Turkish Natural Gas Market

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`The interpretations, estimates and/or opinions reflect the judgment of the authors, not the Company`

Overview of Türkerler Group

Construction

Contract Work

Real Estate Development

Water & Infrastructure

Cement

Highlights

- A leading brand in the construction business
- Pipeline of A+ real estate development projects
- Significant growth potential for infrastructure

International Alliances
OTV International, a Veolia Water company

Others
Several companies operating in the textile,

Energy

Generation

Distribution

Trading

Highlights

- 24 MW GEPP, 120 MW HEPP operational
- 816 MW existing RES licenses, 125 MW under con
- 600.000 power distibution customers and

1.7 GWh Energy Sales in VEDAS

- Currently with 678.000 of customers and 2.6 bil.

m3 of gas distribution, in İzmir

Public-Private Partnership

Healthcare

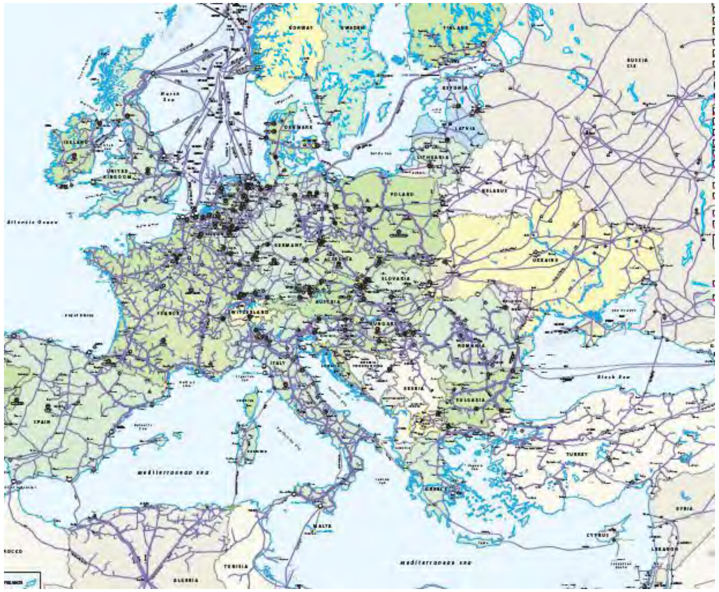
Highlights

- Won the tender for Turkey's first and largest PPP
- Ankara, İzmir, Kocaeli healthcare campus projects

Local & International Alliances
Astaldi SpA, Gama Holding

Introduction 1

- 1-) Although there is a powerful integration all over Europe, according to conducted analysis, Southeast Europe both internally and with other parts of Europe is not integrated at a desired level which creates major problems in supply security, market integration, competition and sustainability subjects.
- 2-) In order to eliminate such problems and to supply secure, sustainable, competitive and low cost energy to their citizens, on 10 July 2015, European Union, Albania, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Italy, Hungary, Macedonia, Moldova, Romania, Serbia, Slovakia, Slovenia, Ukraine and Greece signed a Memorandum of Understanding under Central and South-Eastern European Gas Connectivity – CESEC Program.



Introduction 2

3-) According to this MOU;

a-) Greece – Bulgaria, Bulgaria – Serbia, Croatia – Serbia, Bulgaria – Romania, Romania – Moldova, Hungary – Slovenia, Croatia – Slovenia, Croatia – Bosna and Herzegovina and Greece – Macedonia interconnection projects,

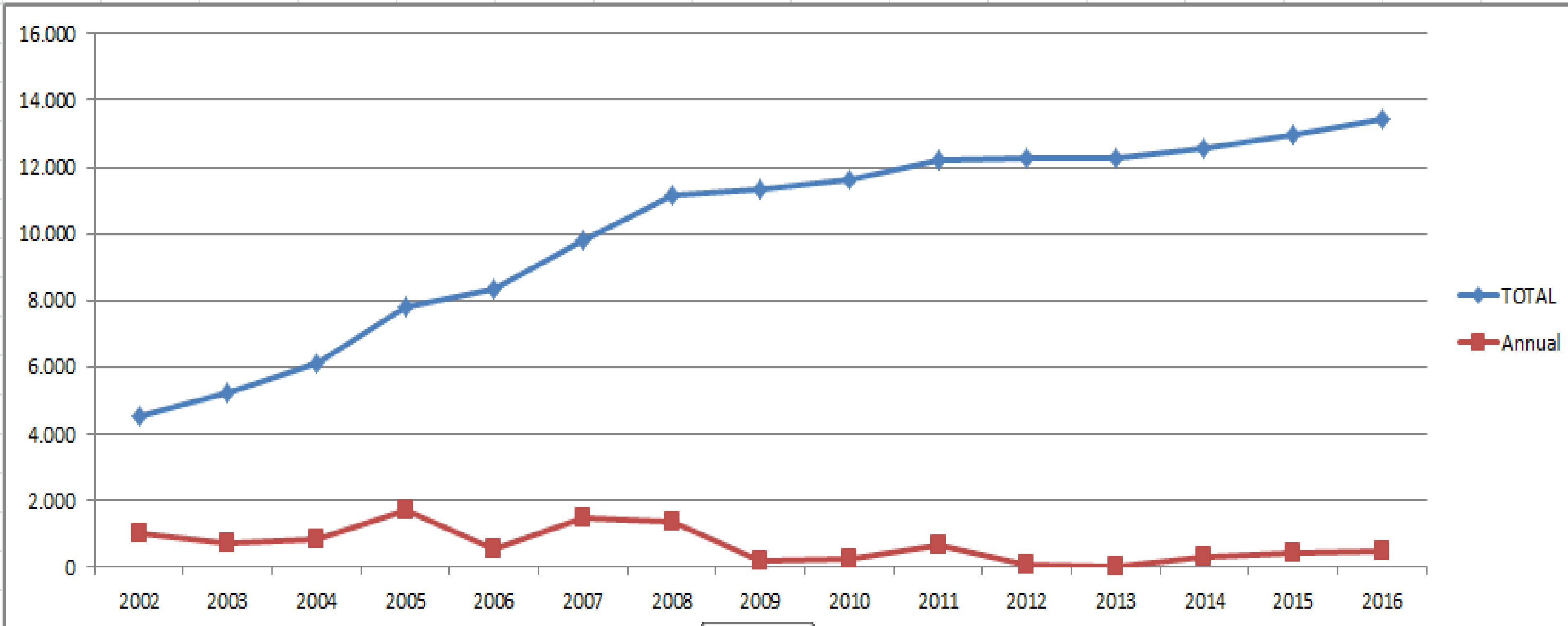
b-) Strengthening of Bulgaria, Romania, Hungary and Greece networks projects, and

c-) Studies started for a lot of different infrastructure investment projects, including multiple country high capacity main transmission line projects like EastRing, Tesla, BRAU.

4-) In the following years, it could be possible to start bidirectional gas flow between Turkey and Europe via Greece and Bulgaria if these physical infrastructure investments under CESEC will be completed and simultaneously Turkey fulfills need preparations.

Ref: Accenture Report EU-IPA12/CS03 Project April 2017

The Length of BOTAŞ NG Transmission Network



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL	4.510	5.245	6.078	7.809	8.333	9.798	11.130	11.332	11.593	12.215	12.290	12.292	12.561	12.963	13.443
Annual	1.020	735	833	1.731	524	1.465	1.332	202	261	622	75	2	270	402	479

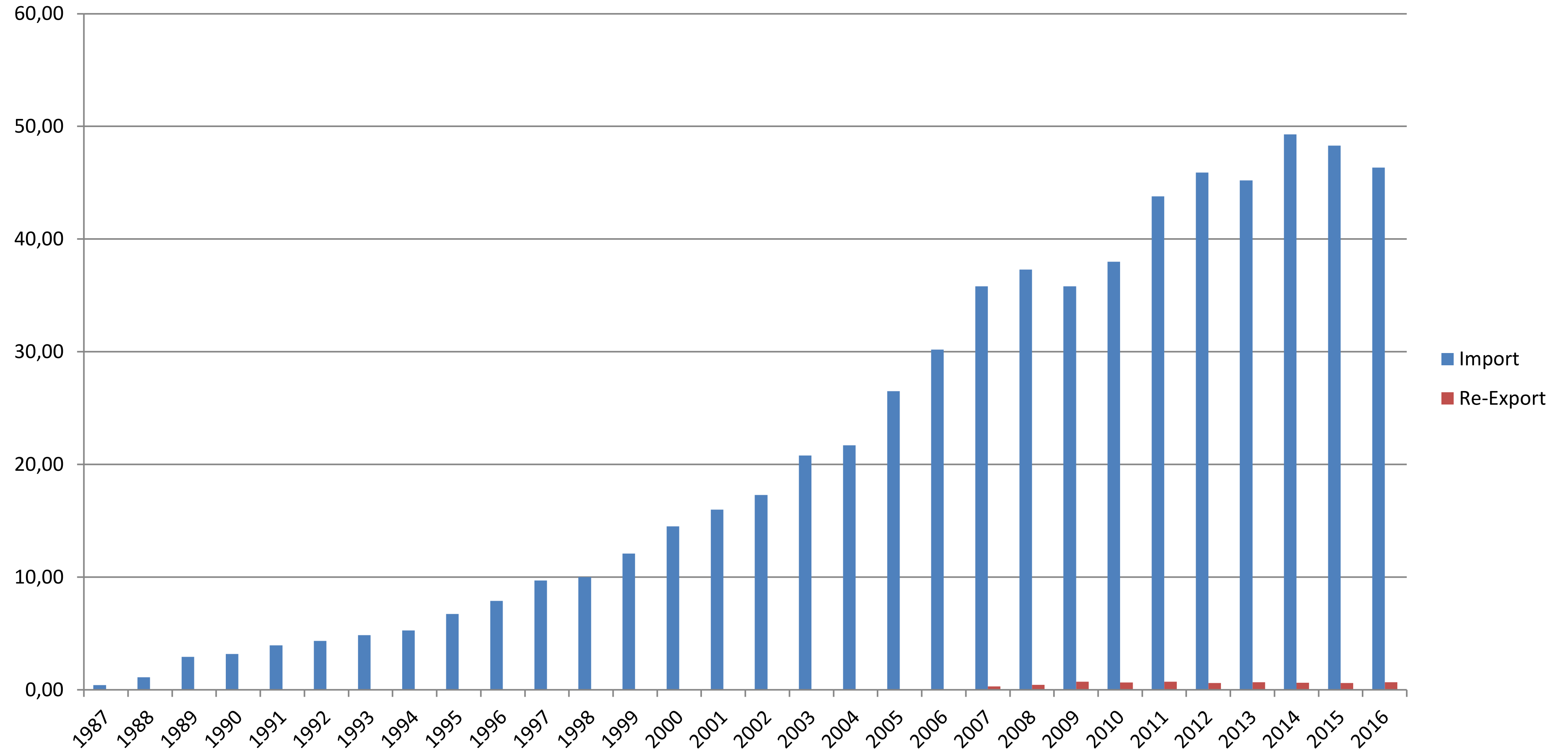
Ref: BOTAS Transmission System Capacity Projection, May 2017

Natural Gas Supplied Cities

Natural Gas Supplied Cities (78)

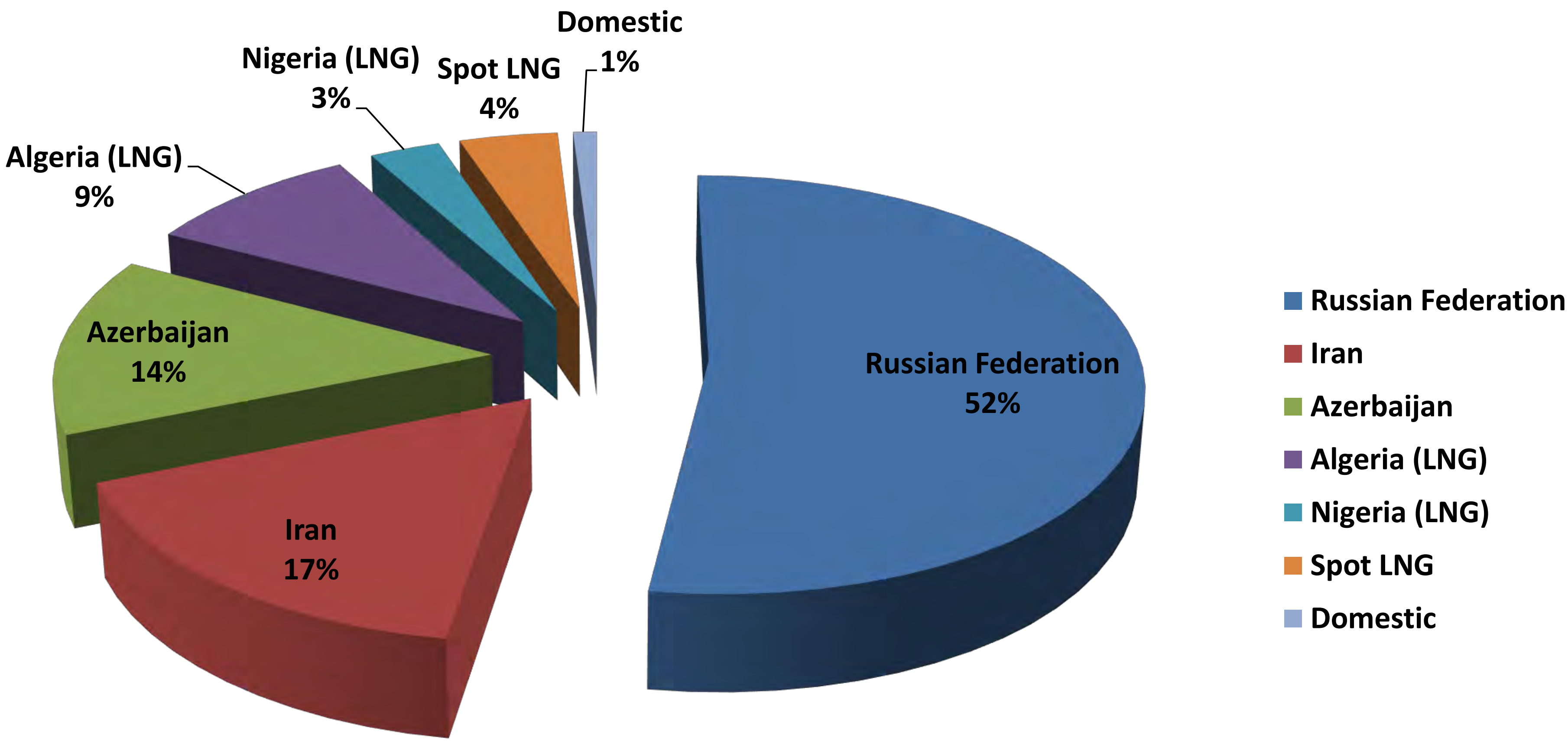
Construction Ongoing (3)

Turkish Import & Re-Export

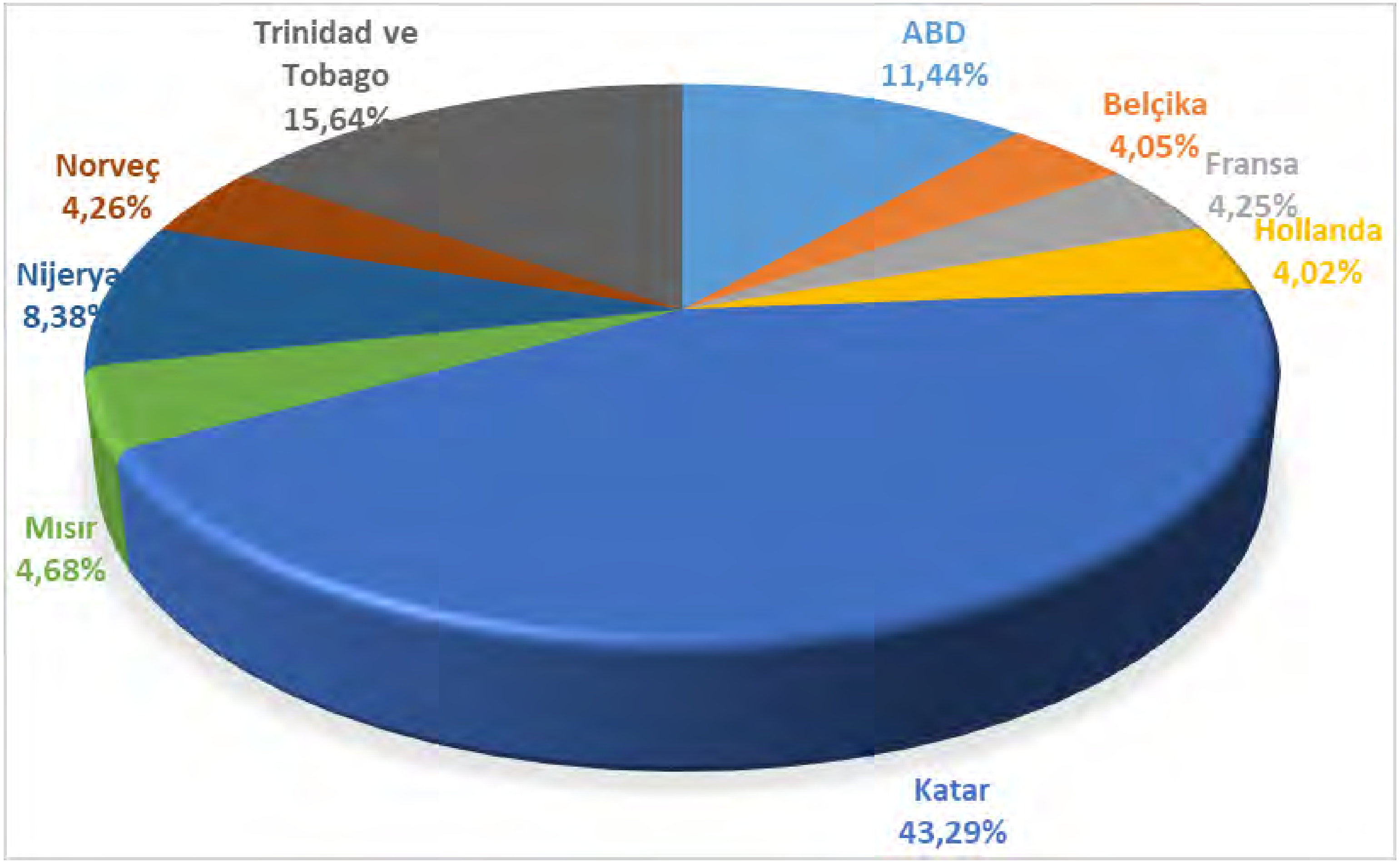


	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Import	0,43	1,11	2,93	3,19	3,96	4,35	4,86	5,28	6,74	7,90	9,70	10,00	12,10	14,50	16,00	17,30	20,80	21,70	26,50	30,20	35,80	37,30	35,80	38,00	43,80	45,90	45,20	49,30	48,30	46,35
Re-Export																					0,31	0,44	0,72	0,66	0,73	0,61	0,68	0,63	0,62	0,67

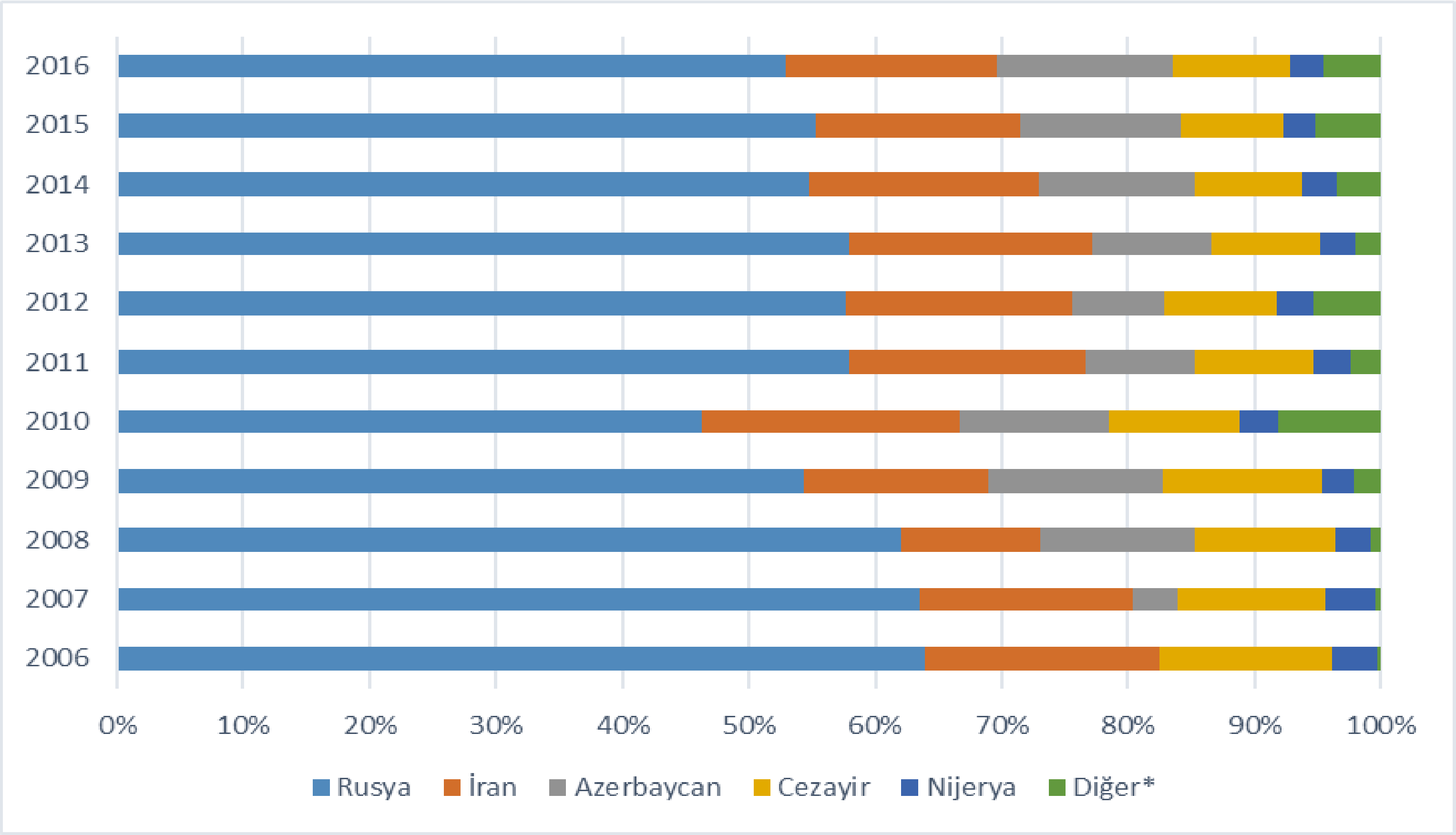
Turkish Supply Sources



Spot LNG Import by Countries



Share of Supply Sources by Years

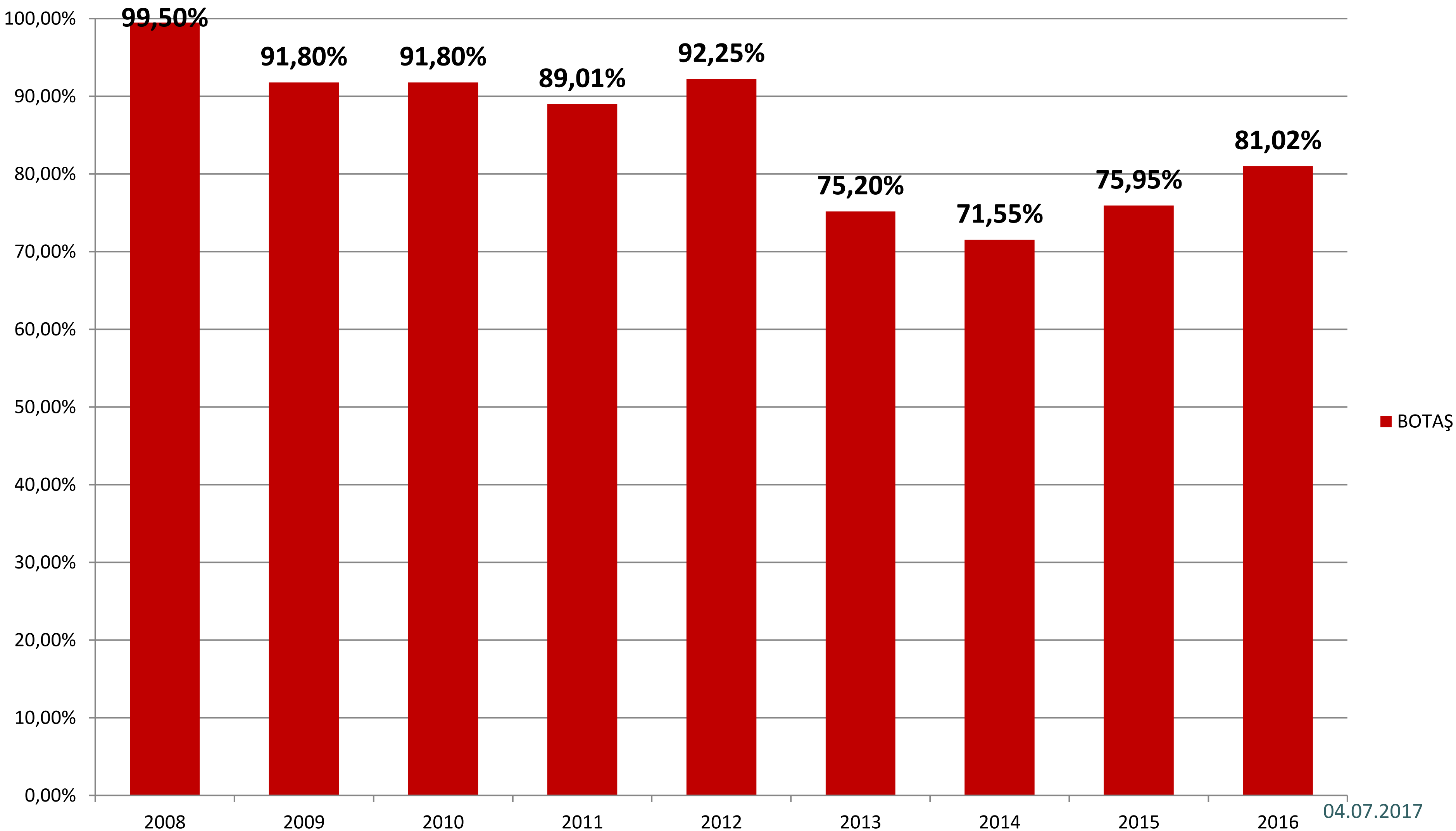


Gas Import Contracts

- BOTAS
- Russian Federation Western Route 4 BCM
- Russian Federation Blue Stream Route 16 BCM
- Iran 10 BCM
- Azerbaijan 6.6 BCM S.D 1
- Azerbaijan 6.0 BCM S.D 2
- Algeria 4.0 BCM
- Nigeria 1.2 BCM
- TOTAL 47.8 BCM

- PRIVATE IMPORTERS
- Enerco 2.5 BCM
- Bosphorus 2.5 BCM
- Akfel 2.25BCM
- Avrasya 0.5 BCM
- **Batı Hattı 1.0 BCM**
- Kibar 1.0 BCM
- Shell 0.25 BCM
- Delivery of Socar at Entry Point 1.2BCM
- TOTAL 10.0 BCM

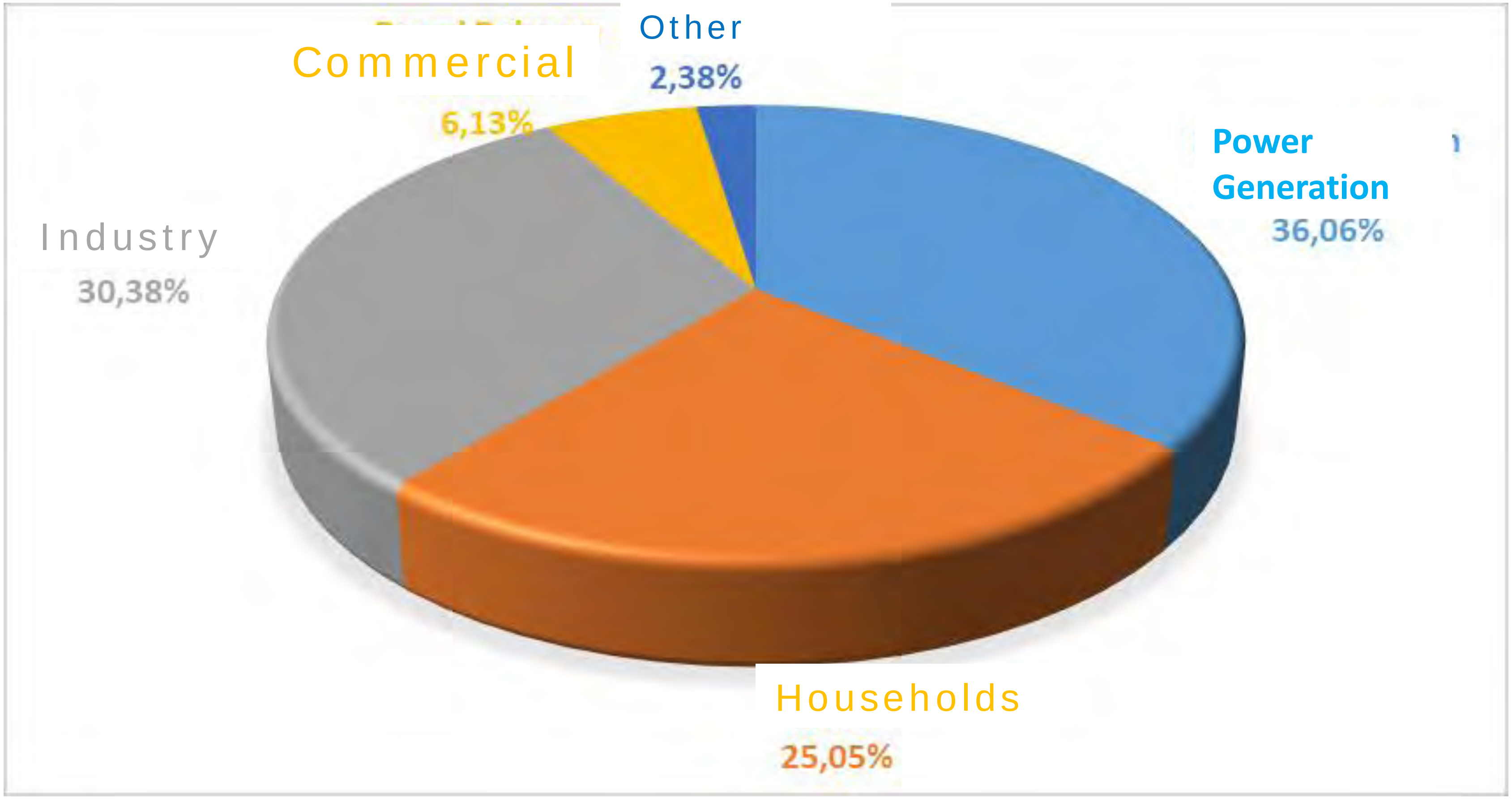
BOTAŞ Share of Imports

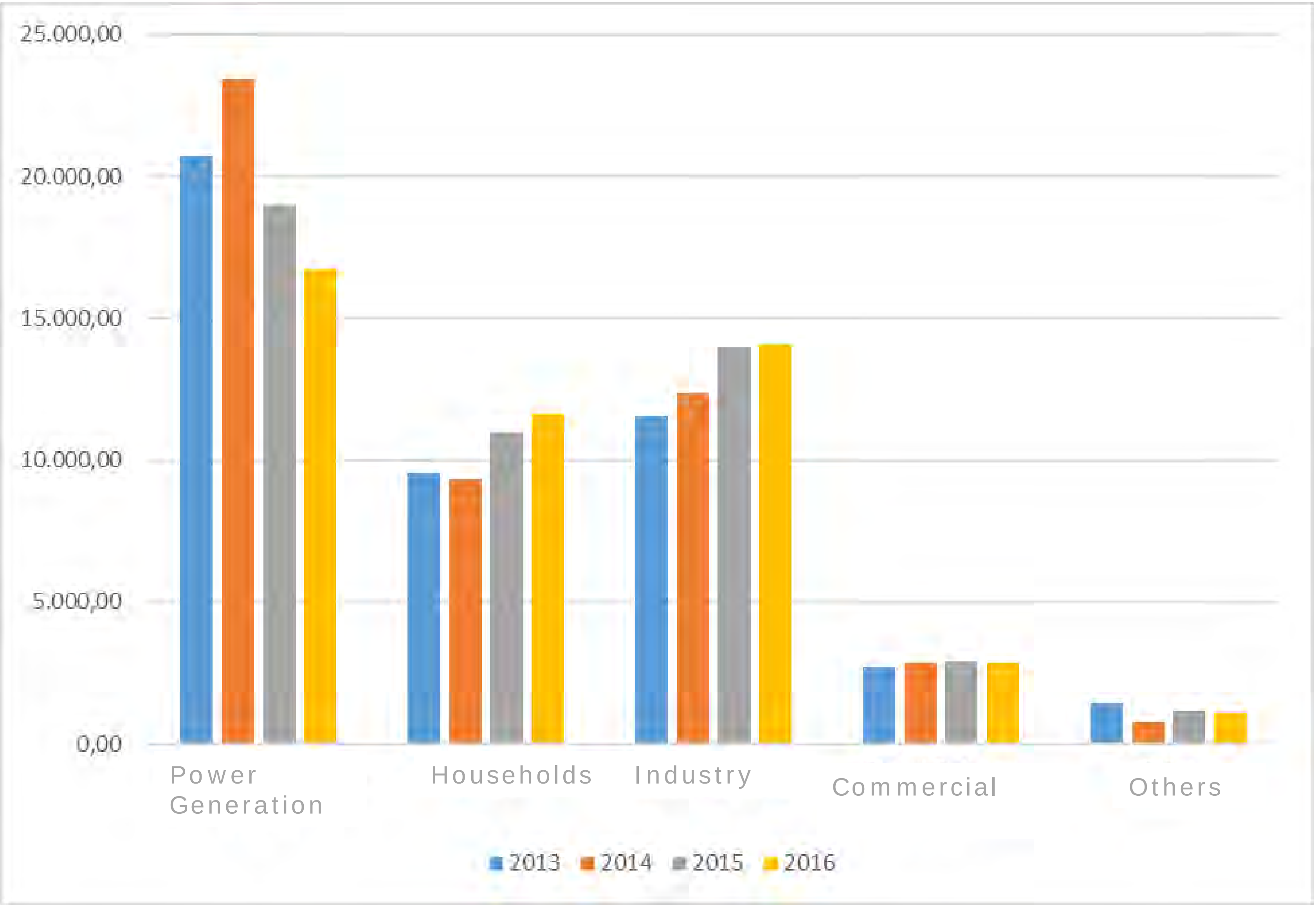


Active Wholesale Companies

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aksa	Aksa	Aksa	Aksa	Aksa	Aksa	Aksa	Aksa	Aksa	Aksa	Aksa
Turcas	Turcas	Turcas	Turcas	Turcas	Turcas	Turcas	Aygaz	Aygaz	Aygaz	Aygaz
		Aygaz	Aygaz	Aygaz	Aygaz	Aygaz	**Doğal**	**Doğal**	**Doğal**	**Doğal**
		Doğal	**Doğal**	**Doğal**	**Doğal**	**Doğal**	EWE	EWE	EWE	EWE
		EWE	EWE	EWE	EWE	EWE	Gazport	Gazport	Gazport	Gazport
		Gazport	Gazport	Gazport	Gazport	Gazport	NaturGaz	NaturGaz	NaturGaz	NaturGaz
		NaturGaz	NaturGaz	NaturGaz	NaturGaz	NaturGaz	Zorlu DG	Zorlu DG	Zorlu DG	Zorlu DG
		Pozitif	Pozitif	Pozitif	Pozitif	Zorlu DG	GDF Suez	GDF Suez	GDF Suez	GDF Suez
		Zorlu DG	Zorlu DG	Zorlu DG	Zorlu DG	EnerjiSA	**Hattuşa**	**Hattuşa**	**Hattuşa**	**Hattuşa**
			Akenerji	Akenerji	Akenerji	GDF Suez	Medgaz	Enerya	Enerya	Enerya
			EnerjiSA	EnerjiSA	EnerjiSA	**Hattuşa**	Hipot	Cengiz	Cengiz	Cengiz
			GDF Suez	GDF Suez	GDF Suez	Medgaz	OMV Enerji	OMV Enerji	OMV Enerji	OMV Enerji
			Hattuşa	**Hattuşa**	**Hattuşa**	Zorlu Ted.	**Odaş**	**Odaş**	**Odaş**	**Odaş**
			Medgaz	Medgaz	Medgaz	OMV Enerji	Angoragaz	Angoragaz	Angoragaz	Angoragaz
			Zorlu Ted.	Zorlu Ted.	Zorlu Ted.	OMV Gaz	Global Energy	Global Energy	Global Energy	Global Energy
				OMV Enerji	OMV Enerji	Angoragaz	Erdgaz	Erdgaz	Erdgaz	Erdgaz
				OMV Gaz	OMV Gaz	Erdgaz	Socar Gaz	Socar Gaz	Socar Gaz	Socar Gaz
					Angoragaz	Socar Gaz	Socar T.	Socar T.	Socar T.	Socar T.
					Erdgaz	Socar T.	Torunlar	Torunlar	Torunlar	Torunlar
						Energist	TT Elektrik	**Şişecam**	**Şişecam**	**Şişecam**
							Energist	Energist	EnerjiSA	EnerjiSA
									Akmercan	Akmercan
									NaturelGaz	NaturelGaz
									Energist	Akenerji
										Energist
										Engie
										Standart
2	2	9	15	17	19	20	21	21	24	27

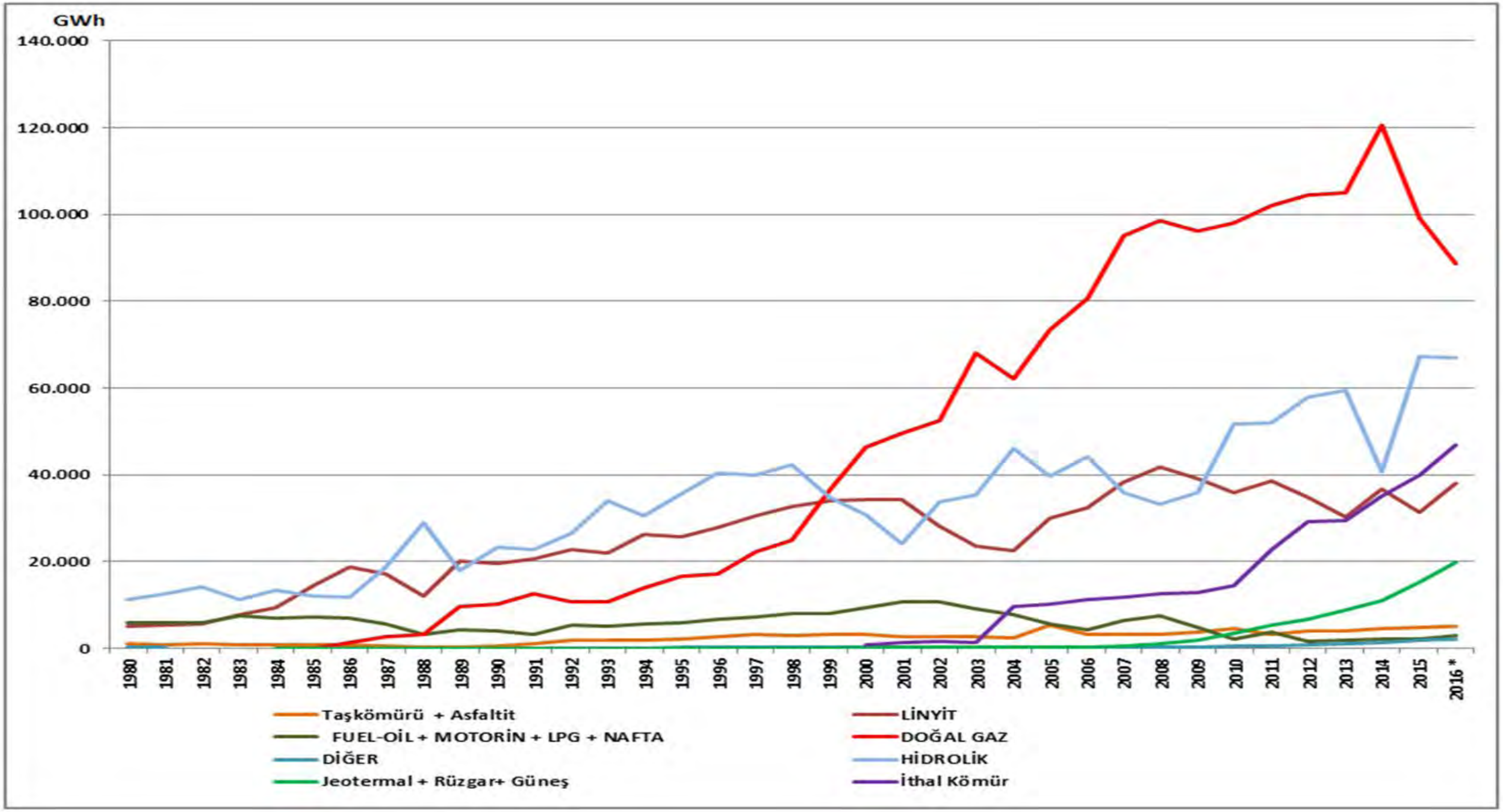
Gas Consumption by Sectors




25.000,00
20.000,00
15.000,00
10.000,00
5.000,00
0,00
Power Generation
Households
Industry
Commercial
Others
2013
2014
2015
2016

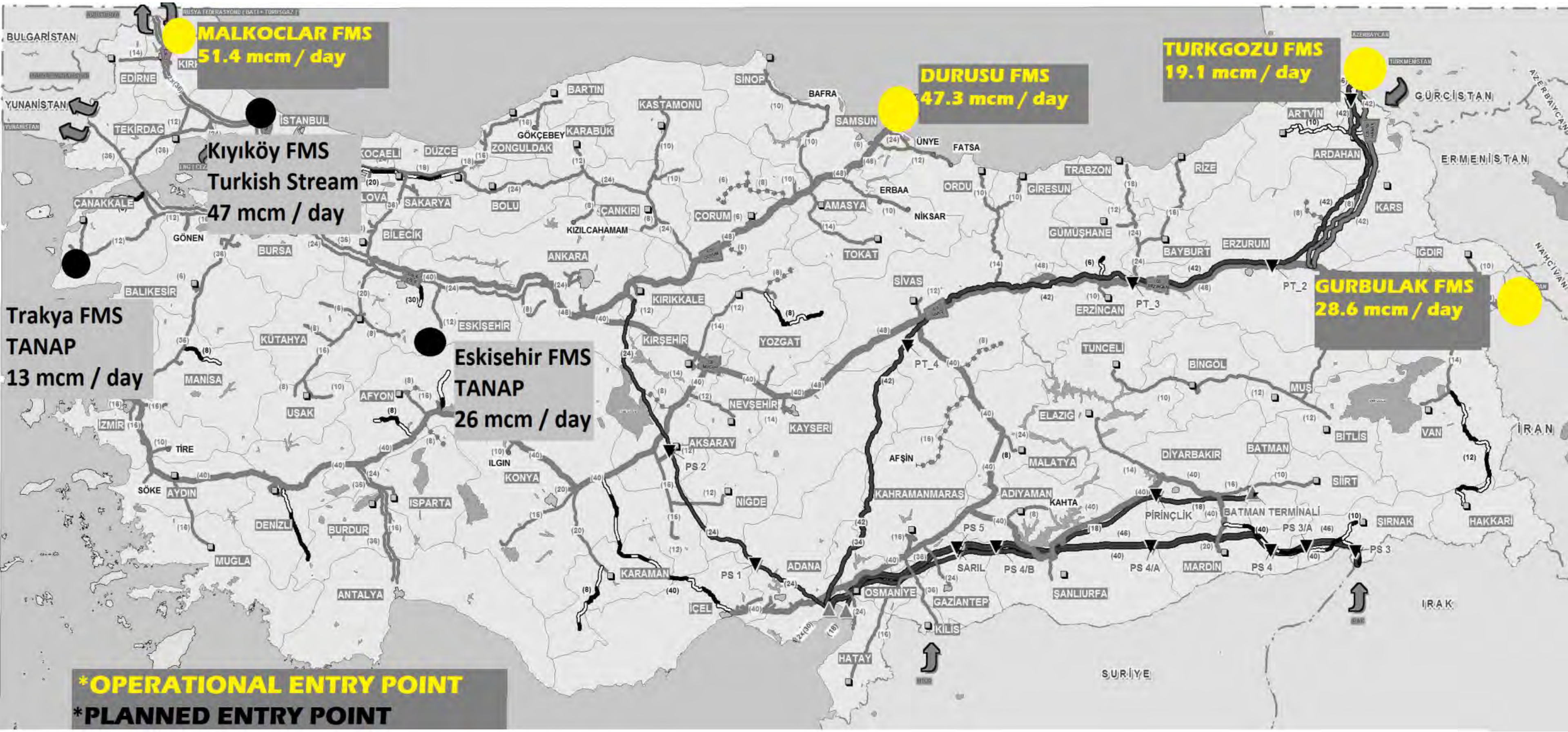
Natural Gas Demand In Turkey (BCM)

Turkey Power Generation by Sources (GWh)1980-2016



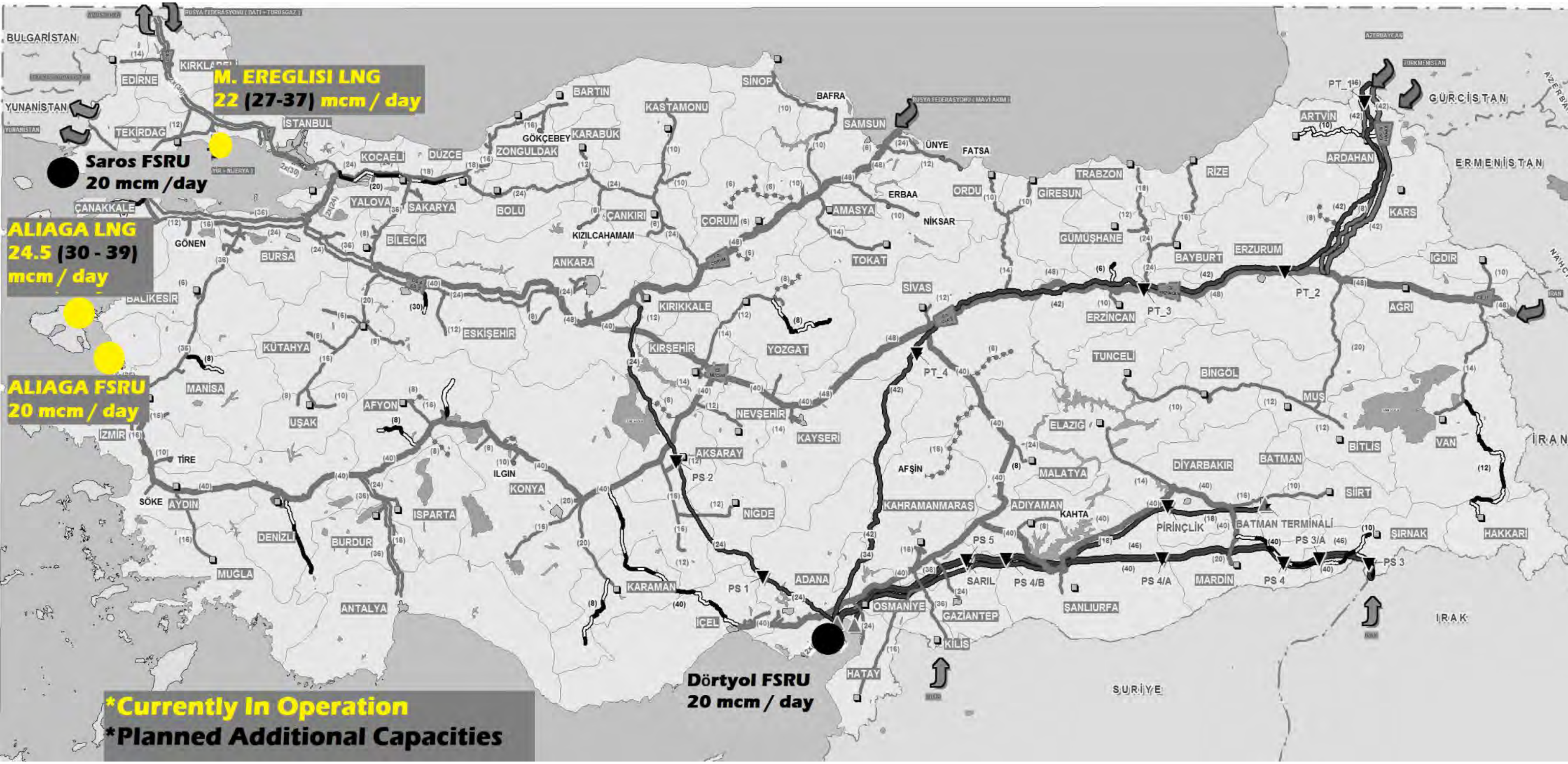
Source: Mechanical Engineers Turkey Energy Outlook 2017

Current System Entry Capacities



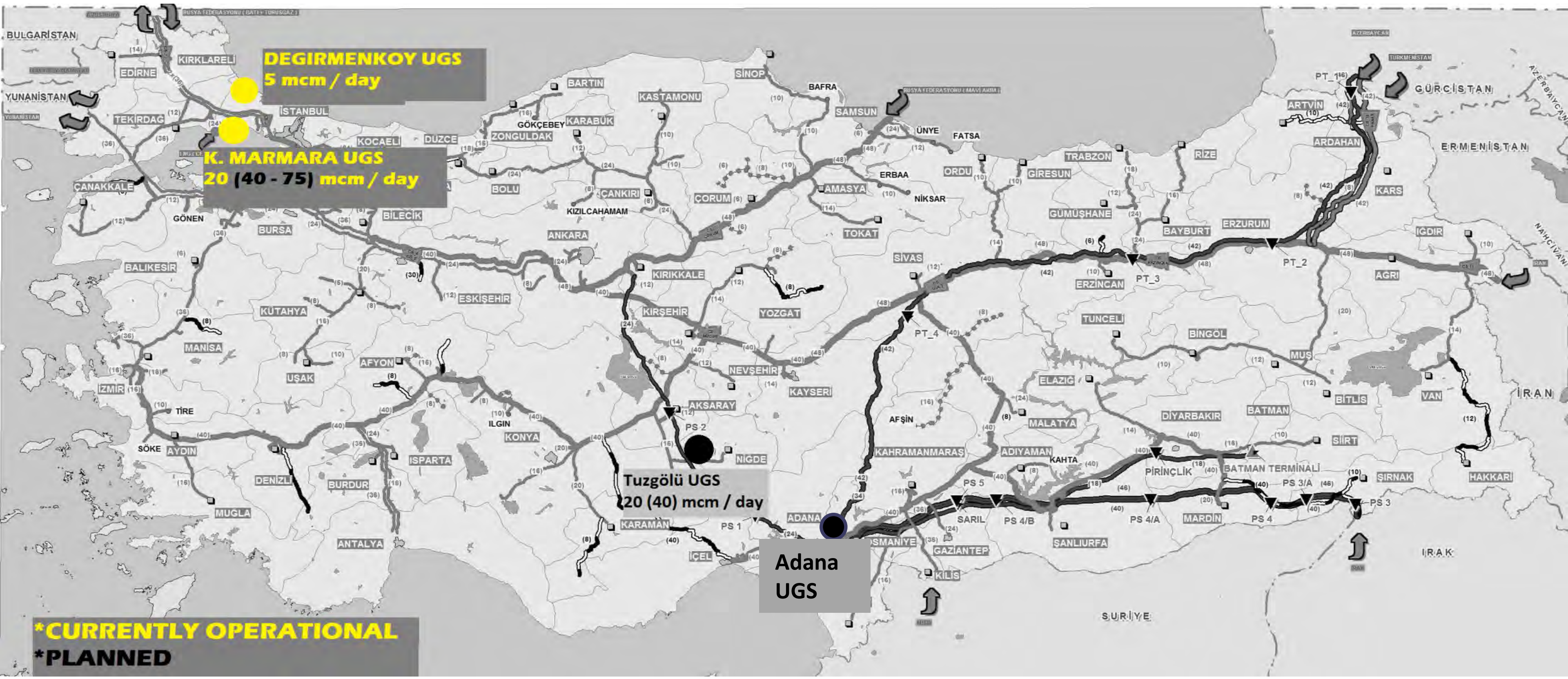
- In the year 2017, Turkey has a total of 146,9 mcm/day pipeline entry capacity.
- On the other hand, average winter daily consumption in the previous winter (Dec 16, Jan 17 and Feb 17) was nearly 193 mcm /day.
- In a peak consumption date daily consumption nearly reached to 240 mcm/day.
- In the future Turkish pipeline natural gas entry capacity is planned to reach 232.9 mcm / day.

LNG Entry Points in Turkey



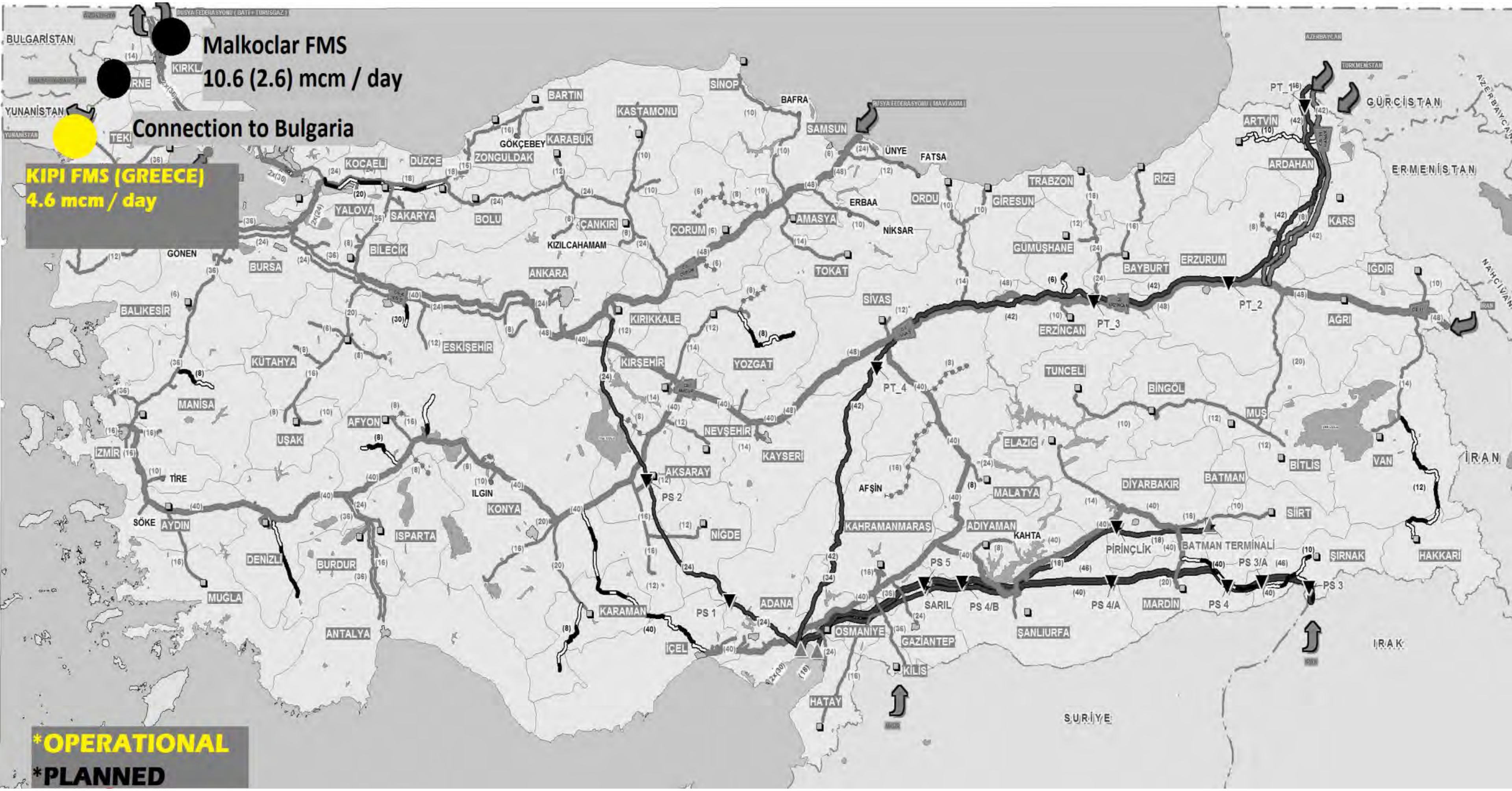
- Turkey in 2017 has nearly 67 mcm / day of LNG entry capacity in different locations.
- 2 additional FSRU facilities are planned to be operational in 2018 with an additional LNG entry capacity, Saros FSRU 20 mcm / day and Dörtyol FSRU 20 mcm / day.
- Also there are 2 different capacity enlargment projects for Marmara Ereğlisi and Aliaga LNG Terminals
- By 2021; it is planned to have in total of 136 mcm / day additional LNG entry capacity in Turkey with 5 stations.

Underground Storage Facilities



- Kuzey Marmara – Değirmenköy Underground Storage Facility includes two underground storages with a total withdrawal capacity of 25 mcm / day. By the year 2020, it will reach to a 50 mcm / day and by the year 2021, it will reach to a 75 mcm / day withdrawal capacity.
- Tuzgölü UGS currently has 13 mcm / day of withdrawal capacity, it will increase to 20 in 2018, to 30 in 2020 and to 60 in 2021.

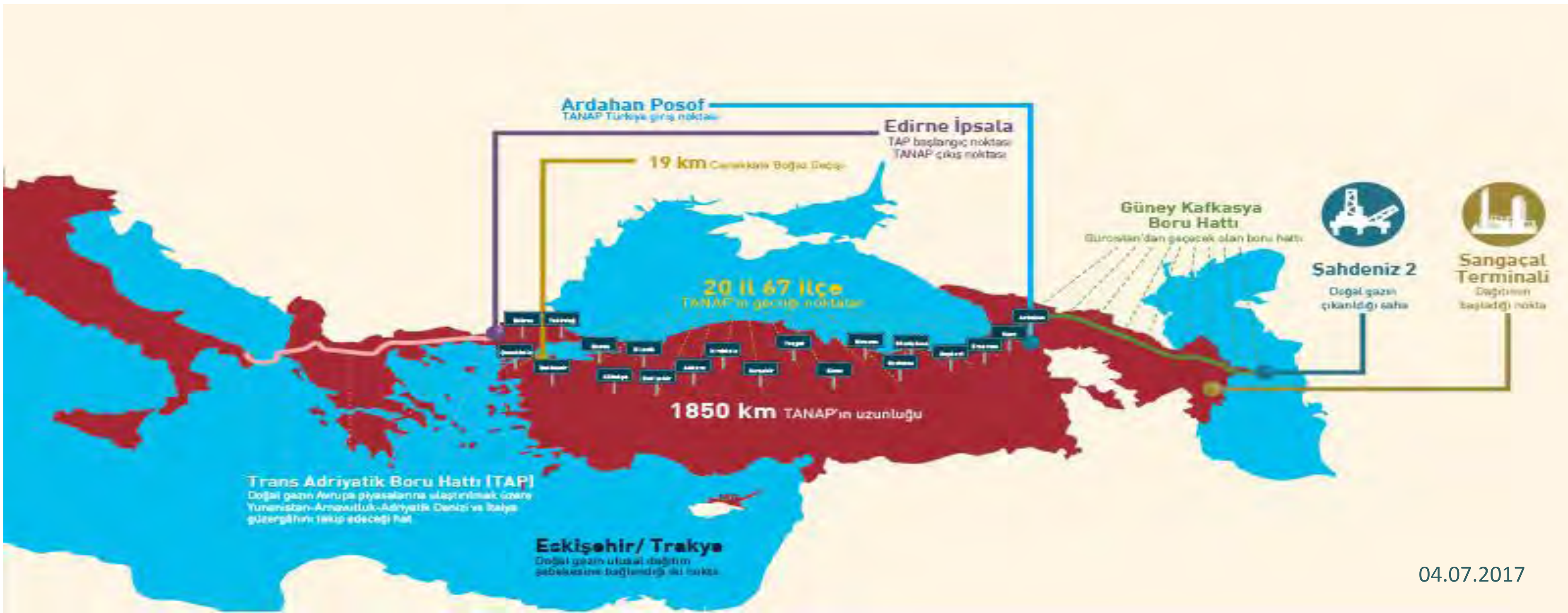
Export Points of Turkey



- Currently only Kipi Export Point to Greece is operational with a capacity of 4.58 mcm / day.
- Malkoclar Exit Point is planned to operate by 2023 with a capacity of 13.2 mcm /day.
- Also there are negotiations and initial planning ongoing in order to construct connection points with Bulgaria.

TANAP

- TANAP Project will bring additional 6 bcm of natural gas from Azerbaijan to Turkey.
- TANAP Project will also carry natural gas from Azerbaijan to Europe by merging into both South Caucausus Pipeline (SCP) and Trans-Adriatic Pipeline (TAP).
- When completed TANAP will have 1.850 km of pipeline.



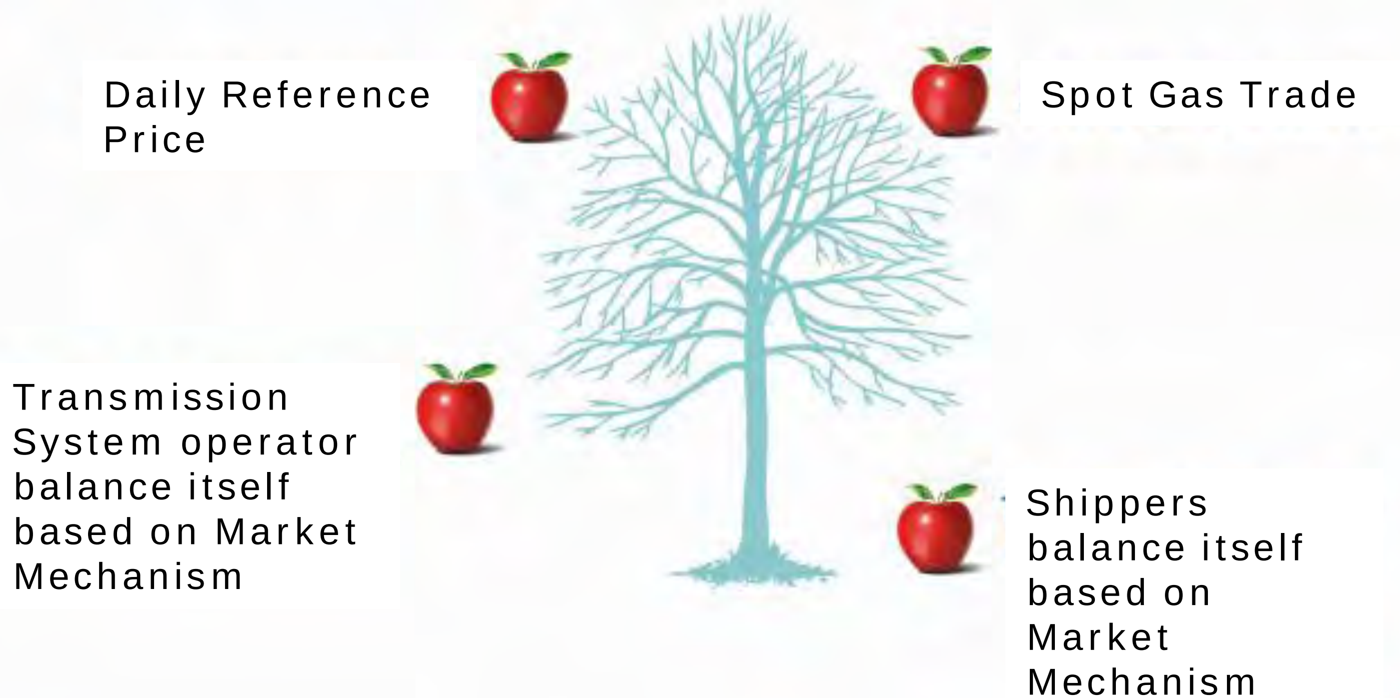
Current and Planned Capacities in 2017 and 2023

ENTRY POINTS (MCM / DAY)		2017	2023
PIPELINE ENTRY	MALKOCLAR - BALKAN	51,4	14,7
	DURUSU - BLUE STREAM	48	48
	GURBULAK - IRAN	28,5	28,5
	TURKGOZU - SHAHDENIZ	19	19
	ESKISEHIR - TANAP	0	16,4
	TRAKYA - TANAP	0	8,2
	KIYIKOY - BLUE STREAM	0	46,9
LNG ENTRY	M. EREGLISI LNG	22	37
	ALIAGA LNG	24,5	39
	ALIAGA FSRU	20	20
	SAROS FSRU	0	20
	DORTYOL FSRU	0	20
PRODUCTION	AKCAKOCA - TP	0,36	0,36
	GELIBOLU - MARSA	0,42	0,42
UNDERGROUND STORAGE	K. MARMARA UGS	25	75
	TUZGOLU UGS	13	80
	TOTAL	**252,18**	**473,48**

EXIT POINTS (MCM / DAY)		2017	2023
EXPORT EXIT POINTS	MALKOCLAR FMS	0	13,2
	IPSALA - GREECE	4,6	4,6
	TOTAL	**4,6**	**17,8**

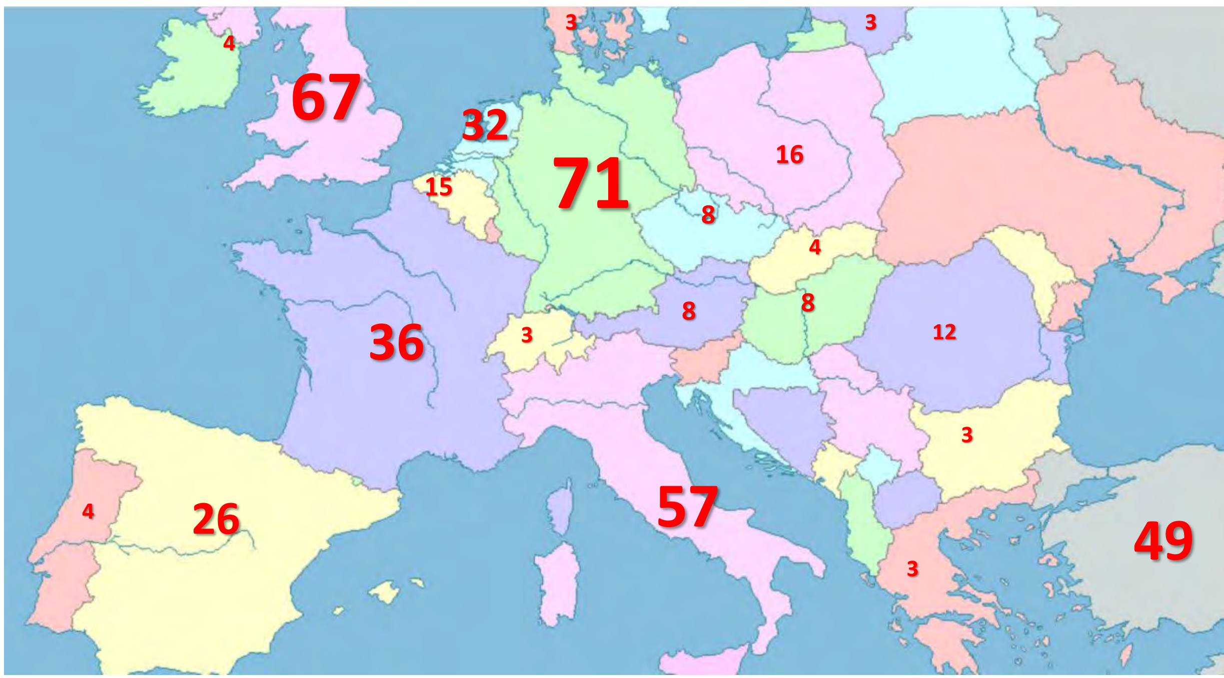
- Organize Natural Gas Wholesale Market Regulations published in the Official Gazette no. 30024 dated 31/3/2017.
- The purpose of the Regulations is to ensure the pricing of natural gas in the market under objective and transparent conditions and it allows market participants to trade and/or eliminate imbalances in the transmission system.
- Procedures and Principles covers the operation of mechanisms regarding organized natural gas wholesale market as well as the procedures and principles regarding the duties, authorities and responsibilities of the Market Operator, the Transmission Company and the market participants, and regarding the settlement of receivables and debts incurred as a result of the procedures carried out in the organized natural gas wholesale market and the imbalances created in the transmission system and the cash exchange and guarantee management stipulated by the central settlement organization.
- CTP will be operation on 1st April 2018.

CTP Continuous Trade Platform Provide

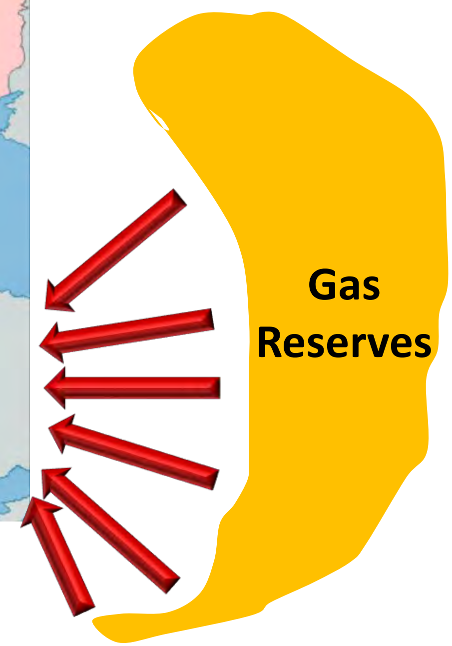


Natural Gas Flows and Consumption

Where is the most suitable place for trading hub?



2014 Natural Gas Comsumptions (bcm)
Source: BP Statistical Review, 2014



Why Turkey?

- Turkey is a big market and nearest country to production Countries,
- Turkey is very well placed geographically,
- New Gas Supply Sources, Israel gas, Iranian additional capacity, Turkish Stream, KRG Gas
- It is easy to be transit country but advantages are limited,
- Turkey can be trading hub and provide security of supply to all countries.
- Turkey's security of supply is important as much as EU's security of supply
- There are many challenging opportunities for future not only for Turkey but also surrounding countries.

THANK YOU

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