity and commodity component, and a higher percentage of revenue is recovered by the capacity charge (55%) than by the commodity charge (45%), reflecting a higher share of fixed costs in comparison with the variable costs in Turkey. The basic contract duration for capacity tariffs is three to ten years. Transmission and Dispatch Control Tariffs are set up ex ante—according to Accounting Methodology which relies heavily on setting allowed revenues based on recognised costs under the relevant accounting standards and therefore by mapping revenues to audited financial statements—and are approved by the EMRA prior to tariff periods. The transmission tariff includes capacity and service charges derived from CAPEX and OPEX whilst the dispatch control tariff consists of system balancing participation and interruption balancing fees (BNC 2019) (Table 5.16).

The price methodology used in Turkey is postage stamp as Deloitte (2012) terms it and it seems to align with the primary price methodology requested by the NC to be used for annual firm products. Nonetheless, due to lack of both short-term and interruptible capacity products unlike other EU countries this price is not being used as a base for calculating the reserve prices for such capacity products but the OWGM is expected to help in creation of the market-based reference prices.

[27] Like France, Ireland and Portugal the Turkish TSO applies locational tariffs for different entry points and a uniform tariff for all exit points (DNV KEMA 2013).

Table 5.16 Methodologies and parameters used to determine target revenue of TSO in Turkey

Regulatory, market and policy framework		
Regulator	EPDK	
TSO(s)	BOTAŞ	
Customer mix	Residential	25.09%
	Industrial	24.83%
	Power generation	38.13%
Ratio of transit to national flows	0.013%	
Network age and length	Pipeline length	Original
	14,000 km (as of 2016)	operation 1987
Regulatory governance and process		
Entity that establishes the methodology and sets allowed/target revenues	EMRA	
Length of revenue-setting process	Three months	
Parties that can appeal NRA-determined revenues	TSO, network users	
Overall framework for setting allowed revenues		
Type of regulation	Revenue cap	
Approach to assembling the cost base	Accounting methodology	
Duration of regulatory period	3 years	
Determining and setting operating expenditures		
Methods and approaches to assessing and setting OPEX allowances	Cost accountings from previous year and cost projections for the next four years	
Inclusion of efficiency or productivity improvements	Yes	
Efficiency factors used in most recent regulatory period	Determined by EMRA	
Determining and setting capital expenditures		
Methods and approaches to assessing and setting allowances	Financial statements	
Inclusion of efficiency or productivity improvements	No	
Regulatory asset base		
Method used for setting the opening asset value	Financial statements	
Depreciation		
Asset lives (for major asset groupings)	Pipelines	22 years
	Compressors	22 years
	Controllers/metering stations	22 years
	SCADA, telecoms	22 years

(*continued*)

Table 5.16 (continued)

Cost of capital and financeability		
WACC method	Before tax real	
WACC value set in the two most recent regulatory periods regulatory periods	Previous regulatory period	Current regulatory period
	10.53%	11.42%
Regulatory reporting		
Requirement for and frequency of regulatory reporting	Annual	
Coverage of regulatory reports	Sectoral statistics	
Purpose of regulatory reports	To inform sector	
Requirement for reconciliation w/audited financial statements	Yes	

Source: Compiled by author based on ECA (2018); EMRA and Interview data

In terms of revenue reconciliation, as stipulated in Articles 27–30 of the TAR NC, BOTAŞ has not yet given any regulatory account for aggregating the under- and over-recovery of transmission services revenue originating from the E/E points. Likewise, no mechanism has been kick-started to use earned auction premia towards the reduction of physical congestion or decrease of transmission tariffs for the next tariff period in Turkey.

5.4 Conclusion

IEA (2006) discussed that in many countries prior to reform, energy markets were historically organised as a single vertically integrated utility, exclusively owned and operated by the governments. In the case of the Turkish gas market this duty was undertaken by the state-owned BOTAŞ. The extensive review of the evolution of the Turkish gas market, provided in the preceding pages, reveals that the 2001 Law has affected change to the original structure of monopoly although a great deal of challenges and implementation issues still remain as of 2019 especially in the context of the EU energy legislation. This last section attempts to extract the early discussions on the compliance of the 2001 Law with the EU natural gas directives into a concise guide for action and the first research question is intended to be answered. The question asked was, "What are the characteristics of the legal framework that has been created to ensure natural gas market liberalisation in Turkey and how effective is it?"

The characteristics of the legal framework created in order to liberalise Turkey's natural gas market is comprehensively given at the beginning of this chapter and the issues that are now central and thus dominate the behaviour of all gas market participants are previously outlined. The effectiveness of the legislation, as the question continues, is where a little something further should be said. As this analysis has shown, Turkey cannot really succeed in its ambitious liberalisation targets without reducing the excessive gas market power of BOTAŞ, and the question of "how effective, or successful, the 2001 Law has been" cannot really be answered without answering "has the market power of BOTAŞ been really restricted by the 2001 law?" As of 2019, the ownership of Turkey's natural gas sector is still largely with the state, the infrastructure is owned by BOTAŞ and despite the Law precluding BOTAŞ from executing further gas purchase contracts until its import share was gradually reduced to 20% of the national consumption pre-2009 (and minimum 10% volume transfers to private companies every year), BOTAŞ controls about 80% of the market today. Therefore, in reality, the aim of properly restricting the market power of BOTAŞ has not really gone beyond a slight reduction of BOTAŞ' power which has been over the course of 18 years. Also given that the provision of the Law that strictly prohibited the sale of gas (more than 20% of Turkey's yearly gas consumption) by a single company has not been so far materialised, it would not be inaccurate to call the realisation of the NGML's competition commitments a failure to some extent.

Similarly, the reasons for the delay in attracting private participants into the supply segment, which later led to Russia's downstream expansion in the Turkish gas market, seem to be manifold and the role of the 2001 Law is not trivial in the final outcome. First, laying obstacles in the way of allowing private entities to import gas from the countries that BOTAŞ does not have unexpired contracts with, and subsequently switching this to a contract release programme with extra complications at the expense of new entrants, has not only slowed down the liberalisation process of Turkey but also paved the way for companies to associate themselves with Russia to obtain the requested documents from the EMRA. In defence of BOTAŞ, this is partly because of the long-term ToP gas purchase contracts BOTAŞ has with various countries which perhaps force the EMRA to condone the monopoly status of BOTAŞ which has been criticised by many liberalisation apologists. However, our ex parte discussions here would not convey sufficiently the breadth of this issue, especially from points of

view of BOTAŞ and the EMRA, and so this is delineated with the members of respective organisations during the interviews for further clarification.

The effectiveness of the 2001 Law can also be considered from the standpoint of the EU energy directives. To begin with, market opening and the notion of an eligible customer which did not exist in Turkish markets before 2001 was introduced by the Law following the First Energy Directive. Although some progress appears to have been made in this regard Turkey's progress remains limited. Contributory factors may be listed as: (1) still existing eligibility thresholds (though reduced greatly from 15 mcm to 75,000 m^3) since the Second Directive removed customer differentiation and all consumers independent of their use of gas are now regarded as eligible in Europe since 2007; and (2) the long captivity of numerous non-eligible customers to regional gas distributors. The distribution companies in Turkey are under the watchful eyes of onlookers since most of these companies came to the end of their eight-year fixed tariff period and the EMRA regulates the tariffs to prevent abusive behaviour of these regional monopolies. Of course, due to the exclusive rights to all non-eligible customers that were guaranteed to such companies during the franchising process, this subject should not be interpreted per se and thus further investigation with the regulators, taking into account all factors involved, is made during the interviews and discussed in following chapter. Developments notwithstanding, the most highly visible measure to check how effective is the market opening is the "switching rates" of eligible customers which are, in line with other EU countries, quite low in Turkey. Including the GFPPs—one of the largest customer groups—the eligible customers do not really switch to other suppliers and the examination of this issue from different perspectives also increases the chances that this case study will be exemplary.

In the EU, average switching duration is approximately 12 days (although a three-week limit as per the Third Directive is generally respected) and the final bill is received within six weeks (ACER/CEER 2017). This duration in Turkey is around 15 days and consumers are notified about whether or not they comply with eligibility thresholds (both on invoice and on distributor's website). However, the bills cannot really be classified as simple given that there is much information which are somewhat unclear and confusing to consumers. There is also a lack of a "reliable comparison tool" which provides transparency of price and non-price elements by enabling consumers to filter out additional services or offers on the platform.

According to early reviews of the OECD on Turkey's regulatory reform, before liberalising the country's energy market and the start of well-functioning gas market some party had to be responsible for creating competitive energy markets and building the regulatory framework as they would not be evolved naturally. Therefore the responsibility for realising such a gas market for Turkey was sitting wholly with the EMRA and it had to fulfil its functions in a clear, objective and unbiased, stable and predictable way according to the law by communicating with the market prior to issuing regulations (OECD 2002, 111). Turkey's EMRA does not appear to be completely consistent with the European principles concerning general competition and antitrust policies, and what the future plans are to truly create and maintain the independence of the EMRA from both the government and the regulated gas industry interference are discussed with the respondents. The situation of the EMRA needs to be improved when examined from the point of independency indexes which are listed in the OECD (2016, 22) as the most frequent dimensions, for example: (1) budget independence; (2) conditions for dismissal of the head of the regulatory agency; (3) accountability and reporting to government, legislature, or representatives from regulated entities; and (4) power to set tariffs or price-setting (Table 5.7). For example, the Turkish government delivers statements of expectations through various channels, but such expectations always have the risk of becoming a "shopping list" which could then easily be perceived as heavy-handed and be counterproductive as the report puts it. Likewise, consultations can be hijacked by powerful lobby groups leading delayed and/or blocked decisions which go against their interest. Therefore, particular precautions should be taken with regard to how formal and informal consultations with government and industry are conducted and used.

In terms of financial independence, OECD (2016, 2017) and Koske et al. (2016) argue that if budgets of regulators are part of the national, budget transparency and accountability of regulators to citizens are more guaranteed and can strengthen independence. However, the EMRA's funding sources come from fees; hence, it is essential that an appropriate cost-recovery mechanism should be in place so the "right" fee can be set in order to guarantee adequate accountability and to minimise risk of conflict of interest and undue influence. Independence of EMRA leadership (president and vice president) is also a critical point where undue pressure and influence can be exercised. When examined in this respect, it is seen that the final nomination and appointment of the senior management are

conducted by the president of Turkey and Council of Ministers, respectively. Because the nomination process mostly leads to the final appointment in Turkey and given the importance of board head's decision making power (for which the regulator will be held accountable) appropriate safeguards should be put in place for transparent and unbiased selection and appointment processes. Salary scales and (non)financial benefits of the regulator's staff are equally important. The EMRA's remuneration is based on government salary policy (with some autonomy) and ensuring that the staff are rewarded commensurate with the salaries of employees in the regulated industry would help them to avoid potential undue influence.

Another impediment to competitive market development in Turkey is the lack of an unbundling regime. With the onset of the natural gas liberalisation process the Turkish government required BOTAŞ to keep separate accounts for each activity it is involved in and not to continue its vertically integrated structure post 2009. The accounting unbundling of the transmission and commercial activities of BOTAŞ was realised shortly after, but despite the EU's continuous prescriptions of even more drastic unbundling regimes as the years went on (i.e. ownership), the restructuring of BOTAŞ requested by the 2001 Law is yet to be realised. Similarly at the retail level, the difference between distribution and retail is not distinguished in Turkey and hence unbundling is still in accordance with the First Directive. Although all distribution companies are now accounting unbundled, the designation of neither DSOs nor CDS operators as per Articles 24–28 of the Third Directive is currently available. The situation is compounded by the fact that Russia has now expanded its activities in the Turkish market and this makes the proper unbundling of such companies as significant as the unbundling of state-owned BOTAŞ.

In Turkey, entities belong to same sector/industry generally operate under single public body or ministry, so diversity lacks. And according to Deloitte and DNV GL (2017) this fact makes the adoptability of already available unbundling models of the EU (especially OU) for the Turkish gas market uneasy. For example, if Turkey opts for the OU model it means supply and transmission operations will need to be transferred to new owner(s). Whilst the MENR exercises control over, let us say, one of the entities, another public body/ministry will still be needed to claim ownership and control of the other. Both parties will then have to satisfy the EC that they have no decision making powers in common and on top of that the legal structure of Turkey's state administration and regulations determining the competences of ministries must be supporting such a struc-

ture. The report also argues that both the MENR and BOTAŞ had reached the consensus that ISO option was not appropriate for the Turkish gas market given its rare application in the EU itself as well as its arguable usefulness in complying with the unbundling requirements and practicality in following the certification process. Likewise, the ITO model is not easy to apply given the disadvantages it carries (e.g. it gathers supply and transmission entities under single body [EMRA] which means both public ownership and a vertically integrated unit will still persist, high-level administrative burden for compliance requirements will be dealt with, rendering of services will be limited and the competition environment will be weaken) as the report further argues. To combine the advantages of both the ITO and the OU, a new unbundling model called ITO+ is recommended to be formed. The new model, according to the report, would perfectly place supply and transmission branches of BOTAŞ under the same ministry (MENR) as two stand-alone entities, and to ensure independency of the TSO, a compliance programme could be established with an appointed compliance officer and an assigned supervisory body to go with it. Without a doubt the brand value of BOTAŞ and the continuation of its (inter)national influence are of high importance whatever the new model would be. Hence, it is suggested that the name of BOTAŞ could remain for the supply side (retaining the existing contracts and liabilities), whilst transmission part of the business could be named as BOTAŞ Transgas (Deloitte and DNV GL 2017, 92–95). In either scenario, however, restriction of main market activities of BOTAŞ to import, export and wholesale after removal of its transmission assets and their transfer to newly established TSO looks inevitable.

With regard to TPA, the transmission network in Turkey is now open to new entrants who want to build, operate or simply use the pipeline systems. One of the most notable successes of Turkey in terms of compliance with the EU energy directives is the full adaption of E/E systems containing the virtual point, the UDN. The 2001 Law requires regulatory oversight for the accession to networks in line with the directives and the only issue which was the accession to storage facilities, line-pack and other ancillary services—that was, by the Law, left negotiable between parties but due to insufficiency in the storage level the EMRA continued to apply regulated TPA—up until 2016 seems to be dealt with. The BUPPs of all new LNG terminals, FSRUs and underground gas storages are prepared in compliance with the network code. However, the uncertainty as to full or partial exemptions of the existing and major new storage infrastructure

from TPA has not been reduced since there are no clear-cut derogations stated in the 2001 Law about Turkey's existing infrastructure. As detailed in Chap. 4, due to the lack of storage and other infrastructure which still undermines confidence in Turkey's future commitment to effectively manage the risk of supply disruption and considering the ongoing construction/enlargement of storage facilities, a further clarification on this issue would help setting the basis for robust market-based price signals for the new infrastructure investments.

The subject of establishing a regional cooperation amongst TSOs has also been given attention in the Third Directive. It is required from the ENTSOG to adopt a non-binding community-wide ten-year network development plan (TYNDP), which specifies modelling of the integrated network, scenario development, a European supply adequacy outlook and an assessment of the resilience of the system, every two years (Art. 8, 10(b)). Accordingly, every MS is expected to contribute to ENTSOG tasks by publishing regional investment plans and actually take investment decisions based on those plans (Dir. 2009/715/EC Art. 12). The rationale behind this is simply supporting the TSOs to promote operational arrangements so they can ensure: (1) optimum management of their network; (2) development of energy exchanges; (3) coordinated allocation of cross-border capacity through non-discriminatory market-based solutions; (4) well-managed specific merits of implicit auctions for short-term allocations and (5) integration of balancing mechanisms throughout the EU. NRA supervision in elaboration of the TYNDPs is necessary as always and they are powered to monitor and make recommendations or even amendments if needed (ibid., Art. 8; ERGEG 2010). There is no publication of such a report in Turkey, however, apart from a ten-year natural gas transmission capacity projection report BOTAŞ had been asked by the EMRA to publish on an annual basis (EMRA Regulation on OWGM, Art. 10).

The EC (2013) stated that Europe has committed itself to the building of an integrated and interconnected gas market allowing all market players to compete on a level playing field whilst gas is generated, transported and consumed as efficiently as possible, avoiding losses along the value chain. For Turkey to be part of this internal market its gas transmission networks (and storage facilities) need to be able to facilitate trade and accommodate changing flows patterns. Our analysis has implied that the Turkish gas market is currently not fully compliant with the EU's single gas market framework. Turkey surely needs to make a considerable effort to harmon-

ise its regulation criteria, especially to promote a liquid wholesale market and an efficient price formation across the gas value chain. At a more specific level:

There is no well-functioning wholesale market, and the presence of a still overly powerful BOTAŞ, high market concentration and insufficient interconnection capacity are the leading contributors to this. As a result of a non-liquid market and mainly due to ToP contracts, the natural gas volumes of Turkey are tied to the gas prices of BOTAŞ, which dominates the market as the largest importer. As the 2001 Law was prepared on the basis of BOTAŞ' annual volume transfers pre-2009, its provisions relative to, for example, distributors which require them to procure no more than 50% of their gas from a single supplier or to purchase gas from the most economic source do not really count for much today (unless alternative suppliers and sufficient rivalry between them—over price and non-price elements—exist in the market). There is room for improvement in the market architecture and the development of market centre(s) based on a gas trading hub in Turkey, and consulting the regulators' views in imparting "how to ensure a well-functioning market" and "what lessons can be learnt from the European experience" can be a pathway.

Turkey's small level of cross-border cooperation with Greece and Bulgaria has been mentioned earlier, and once full EU membership is gained the harmonisation of particular rules, that is, gas balancing and transmission tariff structures, will gain more importance in Turkey. With regard to gas balancing arrangements, firstly, the STSPs are not sufficiently offered in the Turkish market which is instead substituted more with the use of balancing services. The UDN has been set and integrated into the E/E system, and Turkey has managed to lessen the prerequisites for the VP access similar to those of the so-called perfectly liquid Dutch and British gas markets. Not impressive as these achievements are, though, Turkey needs to define a standardised CAM in the form of an auction procedure via which the SCPs (yearly, quarterly, monthly, daily and within-day) can be made available to all network users registered on the booking platform (CTP) instead of pro-rata allocation method. Trade notifications, redesign of (re)-nomination processes, within-day obligation, trading possibilities within an adjacent market for balancing purposes, investment in new IT equipment and metering changes (ACER/ENTSOG 2014) are other important issues, but as no capacity trading takes place as of yet Turkey needs to improve its balancing mechanism further within the BAL NC framework.

In terms of transmission tariffs, as this analysis has shown Turkey's current regime is broadly consistent with the ENTSOG's TAR NC, given that the postage stamp is already being used as a primary price methodology. However, neither the secondary adjustments towards the calculation of reference price for annual capacity products nor an explicitly equalised revenue (50:50) from the sale of entry and exit capacity (entry-exit split) is implemented in the Turkish market. Two critical issues—namely, revenue reconciliation and cash neutrality of the TSO—were dealt with in September 2017, the details of which are now published in the OWGM BUPP. However, the absence of a mechanism aimed at facilitating the use of earned auction premia for reducing the physical congestion or to decrease the transmission tariffs for the next tariff period, still continues to be an issue Turkey needs to tackle.

In this chapter, considerable effort has been made to review the most relevant elements of the work that had thus far been carried out on Turkey's natural gas sector reforms and the issues identified here are addressed with governmental officials, policymakers and market players to draw out key policies and to make recommendations in Chaps. 6 and 7.

References

Accenture. (2013). *Türkiye doğalgaz ticareti üssünün/borsasının geliştirilmesi [Developing a Natural Gas Hub/Exchange in Turkey]*. Turkey: Accenture.

ACER. (2014, September 19). *A Bridge to 2025 Conclusions Paper: Recommendation of the Agency on the Regulatory Response to the Future Challenges Emerging from Developments in the Internal Energy Market*. Slovenia.

ACER. (2016). *Implementation Monitoring Report on the Capacity Allocation Mechanisms Network Code* (1st ed.). Slovenia.

ACER/CEER. (2017). *Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016: Consumer Protection and Empowerment Volume*. Agency for the Cooperation of Energy Regulators and the Council of European Energy Regulators.

ACER/ENTSOG. (2014). *ACER-ENTSOG Report on the Early Implementation of the Balancing Network Code (BAL NC)*. Final Version.

Akçollu, F. Y. (2006). *Major Challenges to the Liberalization of the Turkish Natural Gas Market*. Oxford Institute for Energy Studies NG 16. Oxford: OIES.

Bast, E., Makhijani, S., Pickard, S., & Whitley, S. (2014). *The Fossil Fuel Bailout: G20 Subsidies For Oil, Gas and Coal Exploration*. Washington, DC: Oil Change International.

Bulut, M. F. (2014, October 30). *Toptan satış şirketleri açısından doğal gaz depolama [Gas Storage from the Standpoint of Wholesalers]*. Turkey International Underground Gas Storage Conference (TUGS 2014), Ankara.

Campodónico, H. (1999). The Natural Gas Industry and Its Regulation in Latin America. *CEPAL Review, 68*, 137–54. Retrieved July 3, 2019, from http://repositorio.cepal.org/bitstream/handle/11362/10691/68137154I_en.pdf;jsessionid=9F51FD4835AE469D501D12C5163CDAC5?sequence=1.

CBRT. (2001a). *Strengthening the Turkish Economy: Turkey's Transition Program*. Ankara: Central Bank of The Republic of Turkey.

CBRT. (2001b). *Balance of Payments Report 2014-II*. Ankara: Central Bank of The Republic of Turkey.

CEER. (2013). *Status Review on the Transposition of Unbundling Requirements for DSOs and Closed Distribution System Operators. Ref: C12-UR-47-03*. Brussels: Council of European Energy Regulators ASBL.

Çetin, T., & Oğuz, F. (2007). The Reform in the Turkish Natural Gas Market: A Critical Evaluation. *Energy Policy, 35*(7), 3856–3867.

CNE. (2012). *Report on the Development of Competition in Gas and Electricity Markets, Part 1: Executive Summary and Regulatory Proposals, Period 2008–2010 and Preview 2011*. Spain: Comision Nacional de Energia.

Coady, D., El-Said, M., Gillingham, R., Kpodar, K., Medas, P., & Newhouse, D. (2006). *The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka*. International Monetary Fund Working Paper WP/06/247, Washington, DC.

Coady, D., Parry, I., Le, N.-P., & Shang, B. (2019). *Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates*. International Monetary Fund Working Paper WP/19/89, Washington, DC.

Corbeau, A.-S., Volk, V., Sinton, J., Jiang, J., Ping, J., Teng, T., Boshu, L., & Fen, Y. (2012). *Gas Pricing and Regulation China's Challenges and IEA Experience*. Paris: OECD/IEA.

Council Directive 1998/30 of 22 June 1998 Concerning Rules for the Internal Market in Natural Gas. OJ L 204/1 ("First Gas Directive").

Council Directive 2003/55/EC of 26 June 2003 Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 98/30. OJ L176/57 ("Second Gas Directive").

Council Directive 2009/73/EC of 13 July 2009 Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 2003/55/EC. OJ L211/94.

Council Directive 2009/72/EC of 13 July 2009 Concerning Common Rules for the Internal Market in Electricity and Repealing Directive 2003/54/EC. OJ L211/55.

Council Regulation 1775/2005 of 28 September 2005 on Conditions for Access to the Natural Gas Transmission Networks.

Deloitte. (2012). Turkey's Natural Gas Market Expectations and Developments 2012. April 2002.

Deloitte and DNV GL. (2017, August). *Consulting Services For: Acquis Alignment & Institutional Capacity of MENR*. Unbundling Support for BOTAŞ and Visibility & Public Awareness: Natural gas market legislative and implementation support report—Updated Version.

DNV KEMA. (2013, July 19). *Study on Entry-Exit Regimes in Gas Part A: Implementation of Entry-Exit Systems*. The Netherlands. Updated December 11, 2013.

EC. (1999). *1999 Regular Report from the Commission on Turkey's Progress Towards Accession*. Brussels: Commission of the European Communities. Retrieved June 18, 2019, from http://ec.europa.eu/enlargement/archives/pdf/key_documents/1999/turkey_en.pdf.

EC. (2000). *Opening Up to Choice: Launching the Single European Gas Market*. Luxembourg: Office for Official Publications of The European Communities.

EC. (2013). *Establishing a Network Code on Gas Balancing of Transmission Networks*. Commission Staff Working Document: Impact Assessment, O029318/01, European Commission, Brussels.

ECA. (2018). *Methodologies and Parameters Used to Determine the Allowed or Target Revenue of Gas Transmission System Operators (TSOs)*. Final Report, Economic Consulting Associates, London.

EMRA. (2011). *Annual Sector Report Natural Gas Market: 2010*. Ankara: Energy Market Regulatory Authority Natural Gas Market Department.

EMRA. (2012). *Annual Sector Report Natural Gas Market: 2011*. Ankara: Energy Market Regulatory Authority Natural Gas Market Department.

EMRA. (2013). *Annual Sector Report Natural Gas Market: 2012*. Ankara: Energy Market Regulatory Authority Natural Gas Market Department.

EMRA. (2014). *Annual Sector Report Natural Gas Market: 2013*. Ankara: Energy Market Regulatory Authority Natural Gas Market Department.

EMRA. (2018a). *Annual Sector Report Natural Gas Market: 2017*. Ankara: Energy Market Regulatory Authority Natural Gas Market Department.

EMRA. (2018b). *2017 Activity Report*. Ankara: Energy Market Regulatory Authority.

ENTSOG. (2017). Balancing Network Code: Implementation and Effect Monitoring Report.

ENTSOG. (2018, September). *Balancing Network Code: An Overview*.

ERGEG. (2010, August 18). *Gas Balancing Rules on European Gas Transmission Networks Draft Pilot Framework Guideline*. Ref: E10-GNM-13-03.

ERRANET. (2013). *Tariff Regulation in Natural Gas Market of Turkey*.

EU Regulation 715/2009 of 13 July 2009 on Conditions for Access to the Natural Gas Transmission Networks and Repealing Regulation (EC) No 1775/2005. OJ L211/36 ("Gas Regulation 715").

EU Regulation 312/2014 of 26 March 2014 on Establishing a Network Code on Gas Balancing of Transmission Networks. OJ 91/15 ("BAL NC").

EU Regulation 2017/460 of 16 March 2017 on Establishing a Network Code on Harmonised Transmission Tariff Structures for Gas. OJ 72/29 ("TAR NC").

EU Regulation 2017/459 of 16 March 2017 Establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and Repealing Regulation (EU) No 984/2013. Official Journal of the European Union, L 72/29 ("CAM NC").

EU Regulation 312/2014 of 26 March 2014 on Establishing a Network Code on Gas Balancing of Transmission Networks. OJ 91/15.

Gence-Creux, C., Blaney, G., Muruais, R., & Vereecke, B. (2018, October 22). *The 2017 Annual Report on Monitoring the Electricity and Natural Gas Markets*. 7th ACER Market Monitoring Report focusing on 2017, Presentations, Brussels.

Grätz, J. (2009). Energy Relations with Russia and Gas Market Liberalization. *IPG, 3*(2009), 66–80.

IEA. (2006). *China's Power Sector Reforms: Where to Next?* Paris: OECD/IEA.

IEA. (2013). *World Energy Outlook 2013*. Paris: OECD/IEA.

IEA/OPEC/OECD/World Bank. (2010, June 26–27). Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative: IEA, OPEC, OECD, World Bank Joint Report Prepared for Submission to the G-20 Summit Meeting Toronto. Retrieved December 20, 2015, from https://www.oecd.org/env/45575666.pdf.

IEG. (2008). *Climate Change and the World Bank Group Phase I: An Evaluation of World Bank Win-Win Energy Policy Reforms*. Washington, DC: The International Bank for Reconstruction and Development.

IGU. (2019, May). *Wholesale Gas Price Survey 2019 Edition: A Global Review of Price Formation Mechanisms 2005 to 2018*.

IMF. (1999a). *IMF Approves US$4 Billion Stand-By Credit for Turkey*. The International Monetary Fund Press Release. Retrieved December 2, 2013, from https://www.imf.org/external/np/sec/pr/1999/pr9966.htm.

IMF. (1999b). Letter of Intent of the Government of Turkey. [online]. Retrieved November 22, 2015, from https://www.imf.org/external/np/loi/1999/120999.htm.

Karan, M. B., & Kazdağlı, H. (2011). The Development of Energy Markets in Europe. In Dorsman et al. (Eds.), *Financial Aspects in Energy* (pp. 11–32). Berlin: Springer-Verlag.

Keuchel, M. (2014, May 30). *Natural Gas in Turkey—Today and Tomorrow*. EBC Working Committee „Energy". Athens.

Koske, I., Naru, F., Beiter, P., & Wanner, I. (2016). *Regulatory Management Practices in OECD Countries*. OECD Economics Department Working Papers No 1296.

Küsmüş, A. (2014, September 18). *Doğalgaz iletiminde gelişmeler—beklentiler [Developments and Expectations: Gas Transmission in Turkey]*. 8th Shippers Forum.

Mulder, M., Shestalova, V., & Lijesen, M. G. (2005). *Vertical Separation of the Energy Distribution Industry: An Assessment of Several Options for Unbundling*. CPB Netherlands Bureau for Economic Policy Analysis, No 84.

NGML. (2001, May 2). Natural Gas Market Law No. 4646, Adoption Date: 18/04/2001, Published in The Turkish Official Gazette No. 24390. Retrieved June 20, 2019, from https://www.epdk.org.tr/Detay/Icerik/1-2302/natural-gaslaw-on-natural-gas-market.

OECD. (2002). *OECD Reviews of Regulatory Reform Turkey: Crucial Support for Economic Recovery*. France.

OECD. (2016). *Being an Independent Regulator: The Governance of Regulators*. Paris: OECD Publishing. Retrieved June 19, 2019, from https://read.oecd-ilibrary.org/governance/being-an-independent-regulator_9789264255401-en#page4.

OECD. (2017). *OECD Economic Outlook, 2017(2)*. https://www.keepeek.com//Digital-Asset-Management/oecd/economics/oecd-economic-outlook-volume-2017-issue-2_eco_outlook-v2017-2-en#page241.

Oil Change International. (2015). *The Cost of Subsidizing Fossil Fuel Production in Turkey: Why Turkey Should Implement the G20 Commitment to Phase Out Fossil Fuel Subsidies*. [pdf]. Retrieved March 19, 2016, from http://priceofoil.org/2015/09/08/the-cost-of-subsidizing-fossil-fuel-production-in-turkey/.

Rzayeva, G. (2014). *Gas in the Turkish Domestic Energy Market: Policies and Challenges*. Oxford Institute for Energy Studies NG 20. Oxford: OIES.

Soysal, C., Yücel, C. Ö., Koyuncu, T., & Tokgöz, E. (2012). *Doğal gaz sektör araştırması [Natural Gas Market Research]*. Ankara: Competition Authority.

Ünal, H. H. (2014). *Third Party Access to the Turkish Natural Gas Transmission System 2007–2013*. Ankara: Energy Law Research Institute.

UNECE. (2012). *The Impact of Liberalisation of Natural Gas Markets in the UNECE Region Efficiency and Security*. United Nations Economic Commission for Europe Committee on Sustainable Energy. Retrieved September 2, 2013, from http://www.unece.org/index.php?id=29309.

USITC. (2001). *Natural Gas Services: Recent Reforms in Selected Markets*. Washington, DC: United States International Trade Commission Publications.
Yardımcı, O. (2011). *Türkiye doğal gaz piyasası: Geçmiş 25 yıl, gelecek 25 yıl [Turkish Gas Industry: The Past and Forthcoming 25 Years]*. Ekonomi Bilimleri Dergisi, Cilt 3(2). [online]. Retrieved May 9, 2015, from http://enerjiuzmani.blogspot.co.uk/2011/09/turkiye-dogal-gaz-piyasasi-gecmis-25.html.
Yardımcı, O. (2018, March 15). *Price Regulations in Energy Markets*. Energy Policy Research Center. Bilkent's Energy Lectures.
Yılmaz, A. (n.d.). *Network ekonomilerinin serbestleştirilmesi ve rekabet sorunlari [Liberalisation of Network Economies and Competition Issues]*. [online]. Retrieved August 31, 2015, from http://tusiad.org/tr/tum/item/download/2472_a84a71dda56eb30fb553ef6e53cf3d47.

Legal Resources

Basic Principles and Procedures of Use for Organised Wholesale Gas Market, Official Gazette No 30024, 31 March 2017.
BOTAŞ Transmission Network Operation Principles (BNC). Official Gazette No 28159, 31 December 2011 by The Board Decision No. 3617 of 28 December 2011.
BOTAŞ Transmission Network Operation Principles (BNC). Official Gazette No 30674, 2 February 2019 by The Board Decision No. 8402 of 31 January 2019.
Energy Market Regulatory Authority Board Decision No 1032.
Energy Market Regulatory Authority Board Decision No 1537/1.
Energy Market Regulatory Authority Board Decision No 1808/1.
Energy Market Regulatory Authority Board Decision No 2966.
Energy Market Regulatory Authority Board Decision No 4169.
Energy Market Regulatory Authority Board Decision No 76.
Natural Gas Market Amended Law No 9/7/2008-5784/20, Official Gazette No 26948, 26 July 2008.
Regulation for Transmission System Operations. Official Gazette No 24918, 26 October 2002.
Regulation on Liquified Natural Gas Storage Facility Basic Operating Procedures and Guidelines. Official Gazette No 27230, 16 May 2009.
Statutory Decree No 350, KHK/350, 9 December 1988.
Statutory Decree No 397, KHK/397, 9 February 1990.
The Supplementary Law on Mandatory Storage Facility No 30/5/2013-6491/27.
The Turkish Commercial Code No 6762.

The Turkish Electricity Market Law No 4628.
The Turkish Liquefied Petroleum Gases Law by the Law No 5307.
The Turkish Natural Gas Market Law No 4646.
The Turkish Official Gazette.
The Turkish Petroleum Law No 5015.